Women's Economic Rights and Children Education

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Abstract

This paper examines whether women's legal rights affect the human capital of the next generation. While previous authors investigate this question at a micro level for specific reforms and specific countries, few evidence rely on a more globally. Using the World Bank database on "50 Years of Women's Legal Rights", we investigate married women's rights as a determinant of children education in 75 developing countries from 1970 to 2010. Using an instrumental variables strategy, we confirm the causal nature of these effects and find evidence that reforms improving the legal capacity of married women raise educational attainment among youth between 15-19 years old. However, legal reforms endowing women with property and inheritance rights equal with men do not seem to have a significant impact on children's schooling.

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1 Introduction

In this work, we investigate from a global cross-country perspective the role of women's economic legal rights in stimulating children's schooling. The promotion of gender equality and empowerment of women is one of the Millennium Development Goals to which the international community has committed since 2010. While significant improvement towards reaching this goal has already been achieved, the situation of women remains largely unsatisfactory. Women's access to economic resources, and in particular property rights are still limited in many countries. Gender discrimination on labour market and for diverse economic operations or activities is still pervasive. Female individuals economic and social rights are often inferior to those of their male counterparts. For example, 21 of the 63 countries studied by Htun and Weldon (2011) have inheritance and bequest rights unequal between genders. According to the Women, Business and the Law 2016 report, 155 of the 173 economies covered have at least one law impeding women's economic opportunities, almost in the Middle East and North Africa and in Sub-Saharan Africa. In 18 economies, husbands can legally prevent their wives from working. In some countries like Cameroon, Ivory Coast or Congo-Brazzaville, the husband has exclusive control on matrimonial assets and financial institutions require the husbands consent to allow women's access to financial services. Strengthening property rights for women seems to be a natural policy avenue to improve this situation. In particular, inheritance rights, access to banking account or to a job without the husbands permission are crucial rights, beyond more common property rights of land, housing or household capital. Gender equality matters because women play a fundamental role in development by improving prospects for the next generation (The World Bank, 2011). A growing literature demonstrates the particular benefits of women's asset ownership, not only for themselves, but also for their families. In Ethiopia, expanding wives' access to marital property and removing restrictions to working outside the home increase the women's share occupations (Hallward-Driemeier and Gajigo, 2015). Female land rights are a positive determinant of household income (Deere et al., 2005) and can reduce fertility (Fernandez, 2014), child mortality (Eswaran, 2002; Field, 2003) and child labor (Field, 2007). Besides, women's share of business assets, savings and farmland, do have an impact on household budget shares (Doss, 2005). Women's asset ownership has been linked to decrease household consumption of some male-favored goods [1] and increases spending on more durable goods, such as children health or education (Thomas, 1990). Married woman may be more able to exercise their preferences on household spending when they participate in household decision making. Their bargaining power could be increased with their asset endowment (Wiig, 2013; Field, 2003; Doss, 2013) such as inheritance or land rights (Allendorf, 2007). All this evidence suggests examining policies improving female bargaining power within household, notably through an aug-

[1] See Anderson and Baland (2002); Bobonis (2009); Brown (2009); Wang (2014); Menon et al. (2014)

mentation of female assets in order to improve human capital accumulation. Indeed, female resources are positively related to child education in numerous countries. Branisa et al. (2013) demonstrate how social institutions related to gender inequality are associated with female education in a cross-country analysis. A rise in female income increases children educational attainment in China (Qian, 2008) and their assets also lead to child schooling outcomes in Bangladesh, Indonesia and South Africa (Quisumbing and Maluccio, 2003). Kumar and Quisumbing (2012) reveal how women's perception of the division of household assets upon divorce affects child education in Ethiopia. Similarly, Geddes et al. (2012) in US and Deininger et al. (2013) in India point out the association between women's economic rights and school enrollment even though this effect is only identified for girls. However, at odds with this literature, Edmonds (2006) shows in South Africa that child schooling can also be enhanced when resources are given to male members instead. The heterogeneity of results with these microeconomic studies raises the question of possible specification of local contexts that was partly drive these results. A global perspective covering most developing economies could provide confirmation or rejection of the main lesson that we want to estimate; That is: the positive impact of women's economic rights on children schooling. Such a global study is however unavailable at the current time, to the best of our knowledge. This is the object of this paper to provide it. Thus, this paper contributes to the literature by expanding both the country coverage and time dimension with the "50 Years of Women's Legal Rights Database" (The World Bank, 2012).

An exception is the study of Hallward-Driemeier et al. (2013b) which analyses married and unmarried legal rights on various outcomes. However, our paper goes considerably further than the literature by raising and solving the issues of identification and endogeneity which were never tackled before. Indeed, more educated countries can be more prone to have legal rights in favor of married women. The importance of human capital due to technological change in societies, leads men granting additional rights to their wives(Doepke and Tertilt, 2009). This may be because they care about their own daughters and their education. In this respect, along economic development way, a growing interest in education alters men's preferences and conducts to an expansion of women's legal rights. Thereby the direction of causality between economic development and female economic rights is ambiguous. According to Duflo (2012), women empowerment and economic development are closely related but economic development alone is insufficient to ensure significant progress in some aspects of children's welfare. Using panel regressions, we control for other drivers of education outcomes, translating microeconomic measures of schooling costs and returns based on an investment function into aggregate variables. In this line, special attention is devoted to simultaneity and interaction issues emerging with aggregate indicators such as fertility, health and education. In this paper, we focus on married women's economic rights - measured by property and inheritance rights, access to a bank account or to a job without the husband's permission, go to court or sign legal contracts. Indeed, gender discrimination is particularly relevant for married women as custom and social norms affect wives differently

from unmarried women. In order to test for these hypothesis, we implement alternative estimation methods like fixed effects, 2SLS-FE and System GMM. We find that social institutions improving women's opportunies in their private and social life are associated with higher children education. Moreover, endowing women with property and inheritance rights equal with men is found not to impact children educational attainment. The remainder of the paper is structured as follows. Section 2 discusses the relationship between women's empowerment and children education. Section 3 describes the data. Section 4 examines our empirical strategy. Section 5 addresses issues of causality and highlights the results. Section 6 concludes.

2 Theoretical Framework

There is no common framework in the literature regarding the choice of model specification in schooling and relevant variables. However, according to Haveman and Wolfe (1995), "the attainment of children depends on three primary factors: (1) the choices made by the society that determine the opportunities available to both children and their parents; (2) the choices made by the parents regarding the quantity and quality of family resources devoted to children; (3) the choices that children make given the investments in and opportunities available to them." Accordingly, we consider that society acts first by reforming specific married women's rights, the economic and institutional environment that households will face in phase (2) changes.
Indeed, allowing women from working outside the home, sign contracts or open a bank account, raises their economic opportunities and endowments.
First, married women's economic and social rights are linked to children education through the channel of income. On the one hand, greater women's employment opportunities, all else equal, increases women's income and more generally household income. With additional earnings, parents are more able to spend greater resources on children education. In the same line, an increase in household income due to parents' additional activites can be associated to a decrease in child labor and then to an increase in children schooling (Edmonds, 2007; Ravallion and Wodon, 2000; Baland and Robinson, 2000). On the other hand, considering that husbands and wives make joint labor supply decisions, greater women's employment opportunities can act as a substitute to men's employment (Mammen and Paxson, 2000). This substitution effect can reduce household total income and affects negatively children education.
As well, greater women's opportunities on the labor market raise the expected benefits for mother's schooling (Jensen, 2010). Then mother's human capital can be positively or negatively related to the attainment of the child. Positively as educated mothers value more the education of their children (Behrman et al., 1999) and negatively as they spend less time at home educating them (Behrman and Rosenweig, 2002). Mother's education is also associated with children's health. Healthier children will be more productive, will live longer and thereby their expected return of education increases. However, endowing women with

equal rights over property and inheritance give women's access to assets that provide smoothing consumption throughout life. Then, women are less dependent on children for old-age assistance and do not try to answer to the same long term needs through children health or human capital (Guyer, 1997).
Besides, women's gaining greater command of resources in the form of stronger rights to own and inherit land or property, legal structures improving labor force prospects may give them greater bargaining power within the household. What matters are woman's abilities to leave the household, all of which increase her influence on household's decisions. Then, if mothers value education more than fathers [2], an increase in women's bargaining power results in greater household resources devoted to children education.
A last but related channel through which married women's reforms influence children's education is fertility. Given women's power within the household, women may be more prone to take decisions about her fertility (Currie and Moretti, 2003). Then, children in smaller families may gain more than those in larger families where they have to compete with other siblings for limited family resources. This refers to the quantity-quality trade-off introduced by Becker and Lewis (1973).
These mechanisms all yield very different implications for understanding the way women's economic and social rights affect the resources devoted to children within the family.

3 Data

A major issue is to find educational outcome measures that are consistent across countries. Data on enrolment rates are widely available but they do not reflect quality differences across countries. We measure children's attainment with the average years of schooling of one specific cohort aged between 15 and 19 years old from Barro and Lee (2013). The focus on this specific cohort is justified since it is just beyond compulsory school ages in most countries. Thereby the effect of selection bias due to early marriage, as girls who marry tend to leave both school and their parents residence, is minimized. Children attainment is a superior measure to enrolment, as holding other things constant, students who receive a good education are more likely to stay in school. Thus, high attainment rates may indirectly reflect high educational quality. In our sample, the average years of schooling of the 15-19 is around 6 years, with a minimum of 2 months and a maximum of 12 years (see Table 1). By region, Europe Asia and America Latina are above the overall mean with respectively (7.7) and (6.8) years of education far behind Sub-Saharan Africa (4.4). Regarding legal rights variables, we use the "50 years of women's legal rights" database from the The World Bank (2012) which provides information about gender gaps in the area of property or inheritance rights, matrimonial rules and women's ability to perform activities

[2]Related papers demonstrating the higher value of mothers compared to fathers on children's education can be found in the introduction.

independently from their husband. Based on published legislation, countries receive the value of zero if the particular right is not equal for men and for women and the value of one if women and men enjoy the same right equally. However, these indicators based on the law included in the Constitution can only imperfectly reflect reality. Indeed, family laws and the lack of awareness of the law by individual can prevent women from acquiring a property good or opening a bank account, although the legal rights are enforced in the country. In this study, we analyze whether married men and married women have equal ownership rights of property and inheritance, does a married woman legally need permission from her husband to get a job, open a bank account, sign any type of contract or initiate legal proceedings in court. We combine the individual legal indicators into two different measures: property rights ($Property$) and legal capacity ($LegalCapacity$). The former index is ranked between 0 and 2 and the one reflecting women's legal capacity between 0 and 4. These aggregate indicators capture more variations in reforms although the results cannot tell us which sub-component is driving the results. They will be included in the education equation separately as reforms are quite different and occured at different time, with little variation regarding measures of property or inheritance rights. Figure 1 shows clearly that most rights have evolved sequentially according to a similar trend, which indicates our strategy to use aggregate indicators. The right to initiate legal proceedings in justice or sign contracts in its own name appear to have been established before the one giving women'access to financial ressources, to property or to the labour market. Equality in inheritance is lagging far behind others. Significant improvements in legal rights have been achieved since 1970. Latin America, East Asia and Pacific or Sub-Saharan Africa have reduced the number of legal constraint by more than 50 percent (Hallward-Driemeier et al., 2013a). Despite general progress, gender disparities in legal rights remains across countries. In 2010, 14 countries legally prevent women from working outside the home without their husband's consent[3], almost located in Sub-Saharan Africa (Figure 2) where delays in children education attainment are also recorded. Figure 3 shows an obvious positive correlation between the average years of education of the 15-19 and the level of women's property rights throughout the period.

According to Behrman (2010), educational outcomes are determined by a combination of household demand decisions and educational supply provider decisions in a microeconomic setting. When modelling at a country level, we have to think to institutional and economic conditions which could alter and influence the costs and benefits of an individual's investment in human capital. From the demand-side, as in every investment situation, the trade-off between costs and benefits determines the optimal level of investment. Family background typically influence the costs and benefits of schooling decisions. Since family background is difficult to capture directly at a country level, we use the fertility rate and women's education attainment aged 25 and above to respectively proxy

[3]In Bolivia, Cameroon, Congo Democratic Republic, Ivory Coast, Gabon, Iran, Jordan, Mali, Mauritania, Niger, Sudan, Syria, Togo and Yemen.

the number of children in a family and mother's schooling. Both variables generally have significant private marginal products on wages and thereby on the budget constraint, modifying incentives for private investments in education. In the same line, female labor force participation rate is also added in order to take into account female income or labor opportunities as a potential channel of women's rights on child schooling. The inputs into education obtained through schooling, importantly include children and their pre-school levels of cognitive and physical development. Therefore, child mortality rate, defined as the number of deaths per 1,000 live births between birth and five years, controls for children's health and productivity. Also, the mortality rate at working ages should affect accumulation, as decisions about human capital accumulation are made primarily on the basis of returns they will yield in adulthood [4]. The country specialization in the industry/services sector, reflected by the agriculture value added may affect the education demand, as almost all jobs available on the labor market require advanced skills and thus increases expected returns in human capital investments. Following Aghion et al. (2012), since education is defined per person of the relevant age group, we do not control for population growth in these specifications. Additionally, we control for economic factors like the logarithm of GDP per capita in constant prices (US$ PPP, in 2005) since higher per capita income may raise the demand for education [5]. From the supply-side, we include environmental factors like the urbanization rate which captures the level of infrastructure and services available in the country. We account for an index of political regime constructed from the institutionalized autocracy and democracy scores in the polity IV database, ranges from -10 to +10, where a higher score means that country i at date t is more democratic. Changes in the quality and quantity of educational supply-related services are also reflected with the government expenditures on education [6]. The variables capturing potential transmission mechanisms described in the Section 2 are thus included in our regressions in order to control for some alternative explanations of education. However, some mechanisms are difficult to capture at a country level. It is not possible to measure women's bargaining power as bargaining power is fundamentally unobservable (Doss, 2013).

4 Econometric Strategy

4.1 Specification of the education equation

Due to the construction of our data from Barro and Lee (2013) and in order to reduce measurement error, we use five-year average for all variables. Our two indices of legal rights are included separately into our regressions and lagged five

[4] See Lorentzen et al. (2008); Cervellati and Sunde (2005, 2013).

[5] See Bils and Klenow (2000).

[6] The effect of public spending on educational outcomes is not obvious and depends on institutional quality (Gregorio and Lee, 2002; Rajkumar and Swaroop, 2008; Baldacci et al., 2008; Bennell, 2002).

years. Indeed, most reforms affecting female rights are little likely to produce immediate and powerful effects. It takes time for individuals to incorporate the information and effectively change their behavior. We estimate two types of equation:

$$Schooling_{i,t} = \beta_0 + \beta_1 Legalcapacity_{i,t-1} + \beta_2 X_{i,t} + \gamma_i + \lambda_t + \eta_{i,t} \quad (1)$$

$$Schooling_{i,t} = \alpha_0 + \alpha_1 Property_{i,t-1} + \alpha_2 X_{i,t} + \mu_i + \delta_t + \epsilon_{i,t} \quad (2)$$

where $\beta_{0,-}$, α_2 are vectors of parameters K estimated and γ_i, λ_t, $\eta_{i,t}$, μ_i, δ_t, $\epsilon_{i,t}$ are error terms.

Variable schooling i,t refers to the average years of schooling in country i and year t. Our main coefficients of interest are β_1 and α_1 which captures the effect of legal rights changes in country i and year t. We include first a set of control variables Xit which do not suffer from colinearity and missing data in order to maximize the size of our sample and thus the prediction [7]. The fundamental challenge is that most inputs in the education production function are likely not to be exogenous, being determined simultaneously. As mentionned in the theoretical framework, some decisions may influence and reinforce each other. In our setting, this would be the case so that the accumulation of education from one generation to another explains both the reduction of fertility and mortality rates. Thus, we add fertility rate, child mortality and female educational attainment with lags, reducing the bias arrising from simultaneity between these determinants of educational attainment and capturing possible time delays until effects can be observed[8]. The specification entails country (γ_i and μ_i) and year (λ_t and δ_t) fixed effects. The errors $\eta_{i,t}$ and $\epsilon_{i,t}$ should satisfy strict exogeneity restrictions. We first use the within estimator in order to deal with unobserved heterogeneity. Effects are thus identified from variation in legal rights within countries over time. Finally, we estimate the equation (3) and (4) which include the lagged dependent variable as explanatory variable. These specifications allow us to better capture the dynamics involved in human capital accumulation which is fundamentally a medium-term evolving process:

$$Schooling_{i,t} = \beta_0 + \beta_1 Legalcapacity_{i,t-1} + \beta_2 X_{i,t} + (\beta_3 Y_{i,t-1}) + \varphi_i + \nu_t + \zeta_{i,t} \quad (3)$$

[7] These variables include the logarithm of GDP per capita, the index of democracy and the urbanization rate. The female labor force participation rate as well as government expenditures in education will be tested only in the robustness part as they have missing data and thus reduce our sample. The agriculture value added which introduces multicolinearity with the logarithm of GDP per capita will also be estimated separately

[8] Fertility rate, children's mortality and women's educational attainment are first not included in the regression and then included in levels to see differences in results. Finally, our preferred specification included them with one period of lags which corresponds to five years.

$$Schooling_{i,t} = \alpha_0 + \alpha_1 Property_{i,t-1} + \alpha_2 X_{i,t} + (\alpha_3 Y_{i,t-1}) + \phi_i + \kappa_t + \varepsilon_{i,t} \quad (4)$$

where $\beta_{0,-}$, α_3 are vectors of parameters K estimated and φ_i, ν_t, $\zeta_{i,t}$, ϕ_i, κ_t, $\varepsilon_{i,t}$ are error terms.

4.2 Dealing with endogeneity of Economic Rights

As discussed before, there might be concerns regarding the direction of causality as gender equality was both a cause and a consequence of economic development (Duflo, 2012). In this light, we estimate two IV-type estimators (2SLS and system GMM) to further correct for endogeneity of the kind arising from the correlation of error terms in the presence of lagged explanatory variables. Then, our instrumentation strategy is based on a combination of external and internal instruments.

Regarding the 2SLS-FE estimator, we use the ten-past year level of reforms to instrument its level five years later. One of the most problematic part of any IV exercise is the exclusion restriction that the instrument does not affect the second stage left-hand-side variable directly. How plausible is that ten-year lagged legal rights affects education in time t other than through its effects on property rights and legal capacity in time $t-5$? There are two ways to address this question, a priori intuition and an econometric testing. The intuition is to argue that a long lag is likely to dilute reforms effects on schooling, particularly if other changes are also happening. Decisions on investment in child education are updating over time. Parents do not take stationnary decisions regarding their children human capital in time of their birth. These decisions evolve due to the constantly changing economic environment, opportunities and shocks that households are facing through the life cycle. Regarding econometric tests, the F-statistics of the first stage regression exceeds 10 (Staiger and Stock, 1997) and is above the critical values identified by Stock and Yogo (2002) as indicating a problem with weak instruments. In order to conduct a test of over-identification, we also add an alternative instrument. However, a good instrument is difficult to find. Neumayer and Soysa (2011) or Juhn et al. (2013) addressed the question of whether trade and investment linkages can diffuse the empowerment of women via spatial dependence. They study the effect of general openness to trade and foreign direct investment (FDI), understood as the extent of a country's integration into the global economy. These variables would have been promising instruments for women's economic and social rights in developing countries, except that international trade and general human capital may reinforce each other (Kim and Kim, 2000; Borensztein et al., 1998). Considerable attention has been devoted to the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) as an instrument, founded in the macroeconomic literature on women's empowerment (Ferrant and Kolev, 2016). Indeed, the ratification of CEDAW encouraged states to review family laws as a way of signaling their integration in the international order

and world civilization (Simmons, 2000). However, with their ratifications, state parties commit themselves to take appropriate decisions ending discrimination against women and girls in all spheres of their private, social and economic life including measures ending gender gaps in education. The latter claim also threatens the possibility to use it as a valid instrument in education or growth estimates. As well, religious affiliation, civil liberties (Dollar and Gatti, 1999) or freedom of the press were tested but these indicators appear to be correlated with omitted variables. For instance, an unobservable tendency to modernity over time may bring shifts in norms and society values and promotes gender egalitarian attitudes (Inglehart and Norris, 2003). Finally, the countries' legal origin (Acemoglu and Johnson, 2005) or the rule of law (Dollar and Gatti, 1999) were impossible to test with the presence of country and time fixed effects which raise the power of our estimations.

The average level of women's rights in migrant-receiving countries seems to be a good candidate. Indeed, we can suppose that migration to countries with different gender equality in social institutions should drive institutional changes in sending countries. This refers to the litterature on transfers of norms (Spilimbergo, 2009; Beine et al., 2013), which supposes that political values are absorbed by immigrants, then transmitted to the origin countries where they contribute in reshaping attitudes and creating new norms about women. Our indicator measures the average level of discrimination against women in institutions across the top 5 destinations of each country immigrants, constructed from the bilateral migration database of Özden et al. (2011) and the 50 years of women's legal rights database. We lagged this instrument with two periods [9] as migrants require time before integrating and then transmit new values in their home country. The 2SLS first condition which assumes a positive correlation between the instrument and the variable suspected of endogeneity is respected. Indeed, (Lodigiani and Salomone, Lodigiani and Salomone) demonstrated how total international migration increases the female political empowerment in origin countries. In the same way, Ferrant and Tuccio (2015) provide evidence on the link between south-south migration and discrmination against women in social institutions. Regarding the exclusion restriction, we can assume that the level of women's rights in country j doesn't have a direct effect on the education system of country i except through its implementation of reforms. Indeed, we do not consider the percentage of migrants in low or high social discrimination receiving countries which would affect education directly through the transfer of education or fertility norms among others (Bertoli and Marchetta, 2015). The first stage regressions are summarized in equations 5 and 6:

$$LegalCapacity_{i,t-1} = \beta_0 + \beta_1 LegalCapacity_{i,t-2} + \beta_2 \sum_{j=1}^{5} LegalCapacity_{j,t-2} + \beta_3 X_{i,t-1} + \sigma_i + \rho_t + \upsilon_{i,t} \quad (5)$$

[9] The F-statistic in the first stage regression is maximised when the indicator is included in $t-2$

$$Property_{i,t-1} = \alpha_0 + \alpha_1 Property_{i,t-2} + \alpha_2 \sum_{j=1}^{5} Property_{j,t-2} + \alpha_3 X_{i,t-1} + \omega_i + \theta_t + \tau_{i,t} \quad (6)$$

where β_0,-, α_3 are vectors of parameters K estimated and σ_i, ρ_t, $\upsilon_{i,t}$, ω_i, θ_t, $\tau_{i,t}$ are error terms.

However, better women's prospects and opportunities in gender egalitarian countries can influence migration choices, which in turn change parents' incentives to educate their children in order to migrate. Nevertheless, in countries with high levels of discrimination against women, women's migration decisions are by definition limited. Women's access to power and ressources necessary to migrate are restricted which limit their incentives to educate themselves for migration prospects. This latter argument provides plausible reasons to remove the potential bias arising from the endogeneity of the norm. Similarly, according to Ferrant and Tuccio (2015), the levels of discrimination in recipient countries have no significant effect on male migration. This suggest to conduct additional estimations with the level of women's legal rights in male migrants' destination to protect ourselves against eventual claim[10].

An alternative specification of our schooling equation included a lagged dependent variable term so as to better capture the dynamic involved in human capital accumulation in an aggregate society. This lagged effect may help us to control for some endogeneity channels of the women's rights variables. However, it generates a potential new endogeneity issue associated with the lagged dependent variable We use a dynamic GMM estimator, as with the within estimator, the introduction of the lagged variable creates a correlation with the error term and induces potential bias. We focus on the System-GMM regressor of Blundell and Bond (1998), addresses endogeneity by simultaneously solving levels and equations in difference. This estimator first instruments the model in first difference with instruments in lagged levels as in Arellano and Bond (1991). However, the model in level is instrumented with the variables in lagged differences as they remain good predictors for the endogenous variables even when the series are very persistent. Moreover, we use the Windmeijer (2005) correction procedure to correct the bias in the two step standard errors. We investigate the validity of moments conditions by testing the null hypothesis that the error term is not second order serially correlated. Finally, we perform the Sargan and Hansen test of overidentifying restrictions.

5 Results

5.1 Baseline results

Table 2 reports the results for equation (1) and (3). The first three columns provide country and year fixed-effect results, estimating the relationship between

[10]Regressions are presented further down in the robustness part.

the lagged value of female legal rights and the change in the average level of schooling among the 15-19 age group. The 2SLS-FE results based on internal and external instruments are presenting from columns (3) to (5), while the last three columns show the dynamic specification with the SYS-GMM technique. Columns 1,4 and 7 test the results without controlling for fertility, child mortality and women's education while the others add these variables with lags (columns 2, 5 and 8) then in levels (colums 3, 6 and 9). These different specifications do not change nor their expected sign nor their significance.

Regarding the index of women's legal capacity, we observe that the estimated coefficient is positive and statistically significant from zero in all specifications. The magnitude of the relationship is higher in 2SLS-FE regressions than in dynamic GMM, in any case higher than FE, suggesting that the causal effect of women's legal rights on children educational attainment is actually understated by the within estimator. Women's legal capacity is thus associated with additional children educational attainment. Reforms improving equality between men and women in the area of finance, justice, and labor increase the average years of schooling of the 15-19 around 3 months. In all regressions, we include country and time fixed effects, since the results are robust to any country-specific time-invariant characteristics which may influence gender equality in social institutions. They encounter religion, colonial history and many other unobservable characteristics. Regarding our specifications with the 2SLS-fixed effect estimator, Table 3 shows the first stage when instrumenting the level of gender equality in social institutions with its historical level and its level in the host countries of migrants. Not surprisingly, historical levels of women's legal capacity at home and in receiving countries (10 years ago) are positively and significantly related to changes in legal reforms in origin countries five years later (column 1). The F-statistics of the first stage is 31, above the critical values of (Stock and Yogo, 2002) which remove the concern with weak instruments. In addition, the P-values of the Hansen Test, 0.7 in the second stage indicate that the exclusion restriction is respected. With respect to the System-GMM estimator, the most appropriate one in the presence of the lagged dependent variable, the lagged dependent variable, fertility rate, child mortality and adult women's years of schooling are intrumented using from their own first to eight lags. Our variable of interest, i.e. the lagged index of women's legal capacity, the logarithm of GDP, the urban rate and the policy index are instumented using from their second to eight lags. Finally, the lagged women's rights index in the migration receiving countries is considered as exogenous. We test the validity of moment conditions by using the test of overidentifying restrictions proposed by Hansen and by testing the null hypothesis that the error term is not second order serially correlated. Furthermore, we test the validity of the additional moment conditions associated with the level equation using the Hansen difference test for all GMM instruments. The results of these tests confirm the validity of our instruments (p-values are around 0.6 in Table 2). It is worth noting that variables reflecting potential transmission mechanisms between education and women's economic rights are all significant and have the expected sign. Indeed, the logarithm of GDP reflecting the channel of income and the level of women's

eduation are positive while fertility and child mortality are negative. The effect of social institutions on education outcome do not turn insignificant once these variables are included (whether it be in level or with lags).

Table 4 reports the results for equation (2) and equation (4). Women having access to property and inheritance rights seem not to impact children education, as the coefficient of the aggregate indicator is never significant. Indeed, even in the first specification with the within estimator, without dealing with potential bias from endogeneity, the coefficient on women's property right index is negative and insignificant. Potential explanations could be mentioned here. Although property can be used as collateral and increase access to credit, it doesnt have a direct impact on income. This explanation is based on the assumption that the main channel driving the results of legal capacity is through income. Now, if we suppose that women's education is the most important variable explaining the relationship, as well property and inheritance rights can increase women's endowments but do not directly raise their expected return to schooling. Besides, in societies where key assets that provide smoothing consumption throughout life are controlled by men (land or property), women can try to answer to the same long term needs through other instruments, as children human capital (Guyer, 1997). By allowing women to control these assets, women can be less dependent on children for old-age assistance. Moreover, the right to inherit is different from the actually fact to inherit. In many countries, multiple legal systems exist and customary or religious laws can be superior to the Constitution (Htun and Weldon, 2011). Social norms are deeply rooted in the area of property and inheritance practices which prevent women to effectively acquire household exit options and thus higher bargaining power. Finally, the right to acquire a property in its own name will not have any impact if women do not have access to ressources necessary to buy it. Having access to financial resources or to labor market opportunities which in turn raise own income, could magnify the property reform effects. We further investigate this argument in the robustness part.

5.2 Robustness

Indeed, we conduct a sensitivity analysis where we first regress our two composite indices within the same equation. The first three columns in Table 5 demonstrate that this specification does not change our previous results as women's legal capacity impacts positively and significantly child education whereas the property right indice is not significant. To go one step further, we interact our two composite indicators in order to evaluate potential complementary or substitution effects between reforms. Results are presented in the last column of Table 5. Surprisingly, their interaction is negative and significant at 5 percent which illustrates the existence of a downward complementary effect between these different types of women's economic rights on schooling attainment. However, our results have to be interpreted with caution as we only use the within estimator adding country and year fixed effects without considering potential endogeneity bias. Secondly, we decompose our aggregate women's legal capacity

index and regress each individual indicators separately into different regressions. Table 6 shows that reforms allowing women to acquire a job, a bank account, sign contract or initiate legal proceedings in court without their husband's permission are necessary to increase the children's average years of schooling as they are all positive and significant. Then, Table 7 gives our instruments more robustness as the same results can be obtained when the internal instrument ($LegalCapacity_{i,t-2}$) or the external one ($LegalAbroad_{i,t-2}$) are used alone in the estimation of the legal capacity indice ($LegalCapacity_{i,t-1}$). In the same line, results are the same when we give the exclusion restriction more validity by lagging the index of Legal Capacity with one more period, resulting with a gap of 15 years between the dependent variable and the instrument. Indeed, we combine the level of women's rights abroad in time $t-2$ with its level within the country 15 years ago, in time $t-3$, which give us a F-statisitc of 19 and do not change our initial results. In addition, we replace the average years of education of the 15-19 age group by the gross enrollment rates in primary, secondary and tertiary, by gender. We report in Table 8 only results with tertiary education as the other ones are not significant. In all specifications, coefficients on women's legal capacity are positive and signficant. Having one additional right increasing women's legal capacity raises the enrolment in tertiary education between 10 and 12 percent. The magnitude of the result is higher when we consider female enrolment compared to male enrolment in tertiary. This is not a surprising result as girls may have more incentives to educate themselves in higher education as their expected returns in human capital investment directly increase with higher opportunities on the labor market due to additional women's economic rights. Likewise, we add important control variables as the agriculture value added [11], the government spending on education and we replace child mortality with the mortality rate at working ages. Given the possible importance of female employment as a key transmission variable, we test separately whether inclusion of the female labor force participation rate affect the impact of social institutions on the outcome. All these variables do not change our initial results[12]. Lastly, we exclude countries that maintain the same small level of discrimination against women in their social institutions throughout the period, always equal to 4 (2) with the index of legal capacity (property). This reduces our sample to 37 (50) countries. Our results remain unchanged[13].

[11] We have to withdraw the logarithm of GDP per capita when testing the agriculture variable due to multicolinearity.

[12] Tables can be provided upon request

[13] Results can be send upon request

5.3 Compliers and Sub-Population

6 Difference-in-Difference

7 Conclusion

The major concerns nowadays in developing countries are whether women can engaged in self-employment without facing barriers in access to credit and other factors of production; and whether women have rights to inherit or purchase land or own other assets. In this paper, we identify and estimate empirically the mechanisms of human capital accumulation and how they are related to female economic rights or female resources with an aggregate setting. More generally, these questions have social policies implications in terms of targeting the social programs for female members, as a device to foster human capital accumulation, and thereby growth and economic development. This panel study offsets previous papers which investigated this issue using cross-country analysis due mainly to a lack of suitable data. Endogeneity between social institutions and education is accounted for thanks to a rigorous instrumentation strategy which exploits 2SLS-FE and System-GMM estimation techniques. We provide some evidence on how government reform improving equality between men and women in their private and social life contributes to increase children educational attainment. Endowing women with equal opportunities than men in justice, on the labour and financial market, increases children's average years of schooling in the latest stages of their human capital accumulation. Thus, empowering women can be an important tool for economic development through the slow channel of human capital investment. Property and inheritance rights are crucial rights for women since it let married women to keep their capital in case of husband's death. However, no clear effect is identified on schooling at a macroeconomic level. This is probably due to our measure of legal rights which do not provide the opportunity to measure the degree of the inequality in reality. Although many countries have made efforts to review and reform legislation, translating property laws from theory into practice at community level remains a challenge. According to "The Advocates for Human Rights", legislation has to support enforcement and monitor mechanisms to facilitate women's inheritance claims, increase public awareness as a pre-condition for overcoming traditions and norms of behaviour.

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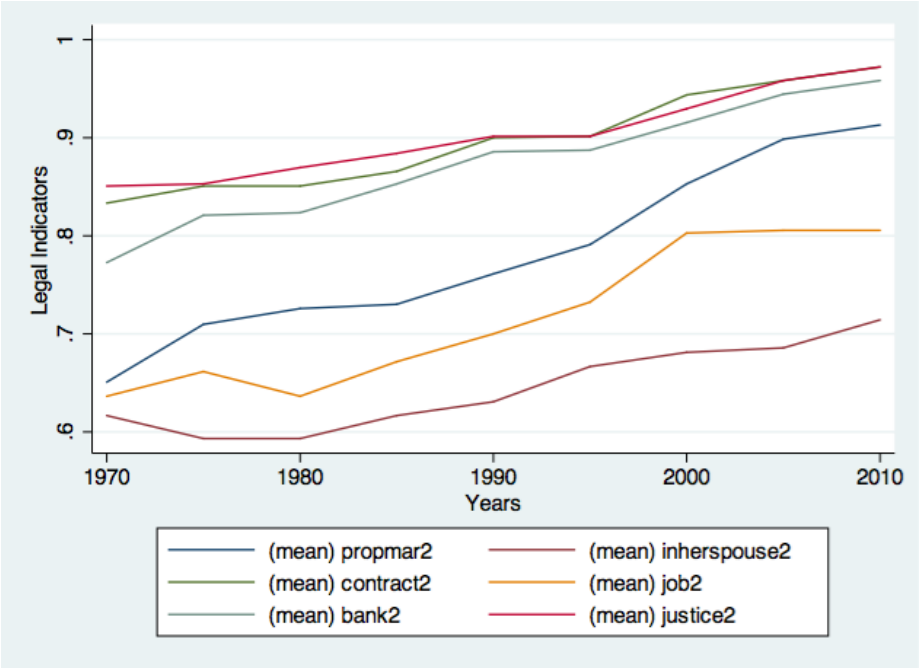

Figure 1: Evolution of Individual Rights between 1970 and 2010

Table 1: Summary Statistics

	Observations	Mean	Std. Dev.	Min.	Max.
Schooling	675	5.856	2.523	.23	12.46
Property	572	1.44	.587	0	2
LegalCapacity	633	3.423	1.963	0	4
LogGDP	619	7.007	1.053	4.498	9.97
Polity	647	-.308	6.501	-10	10
Urban	657	39.919	20.318	3.34	90.794
LogChildMortality	648	4.389	0.814	2.070	5.979
AdultMortality	656	274	115	77	747
Fertility	675	4.732	1.813	1.076	8.873
LogWomenSchooling	657	1.369	0.636	0	2.55
LogGovSpending	426	4.139	2.696	.814	44.333
Agriculture	583	23.447	14.206	2.47	68.547
Flabor	365	54.27	20.17	9.7	90.3
LegalCapacityRightsAbroad	580	3.527	.832	1	16
PropertyRightsAbroad	568	1.534	0.407	0.666	2

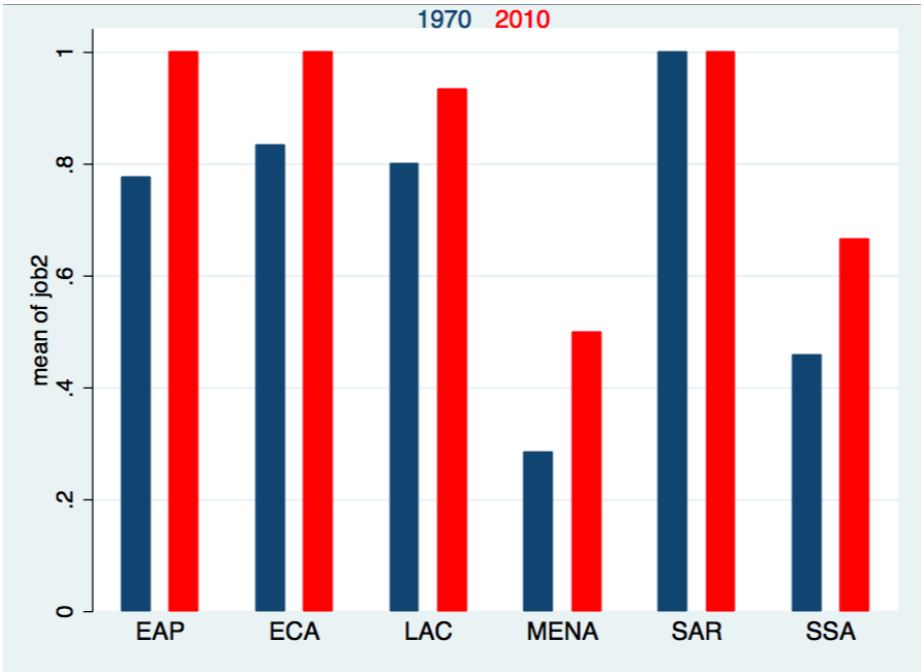

Figure 2: Evolution of the Right to Work without the husband's permission from 1970 to 2010, by Region

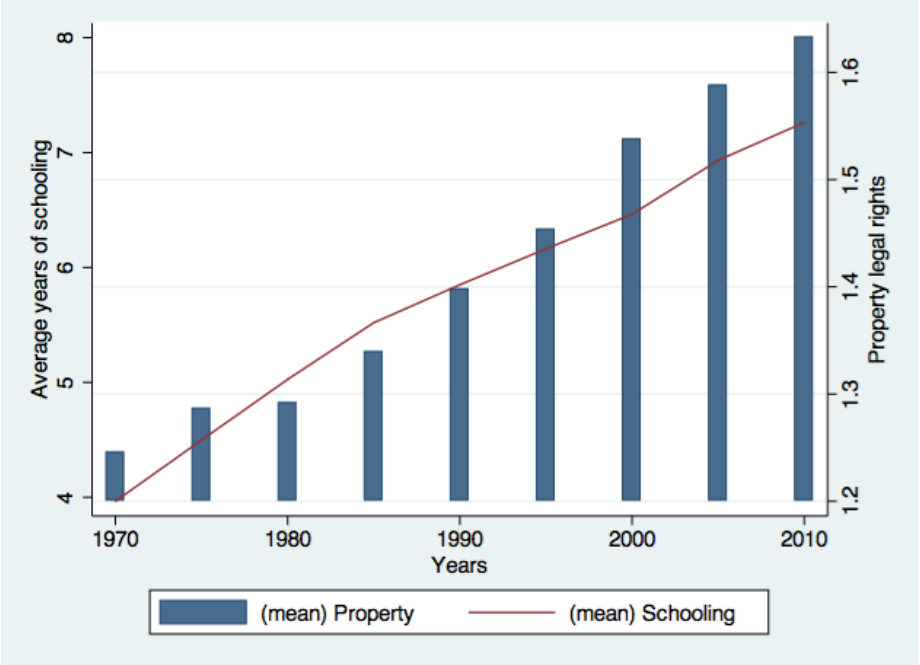

Figure 3: Correlation between Women's Property Rights and Child Education

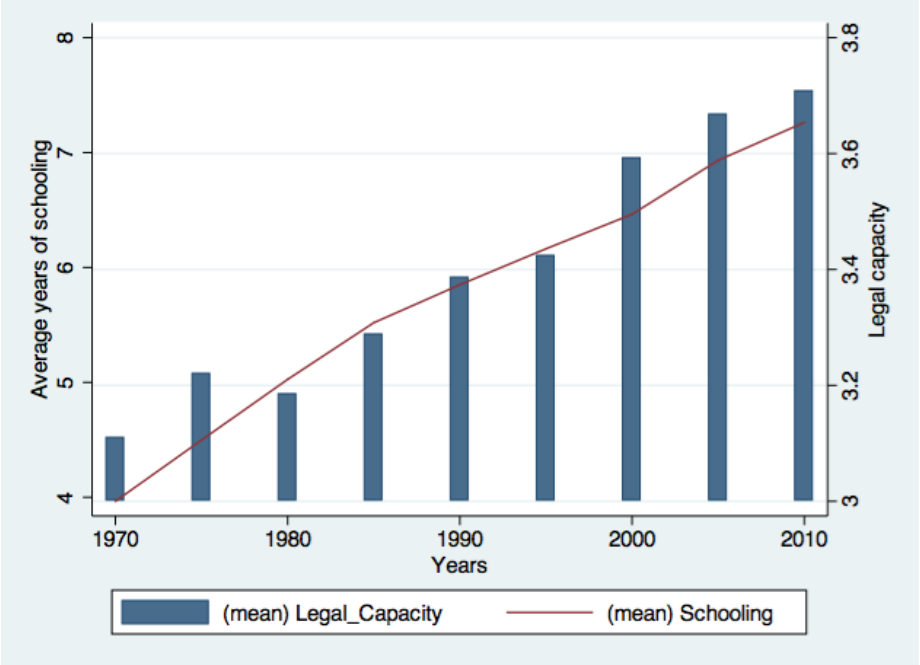

Figure 4: Correlation between Women's Legal Capacity and Child Education

Table 2: Estimation Results for Women's Legal Capacity

Dependent Variable	Average Years of Schooling of the 15-19 cohort								
Variables	Fixed Effects			2SLS-FE			System GMM		
$LegalCapacity_{i,t-1}$	0.153**	0.233**	0.227**	0.229*	0.339***	0.313**	0.229*	0.326***	0.285***
	(0.061)	(0.105)	(0.105)	(0.125)	(0.129)	(0.122)	(0.136)	(0.1)	(0.085)
$LogGDP_{i,t}$	0.828***	0.642***	0.704***	0.662***	0.635***	0.698***	0.565**	0.692***	0.675**
	(0.154)	(0.227)	(0.229)	(0.231)	(0.228)	(0.234)	(0.269)	(0.250)	(0.268)
$Polity_{i,t}$	-0.026**	-0.018	-0.024*	-0.026**	-0.018	-0.024**	0.052*	0.026	0.028
	(0.010)	(0.014)	(0.013)	(0.012)	(0.012)	(0.011)	(0.030)	(0.021)	(0.019)
$Urban_{i,t}$	0.033***	0.023	0.028	0.04**	0.023	0.028*	-0.015	-0.023**	-0.02*
	(0.01)	(0.024)	(0.022)	(0.016)	(0.018)	(0.016)	(0.012)	(0.009)	(0.01)
$Fertility_{i,t-1}$		-0.184*			-0.179**			0.157	
		(0.096)			(0.08)			(0.122)	
$LogChildMortality_{i,t-1}$		-0.733***			-0.755***			-0.335	
		(0.264)			(0.270)			(0.296)	
$LogWomenSchooling_{i,t-1}$		0.722***			0.869***			0.149	
		(0.182)			(0.192)			(0.139)	
$Fertility_{i,t}$			-0.207**			-0.185**			0.0510
			(0.101)			(0.0887)			(0.118)
$LogChildMortality_{i,t}$			-0.682**			-0.626**			-0.0417
			(0.298)			(0.268)			(0.257)
$LogWomenSchooling_{i,t}$			0.889***			1.310***			0.328
			(0.202)			(0.200)			(0.216)
$Schooling_{i,t-1}$							0.814***	0.705***	0.660***
							(0.12)	(0.091)	(0.088)
Hansen J-test (p-value)				0.4	0.7	0.8	0.1	0.4	0.4
p-value of test AR(2)							0.6	0.6	0.6
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	509	505	508	431	429	431	441	439	441
R-squared	0.640	0.679	0.691	0.570	0.609	0.627			
Number of countries	72	72	72	68	68	68	70	70	70

$***$Significant at 1%. $**$Significant at 5%. $*$Significant at 10%.
Standard errors are in parenthesis.

Table 3: Estimation Results for the First-Stage Regressions

Panel A: First-Stage Regressions for Equations in Levels		
Dependent Variable:	$LegalCapacity_{i,t-1}$	$Property_{i,t-1}$
$LegalCapacity_{i,t-2}$	0.62***	
	(0.102)	
$LegalRightsAbroad_{i,t-2}$	0.178***	
	(0.045)	
$Property_{i,t-2}$		0.505***
		(0.082)
$PropertyAbroad_{i,t-3}$		-0.159*
		(0.08)
F Stat excluded instruments	31	18
Hansen J-test (p-value)	0.7	0.1
Country FE	Yes	Yes
Year FE	Yes	Yes
Control Variables	Yes	Yes

$***$Significant at 1%. $**$Significant at 5%. $*$Significant at 10%.
Standard errors are in parenthesis.

Table 4: Estimation Results for Women's Property Rights

Dependent Variable	Average Years of Schooling of the 15-19 cohort								
Variables	Fixed Effects			2SLS-FE			System GMM		
$Property_{i,t-1}$	-0.0396	0.253	0.294	-0.0979	0.442	0.252	-0.148	-0.274	-0.283
	(0.149)	(0.263)	(0.254)	(0.405)	(0.424)	(0.399)	(0.308)	(0.226)	(0.211)
$LogGDP_{i,t}$	0.895***	0.670***	0.676***	0.835***	0.789***	0.905***	0.609**	0.199	0.359
	(0.165)	(0.202)	(0.183)	(0.279)	(0.264)	(0.279)	(0.296)	(0.365)	(0.336)
$Polity_{i,t}$	-0.013	-0.005	-0.011	-0.018	-0.013	-0.019	0.036	0.032	0.034
	(0.011)	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)	(0.035)	(0.024)	(0.025)
$Urban_{i,t}$	0.01	-0.007	-0.004	-0.001	-0.021	-0.02	-0.027**	-0.008	-0.017
	(0.013)	(0.017)	(0.016)	(0.019)	(0.017)	(0.017)	(0.011)	(0.013)	(0.01)
$Fertility_{i,t-1}$		-0.110			-0.109			-0.211	
		(0.123)			(0.123)			(0.147)	
$LogChildMortality_{i,t-1}$		-1.075***			-0.999**			-0.228	
		(0.287)			(0.404)			(0.341)	
$LogWomenSchooling_{i,t-1}$		0.719***			0.852***			-0.0566	
		(0.210)			(0.249)			(0.210)	
$Fertility_{i,t}$			-0.106			-0.180			-0.124
			(0.125)			(0.130)			(0.154)
$LogChildMortality_{i,t}$			-1.179***			-0.719*			-0.377
			(0.316)			(0.370)			(0.337)
$LogWomenSchooling_{i,t}$			0.975***			1.622***			0.156
			(0.242)			(0.281)			(0.286)
$Schooling_{i,t-1}$							0.906***	0.757***	0.662***
							(0.124)	(0.097)	(0.094)
Hansen J-test (p-value)				0.4	0.2	0.05	0.7	0.7	0.5
p-value of test AR(2)							0.06	0.1	0.2
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	456	453	455	336	336	336	395	394	395
R-squared	0.615	0.673	0.692	0.467	0.528	0.555			
Number of countries	69	68	68	61	61	61	66	66	66

$***$Significant at 1%. $**$Significant at 5%. $*$Significant at 10%.
Standard errors are in parenthesis.

Table 5: Estimation Results with both Women's Legal Rights Indices

Dependent Variable	Average Years of Schooling of the 15-19 cohort			
Variables	FE	2SLS-FE	System GMM	FE
$LegalCapacity_{i,t-1}$	0.193**	0.246*	0.320**	0.421***
	(0.082)	(0.135)	(0.160)	(0.133)
$Property_{i,t-1}$	0.072	0.09	-0.466*	0.755***
	(0.164)	(0.334)	(0.274)	(0.353)
$LogGDP_{i,t}$	0.664***	0.757***	0.150	0.638***
	(0.163)	(0.229)	(0.231)	(0.162)
$Polity_{i,t}$	-0.006	-0.008	0.031	-0.007
	(0.01)	(0.011)	(0.024)	(0.01)
$Urban_{i,t}$	-0.006	-0.01	-0.003	-0.006
	(0.012)	(0.015)	(0.011)	(0.012)
$Fertility_{i,t-1}$	-0.111	-0.147	-0.190	-0.088
	(0.084)	(0.105)	(0.159)	(0.085)
$LogChildMortality_{i,t-1}$	-1.210***	-1.150***	-0.147	-1.338***
	(0.237)	(0.308)	(0.330)	(0.242)
$LogWomenSchooling_{i,t-1}$	0.806***	0.939***	0.025	0.835***
	(0.143)	(0.198)	(0.243)	(0.143)
$Schooling_{i,t-1}$			0.711***	
			(0.084)	
$LegalCapacity_{i,t-1} * Property_{i,t-1}$				-0.218***
				(0.1)
Hansen J-test (p-value)		0.9	0.4	
p-value of test AR(2)			0.6	
Country FE	Yes	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	449	373	391	449
R-squared	0.673	0.601		0.678
Number of countries	68	61	66	68

$***$Significant at 1%. $**$Significant at 5%. $*$Significant at 10%.
Standard errors are in parenthesis.

Table 6: Estimation results with individual legal indicators reflecting Women's Legal Capacity

Dependent Variable	Average Years of Schooling of the 15-19 cohort							
Variables	2SLS-FE				System GMM			
$Bank_{i,t-1}$	1.343***				1.135***			
	(0.466)				(0.311)			
$Job_{i,t-1}$		1.133**				0.141		
		(0.483)				(0.320)		
$Contract_{i,t-1}$			1.277***				1.166***	
			(0.433)				(0.284)	
$Justice_{i,t-1}$				1.589***				1.301***
				(0.562)				(0.325)
$Schooling_{i,t-1}$					0.729***	0.754***	0.695***	0.735***
					(0.086)	(0.091)	(0.083)	(0.067)
$X_{i,t}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J-test (p-value)	0.6	0.2	0.6	0.6	0.5	0.2	0.4	0.4
p-value of test AR(2)					0.5	0.7	0.5	0.6
Country FE	Yes	Yes	Yes	Yes	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	430	429	430	430	444	442	444	448
R-squared	0.601	0.571	0.610	0.596				
Number of countries	68	68	68	68	70	70	70	70

$***$Significant at 1%. $**$Significant at 5%. $*$Significant at 10%.
Standard errors are in parenthesis.

Table 7: Robustness of the Instruments for Women's Legal Capacity

Panel A: First-Stage Regressions			
Dependent Variable:	$LegalCapacity_{i,t-1}$		
$LegalCapacity_{i,t-2}$	0.623***		
	(0.107)		
$LegalRightsAbroad_{i,t-2}$		0.166***	0.197***
		(0.045)	(0.033)
$LegalCapacity_{i,t-3}$			0.227*
			(0.125)
F Stat excluded instruments	33	13	19
Hansen J-test (p-value)			0.7
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Panel B: Second Stage Results			
Dependent Variable:	$Schooling_{i,t}$		
$LegalCapacity_{i,t-1}$	0.333***	0.347***	0.414***
	(0.143)	(0.219)	(0.181)
$X_{i,t}$	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
R-squared	0.623	0.601	0.543
Observations	444	437	372
Number of countries	70	68	67

***Significant at 1%. **Significant at 5%. *Significant at 10%.
Standard errors are in parenthesis.

Table 8: Estimation Results for Enrolment Rate in Tertiary

Dependent Variable	Tertiary	Female	Male	Tertiary	Female	Male	Tertiary	Female	Male
Variables		Fixed Effects			2SLS-FE			System GMM	
$LegalCapacity_{i,t-1}$	0.0598**	0.127***	0.106***	0.123*	0.321***	0.228***	0.128**	0.143**	0.127*
	(0.028)	(0.041)	(0.033)	(0.066)	(0.119)	(0.081)	(0.059)	(0.071)	(0.07)
$LogGDP_{i,t}$	0.31***	0.314***	0.365***	0.371***	0.461***	0.481***	0.112	0.084	0.139
	(0.07)	(0.093)	(0.075)	(0.102)	(0.152)	(0.113)	(0.085)	(0.104)	(0.165)
$Polity_{i,t}$	-0.004	-0.013**	-0.005	-0.002	-0.007	-0.003	-0.013	0.001	-0.005
	(0.004)	(0.006)	(0.005)	(0.005)	(0.007)	(0.005)	(0.01)	(0.007)	(0.01)
$Urban_{i,t}$	0.039***	0.043***	0.039***	0.033***	0.035***	0.032***	-0.001	-0.001	-0.005
	(0.004)	(0.006)	(0.005)	(0.006)	(0.007)	(0.005)	(0.005)	(0.005)	(0.007)
$Fertility_{i,t-1}$	0.062*	0.146***	0.148***	0.066*	0.206***	0.165***	0.015	0.133*	0.134**
	(0.032)	(0.045)	(0.036)	(0.039)	(0.056)	(0.047)	(0.057)	(0.068)	(0.068)
$LogChildMortality_{i,t-1}$	0.201**	0.204	0.120	0.098	-0.113	-0.098	-0.068	-0.317	-0.247
	(0.089)	(0.126)	(0.101)	(0.104)	(0.176)	(0.136)	(0.118)	(0.198)	(0.165)
$LogWomenSchooling_{i,t-1}$	0.043	0.184**	0.028	0.059	0.257**	0.028	-0.007	0.014	0.077
	(0.056)	(0.071)	(0.057)	(0.086)	(0.118)	(0.078)	(0.059)	(0.094)	(0.091)
$LogTertiary_{i,t-1}$							0.798***		
							(0.038)		
$LogFemaleTertiary_{i,t-1}$								0.811***	
								(0.074)	
$LogMaleTertiary_{i,t-1}$								0.760***	
								(0.08)	
Hansen J-test (p-value)				0.3	0.3	0.2	0.4	0.9	0.6
p-value of test AR(2)							0.06	0.1	0.9
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	428	357	357	358	297	297	391	288	288
R-squared	0.820	0.859	0.795	0.796	0.813	0.761			
Number of icountries	70	69	69	66	64	64	70	67	67

$***$Significant at 1%. $**$Significant at 5%. $*$Significant at 10%.
Standard errors are in parenthesis.

Table 9: Countries in the Sample

Algeria	Ivory Coast	Kyrgyz Rep.	Niger	Tanzania
Argentina	Dominican Rep.	Lao PDR	Pakistan	Thailand
Bangladesh	Egypt Arab. Rep.	Lesotho	Papua New Guinea	Togo
Benin	Fiji	Liberia	Paraguay	Tunisia
Bolivia	Gabon	Malawi	Peru	Turkey
Botswana	Ghana	Malaysia	Philippines	Uganda
Brazil	Guatemala	Mali	Rwanda	Ukraine
Cambodia	Honduras	Mauritania	Senegal	Venezuela RB.
Cameroon	India	Mexico	Sierra Leone	Vietnam
Central Af. Rep.	Mongolia	Mali	South Africa	Yemen Rep.
Chile	Iran Islamic. Rep.	Morocco	Sri Lanka	Zambia
China	Jamaica	Mozambique	Sudan	Zimbabwe
Colombia	Jordan	Namibia	Swaziland	
Congo Dem. Rep.	Kazakhstan	Nepal	Syrian Arab. Rep.	
Costa Rica	Kenya	Nicaragua	Tajikistan	