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Poverty and Children's Work in Spain and Latin America. Some Preliminary Remarks

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POVERTY AND CHILDREN'S WORK IN 19th AND 20th CENTURY SPAIN AND NOWADAYS DEVELOPING COUNTRIES. FIRST RESULTS.

Abstract

In the first part of this paper we portray the relationship between mothers earnings, fertility and children's work in the Spanish (Catalan) context of the second half of the 19th century and the first third of the 20th century. Specific human capital investment in adult working women had as an outcome the sharp increase of their real wage and also the increase of the opportunity cost of time devoted to house work including child rearing. Fertility evolution is endogenous to the model and decreases as a result of women real wage increases. Human capital investment of labouring women and mandatory schooling of children shift the labour supply function to a new steady state in which the slope of the function is steeper. According to recent papers this model applies to 20th century Spain and it causes the abolition of children's work. Nonetheless this model do not apply to nowadays developing world. The increasing spread of the informal sector of the economy and economic inequality imply the increasing use of part time women's and children work. High income inequality and poverty, in promoting the intensive use of the mother's and children's work, are contemporaneously blocking the development of human capital, both health and education. In these countries children's work is an obstacle to human capital accumulation does not allow for overcoming the poverty trap.

Key Words: Children's and women's work, human capital, fertility evolution, income inequality.
Jel Codes: J22, J24, J13, J16,O1,N36

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POVERTY AND CHILDREN'S WORK IN 19th AND 20th CENTURY SPAIN AND NOWADAYS DEVELOPING COUNTRIES. FIRST RESULTS[1].

1. INTRODUCTION: WHY DID CHILDREN WORK IN CONTEMPORARY SPAIN?

In all the situations in which economic backwardness constraints the preferences and choices of the economic agents, the strategies followed by labouring families are mainly adaptive. Primary wage earners secure the economic sustainability of the household but secondary wage earners (women and children) often provide a critical share of the family income. In pre-modern economies with very low productivity rates, the redundancy of male workers often leaded to a variety of strategies for breadwinning, including causal an seasonal work in the informal economy or/and international emigration. In all of these situations work done by children was crucial for the household well-being. During the 19th and part of the 20th centuries Spanish children had worked in the agriculture, industries and personal services[2]. Children began to work as soon as at the age from 7 to 10 and labour experience at such young ages could cause serious health damages which have been measured in the Belgium case by means of anthropometric analysis[3]. As we shall see in part 3 of this essay children's work continue to cause serious human capital damages in nowadays developing countries.

It must be stressed that the patterns of children's work in 19th Century industrialised regions of Spain are very similar to those observed in Britain and in other contemporary

[2] See Borras-Llop (2002); Galvez,.; Sarasua, (2004); Muñoz-Abeledo (2004); Camps, E.(2003).
[3] For the case of Belgium it has been proved that working children were shorter (age and gender constant) and thinner. See Cunningham, Viazzo (1996). The variables influencing the anthropometric analysis by exploring the patterns of household internal income distribution can be found at Sonalde Desai (1992). One of the results of the article in that holding the rest constant the education of the parents has positive effects on the weight and the height of the babies.

regions of Europe[4]. In this writing we want to further test the hypotheses that the opportunity cost of children's work is human capital (education but also health). While the child is working he or she cannot attend school and his condition prevents to develop a healthy life. Some of the reasons for children's work are a lack of family income or meagre schooling supplies. A lack or scarcity of education expenditure in schooling[5] and the inelasticity of earnings demand of families living at the subsistence level are all engines leading to children's work. Literature on the formation of human capital states that insufficiency of human capital has medium and long-run term effects, since it leads to slower (if any) future path of economic growth[6].

In historical Spain children's work was universal in a context in which couples had the preference not to restrict their fertility (or just moderately). The number of children born and living with their parents was high and therefore they constituted a substantial contribution to the amount of work that the family could do. In connection to the work of mothers, the situation meant that they could not dedicate themselves exclusively to paid production. It appears to be an universal pattern in early stages of economic development that women perform paid work while being young daughters, young singles saving for dowry or young mothers. In the Spanish context only in cases of great need would women continue to work after the age of 30-35. Women's employment at young ages appears to be an universal pattern of female employment patterns in Catalonia 1858, England and Wales 1851, Japan 1879 and in 19th century US[7]. There is abundant evidence that this does not mean the under use of women's potential for work. In the context of large families and given the technologies in use at that time in domestic chores, the demographic reproduction required huge amounts of work. In broad terms the unpaid work offering services to the household meant that as a general rule women worked more hours per day than men. This situation of competing

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[4] See ibid Cunningham (2000); Basu, Hoang Van (1998); Lavalette (1999); Horrell and Humphries (1999). For an extensive analysis on the patterns of labour use in industrialising England compared with the nowadays developing world see Williamson (1990).

[5] See Lindert (2004).

[6] See all models of endogenous economic growth.

[7] See Goldin, (1990); Hareven (1982); Saito (1981). In 19th century US married women show low levels of participation in the workforce. The contribution of married women to paid production in Catalonia is about 20 per cent. This result is similar to the US result Goldin (1990). Despite the levels of participation of mothers are low, they can explain the trend of married women towards performing paid work already in the 19th century. In Spain high levels of participation of mothers are found in the Galician canning industry (Munoz-Abeledo), in the tobacco manufacturing (Galvez),in lace making (Sola, Sarasua) in services like breast feeding (Sarasua) and agrarian activities. See the state of the debate in C. Borderias (2004).

labour demands collapsed the availability of women to invest in their own education and the education of their children.

In Western European societies the rule was to delay the marriage for both men and women. In 19th century Spain women married at about the age of 25[8] with some variance according to the region of residence. At the mother's age of 35 the first child was already 10 and could contribute to the family economy with his wage. Therefore there was an economic substitution effect by means of which children's earning replaced the income raised by their parents while the latter were growing older. According to my own calculations in 1890s Catalan industrial scenarios the wage of a child aged 10-14 was equivalent to the wage of an adult women aged 20-30 and therefore a child and his mother represented the same earning input to the family economy[9] . Gender division of labour normally meant that mothers and sons were not perfect substitutes but in broad terms we can assert that the economic contribution they made to the household was similar. On the other hand, and after hard work in the factory or in the agrarian sector, or in unpaid services for the family household economy women were likely to lose physical strength and dexterity as soon as they attained the threshold age of 35. In this period of the family cycle the husband was about 40 years old and he was still economically active but successive children were entering in the paid labour market and providing important shares of the household income. With this assertion we do not imply that children were conceived as a financial asset. Both in the Catalan and British scenarios there is enough evidence that having children implied a net drain of monetary resources during most of the life cycle (Catalonia), and in the English context that the wage of the child was equal to his day to day expenditures. Therefore deploying children energies into paid activity did not imply increasing the household net incomes[10] and indeed other factors not linked to the economic life influenced the vital events of marriage and conception.

Despite that children were not conceived to bring money to the household, once they were born we have seen that they had to. Over the life cycle the contribution of children's earnings to the household budget was only positive during the third age of the parents. And in catholic family based societies like Spain customary inheritance laws implied that children were assisting their parents while they were growing older. In the

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[8] This assertion is base don Cabre (1999).
[9] Camps, E.(1995).
[10] For the English case se Williamson(1990). The Catalan case is in Camps(1995).

Spanish industrial scenarios of Catalonia and the Basque Country, and also in some agrarian areas of Spain sons and daughters represented the basic financial asset of the household to face the economic needs of economic inactivity of the elderly[11]. As far as the transference of earnings from children to parents (co resident or not co resident children) shaped an intergenerational contract to secure the economic welfare of the elderly we can make the assumption that married couples were not interested to restrict fertility. Children represented a very flexible asset providing security in unstable economic worlds[12]. When after WWII the welfare state assumed the role of subsidising poverty by means of unemployment and pensions programs this intergenerational contract lost much of its previous meaning and importance. But until then having children was a means of protecting the labouring family household against its extreme vulnerability.

Summarizing a lot on the supply side factors explaining children's work we can say that before the development of the welfare state family was the institution providing well being to all of its members. The flexibility of children's work allowed their parents to confront adverse economic situations caused by the business cycle (like unemployment in the formal economy) or the family cycle (like the third age). In such a situation having children can be considered as the most secure asset to provide expectations of future economic welfare to the labouring families.

A part from the supply factors explaining children's work there were also reasons linked to labour demand preferences by the firms. On the side of the firm decision making we must bear in mind that for employers economic backwardness means low wages. In 19th century Europe and in nowadays developing world their preferences were to settle their factories in areas with cheap[13] production factors endowments and natural resources, including labour. Training children through the apprenticeship system was the alternative that the factory provided to formal education to acquire the necessary skills to deal with the factory jobs.[14] By means of the apprenticeship system children learnt the know how of industrious factory skills, dexterity and discipline and adaptation to the factory hierarchy. Apprenticeship was also a means to integrate young

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[11] For patterns of co residence with the elderly see Perez-Fuentes (1998) and for the income provided by co resident children Camps (1995). For agrarian areas of Castille see Reher (1991): town and Country in Pre-industrial Spain, Cambridge.

[12] Nonetheless Basu and Hoang Van state that in nowadays contemporary societies this kind of intergenerational contract is very loose or non existent. See K.Basu, P. Hoang Van (1998).

[13] Here the term cheap is used in absolute terms. In fact in poor countries labour productivity is also lower and this is why wages are also low.

[14] See Laslett, P. (1965); Murray.; Wallis Herdon (2002).

workers into the job ladders of promotion and training of the factories[15]. In a way we could assert that this kind of human capital formation operated as the on the job training so typical of 20th century internal labour markets of USA big corporations.

Labouring families on the side of labour supply and firm's employers on the side of labour demand were interested in children's work during this very initial stage of economic development in which factors of economic growth are mainly exogenous. Until WWII the spread of literacy and formal education was limited to the core countries of Europe and the USA and indeed the correlation between literacy and economic growth was very weak. Only after WWII human capital accumulation began to have more direct causation effects on the economic growth of the developed world.

2. THE HUMAN CAPITAL TRANSITION: THE SPANISH (CATALAN) MODEL.

For labouring families living at the subsistence level, the beginnings of the human capital century [16]meant that they had to confront increasing financial requirements to make feasible children's education. The financial sources of these families to invest in human capital were limited to the inherited family wealth or the indebtedment capacity in the financial markets. And both kinds of assets were restricted to the wealthier sectors of the society. Several shocks to raise the stocks of human and physical capital are necessary in order any individual country diverge enough from the underdevelopment trap. If by means of development policies we increase the stock of human and physical capital sufficiently it is possible that the combination of these shocks leads to another more stable steady state[17]. More expensive training of children through formal education is going to have as a direct consequence that couples begin to control fertility. Higher rates of growth of GDP and lower rates of growth of population lead to the

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[15] Till the Civil War Internal Labor Markets applied to most of big Spanish industrial firms. See Ibid Camps (1995).
[16] This is the name C.Goldin gives to the XXth century. During this new period the new hegemonic role of the USA in the world was based in its superiority in education and training.
[17] Becker (1993).

improvement of labour productivity and living standards through the growth of per capita GDP[18].

The problem is how this process begins. Recent research in developing countries has stressed the role of literate mothers on fertility control since the last decades of the 20th century[19]. Simplifying and schematizing a lot, the model develops the idea that women's human capital accumulation coupled with an increase in women's real wage and technological change, also increases the opportunity costs of time devoted by married women to household work and child bearing and child rearing. On the other hand educated women feel freer to adopt contraceptive methods and to have the whished number of children than illiterate women. A third important factor is that women who have attended school and have learnt a language guided education are in a better situation to educate and grow their children and to make use of distant health services[20]. This is why couples with educated mothers have less quantity and more quality of children.

We must insist in the fact that the "how" to begin with this process is what it is difficult to solve from the puzzle. The Spanish case of the first third of the 20th century can offer some hints. In Spain, the leading region in fertility decline was Catalonia. Catalan couples controlled fertility since the second half of the 19th century despite the poor investments in human capital in the region[21]. By then the gender wage gap was about the 50%[22]. And in Spain the education gender gap was enormous with an absolute difference of more than 30 per cent in the literacy levels of women with respect to men by 1860.

During the first third of the 20th century, contemporary to the diffusion of the second technological revolution, physical and human capital shocks sharply

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[18] During the first stage of the demographic transition the decrease of infant and child mortality normally has as a consequence the increase in the number of surviving children, if couples do not limit fertility immediately, and the increase of rates of population growth. This can have positive economic effects when these abundant cohorts of birth attain the working age and the age structure is transformed. See Williamson (2001). Nonetheless, in the Catalan case of the 19th century this sort of conclusion applies only partially. Here the diminution of fertility is contemporaneous to the diminution of infant and child mortality. See Cabre (1999). In my view the initial contraction of fertility during the 19th century was caused by the spread of the anarchist movement among the working class and the Neo-Malthusian practices it implied. See E.Camps (2005): Labour markets in the Catalan cotton textiles sector. Employment and Living Standards, 1830-1913, Mimeo, Harvard University.

[19] O. Galor, D.N. Weil (1996); M. Hazan, B. Berdugo (2004), R.A.LeVine, S.E.LeVine, A.Richman, F.Medrado, C.S.Correa, P.M.Millar (1991); Caldwell, J. C. (1982) Cochrane (1979); Inkeles, Holsinger (1974).

[20] Ibid LeVine et alt. (1991)

[21] Nicolau (1990), Cabré (1999).

[22] By 1850 the gender gap was about 50% and it increased during the 19th century. See Camps(1995).

transformed the Catalan family economies (the most developed region of Spain for which I have more research done) . Between 1860 and 1930 the literacy rate of Catalan population rose from 24 per cent to 82 per cent and the educational gender gap diminished from 28 to 12 per cent among the same dates[23]. These facts had clear positive effects on the development of the region. They provided a labour supply capable to couple with the labour demands of the second technological revolution causing a circular process of causality which in turn was demanding more human capital formation. And the earnings gap according to gender narrowed between the second half of the 19th century and 1925[24]. But what is more important for our approach is that all together with human and physical capital improvements women's real wages in the textiles mills significantly rose from 1919 to 1932 (see figure 1)[25]. According to Monserrat Llonch women's human capital was acquired in trade schools that offered vocational training specially adapted to the Catalan experience in the textile and other industrial sectors[26]. Between 1920 and 1930 women's hourly real wages increased in an absolute percentage of 70 per cent. The magnitude of the wage increase is enough to prove that in the Catalan case the capital shocks of the second industrial revolution had immediate effects on the development path of the region and well being conditions. The sharp increase of the price of women's time and therefore the increase of the opportunity cost of paid labour had as an immediate consequence the further diminution of the size of the offspring which attained its minimum of 1,9 children by 1930-35 (legitimate children per women of the birth cohort 1910-1914) (Figure 1)[27]. The implications of the improvement of women's real wages and the financial assistance of immigrant co residing collateral kin[28] by the native couples can shed some light on the origins of the family savings for the investment in children's human capital formation. During the same period the length of children's schooling increased to 8 years, from the age of 6 to the age of 14. This meant that the educational level of

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[23] All the data on literacy presented here are those built by Nuñez (1992)
[24] This result is in line with ibid Goldin (1990). See also Camps (2004).
[25] See Llonch (2004).
[26] In many instances this trade schools (Escoles d'Arts i Oficis) were formed under the initiative of the firms entrepreneurs and therefore can be considered as an example of specific human capital formation . See Ibid. Llonch (2004).
[27] See Cabré (1999).
[28] Se Camps i Cura (2004)

children improved from the elemental level during the 19th century to the basic secondary level during the first decades of the 20th century[29].

Without any doubt Catalonia was a leader in the Spanish demographic and literacy transitions. The reversal of living standards and welfare conditions during the civil war and the 1940s did not help to develop a sustained path of economic modernization in Spain. Nonetheless there is a strong evidence on the role of women's education improvements on the education of the children as well as on fertility control among the female cohorts of birth 1900-50[30].

In figure 2 the aforementioned process of women's human capital investment and fertility control presented for the Catalan case of the first third of the 20th century is schematically presented. Together with women's human capital investment the supply of labour moves from LS (more elastic function) to LS' (more inelastic function) since one of its consequences is the increase of levels of productivity. The changes in the slope of the labour supply function caused by human capital investment have further consequences on real wages and employment. Here employment at the steady state is assumed to be a function of population growth and of the open forces of the labour market. Keeping demand for labour constant the shift from LS to LS' has two main effects:

A. The increase of real wages because of productivity improvements caused by human (and physical) capital formation.

B. The diminution of the size of the employment from M to M' because of the decrease of the population rate of natural increase and also because of the delay of the age of entrance into the paid labour market as a consequence of mandatory schooling. M implies a situation of high elasticity of the labour supply in which fertility is not controlled and therefore the number of children the family employs is large. In order LS suits in the situation we have presented in section 1 of this essay we must also assume that adult and children's work are perfect substitutes. This assumption represents some simplification of reality since the extent to which a child could replace an adult depended on a great deal on labour gender roles and the respective stage of the life

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[29] During the 19th century education was not compulsory in Spain but it was highly recommended to scholar children in ages from 6 to 9.
[30] See Baizan, Camps (2006).

course (and therefore the age) attained by children and adults. Nonetheless this assumption may be plausible in what concerns the observations witnessed by contemporary people on the way local workers dealt with British technologies[31].

The switch from M to M' implies the new situation in which female real wage increases the opportunity cost of women for house work and fertility control is spread. In this new situation new equilibrium is attained with a lower size of the employment and lower rates of demographic natural increase. The slope of LS' is also higher because in the new situation schooling is a necessary condition to enter the paid labour market and adult and children are no longer substitutes. The new equilibrium implied by M' means that the population attains higher living standards with a lower demographic pressure on fixed production factors and other fixed assets[32].

Summarizing a lot the Catalan economic history literature of the first third of the 20th century illuminate a situation in which we can emphasise the very positive role that the improvement of education of mothers coupled with technological change (and capital accumulation) and women's real wage increases had over the good performance of the Catalan economy over the mid run.

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[31] Bosch i Cardellach, when referring to the Hargreaves mule said it was a machine that could be powered by a girl or an animal

[32] A similar model is presented by Ibid. Basu when discussing the effects of administrative regulation of adult wages. See K.Basu (2000)

3. WOMEN'S AND CHILDREN'S WORK IN NOWADAYS DEVELOPING COUNTRIES.

The most positive consequence of the second globalisation era in the years 1970-2000 has been the improvement of the human capital stock of part of the developing world, particularly in countries of Latin America and East Asia. In terms of health improvements the effects of the diminution of children mortality on fertility and life expectancy have been stressed for the East Asian case by Jeff Williamson (various dates). In Williamson model health improvements of these previously poor countries have been exogenous. They were caused by the late assimilation of all medical innovations stored by the Western world. The assimilation and diffusion of scientific medical innovations caused the sharp diminution of child mortality. Thus because of an exogenous shock couples suddenly had more surviving children. A second consequence of this fact was the social concern on the social costs from rising an increasing number of children in poor countries who according to all estimations were consuming more than producing.[33] But according to Williamson the medical knowledge improvement transfer was soon assimilated by East Asian societies. Fertility decreased sharply as a consequence of the reduction of infant and children mortality. This facts as a whole had as a main outcome the sharp transformation of the age structure of the population yielding important economic profits that were baptized by the Professor of Harvard as the demographic gift. When the abundant birth cohorts born during the years of reduction of infant and child mortality attained the working age, the number of children was already relatively small because after a certain time span fertility rates contracted. What is more important form this transformation is that it caused the sharp diminution of the dependency rate and raised the potential of labour productivity of a population mainly composed of young active economic agents. All this transformations occurred together with the improvement of the education levels, particularly of those by young women that also joined the paid labour market activities. The

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[33] See Mueller (1976).

transformations of women's life helped to additionally diminish the dependency ratio and their education improvements also had consequences in the subsequent diminution of fertility rates following the arguments presented in part 2 of this essay for the Spanish case.

Gary Becker (2005) also has insisted in the direct profits of health improvements for poor countries. His article accounts for the important improvement in life expectancies in the years 1960-2000 in many poor countries. While till the effects of the economic liberalization of China and India after 1980 there was not any indication of economic convergence between poor and rich countries at the per capita GDP level[34], life expectancies converged. Indeed health improvements measured by means of average duration of life have diminishing returns with respect to GDP and income levels. This evidence is presented in figure 5 of this paper. In poor countries a marginal increase of incomes has enormous incidence in the improvement of health conditions while among rich countries marginal increases of income have a much lower impact on life expectancies. According to Becker when we observe the improvements of the quantity of life (life expectancy) we can appreciate a convergence process that is more clear than the trends observed for the data of quality of life (per capita GDP).

All in all we must stress that the existing literature has emphasised the profits derived from the effects of the improvements of health human capital in the poor countries of Asia and Latin America as a result of globalization. But what we want to stress here is the remaining problems linked to poverty that do not allow for the full operation of the positive feedback caused by human capital accumulation[35] to overcome the poverty trap. If we look at the relationship between female activity levels and per capita GDP we obtain something similar to the U shaped female activity function that was stressed years ago by Claudia Goldin [36]. In figure 6 we present the relationship between female participation rates and per capita GDP. The scatter of points from the year 2000 fits the U shaped function. But notice that the highest levels of female participation are attained in extremely poor countries. In the richest countries participation rates are around 60% and these rates are lower than the rates attained in very poor countries of around 80%. The intermediary group is

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[34] See Sala-i-Martin (2006). See also the convergence debates in Barro, Sala-i-Martin(2003).
[35] See page of this essay.
[36] See Goldin(1994).

composed of countries with female participation rates around 40-50%. Indeed a preliminary aspect we must emphasise is that in very poor countries these very high female participation levels have a completely different meaning and nature than the female participation levels in rich countries. The features of female work in poor countries pointed here are similar to those of the historical scenarios presented in part 1 of this essay. We have recently reported[37] using time budgets that in very poor countries the average daily time a woman can allocate to paid production is 3-4 hours while the load of non paid domestic chores absorb a remaining of 6-7 hours per day. In poor countries women work more hours than men because of the burdens of domestic work. Very poor technologies to undertake household services including human capital formation of the children (health and education) do not allow women to deploy their energies to the market. Relatively higher fertility rates in these countries also increase the needs for domestic work. Women's situation is similar to that we have presented for 19th century Spanish women. Competing demands for paid and unpaid work do not allow women to invest in their human capital and in that of their children. Their part time participation in the paid labor market is in the informal sector of the economy.

This last fact, the very poor nature of economic participation of women in poor countries has further implications. In figures 7 and 8 we can see that in spite of a high variance infant mortality is positively correlated with women's participation rates and also with children's work. In other words infant mortality is higher in countries were women and children work. This facts illuminates some of the main consequences caused by women and children work in poor countries: the problems that the lack of education and incomes of the parents in poor countries have in human capital formation of the children including health. On the other hand we can infer that women's and children's work are some of the obstacles to allow for the diminution of infant and child mortality that can explain the demographic gift in Williamson's model and the life expectancy convergence in Becker's model (as presented at the beginning of this section).

On the other hand we can also infer that societies in which women and children work are not only those with lower growth potential but they are also the most unequal societies. Gini coefficients used here come from Deininger and Squire

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[37] See Camps, Camou, Maubrigades, Mora-Sitja (2006)

(1996) and for years 1990-95 we obtain a lot of missing values. But as far as the relationship between the gender gap and economic inequality is concerned we obtain a positive relationship (figure 10). The greater the inequality levels the greater is the gender gap. In Camps, Camou, Maubrigades and Mora-Sitja (2006) we try to frame explanations to deal with this fact. Factors improving women's real income situation are life expectancy improvements, market openness and women's empowerment. And all these events occur more easily in more egalitarian societies than in extremely unequal ones were women tend to have less access to human capital services and thus have scarce means to improve their health and empowerment.

The result we obtain on the relationship between economic inequality and children's work is less clear but also suggest that higher levels of inequality lead to higher levels of children's work (figure 11). Indeed the initial levels of inequality mean that important portions of the society have problems to finance human capital investment. If the income and wealth distribution is very unequal and the number of people living bellow the poverty line is high, this fact shall imply that the access to education shall also be very unequal. To afford their human capital expenditures and investments ordinary households just can rely in current incomes, inherited wealth or in the financial assets. Therefore the distribution of income and wealth of the economy finally determines who goes to the school and who do not, and in this last case which children go to work and drop from school.

In table 1 we present a model based on economic factors and social capital to explain the intensity of children's work. Notice in this table that the intensity of children's work is a function of economic development (log per capita GDP) and female labour participation. Other cultural variables explaining the role of religion and ethnicity have a much lower statistical significance. In the Asian and Latin American case Black, Indian and Asian brown ethnic groups have a negative correlation with the intensity of children's work. This last fact suggest that for this groups and in contrast with the White European group children's work is under registered may be because it is a part time by employment. There is enough evidence to prove that in the reality among non white ethnic groups children's participation levels are higher than among whites, specially among the Black and

Indian groups[38]. Therefore our negative correlation can just be explained by a problem of under registration in the source of children's economic activity which is different in nature with respect to that undertaken by white children. Work helping mothers in part time jobs in the informal economy may be the main activity of children in these sets of ethnic groups.

On the other hand we can also see in table 1 that the highest propensity of children to work is in poor countries with high levels of female participation rates. In nowadays poor countries as well as in 19th century Europe the intensity of children's and women's work in the informal economy is negatively correlated to the income of the husband in the formal sector of the economy. And we have seen that the intensity of this economic events rises in the most unequal societies and has important human capital damages. To solve this problems and since the 1990s the World Banc and several NGO have began to sponsor the education of children and women. We have seen in part 2 of this essay that the education of young women is crucial to transform the slope of the labour supply function. On the other hand it must be stressed that public sponsorship of education services is not enough to provide the education for children. In the same way we have stressed for the historical scenarios of Catalonia that the demand for children's income by their households is very inelastic. And indeed to secure the education of children in poor countries it is important that families receive the equivalent of their wage in paid employments.

In table 2 and by means of a regression analysis we present some of the factors related to culture and to children's work that block economic growth. Notice in table that the percentage of children working is negatively correlated with economic growth at levels of high statistical significance. With the exception of Jewish religion the practice and confession of other religions have positive effects on economic growth. Market openness has a positive significant effect while political instability has a negative one. From this table we can conclude that politically unstable countries making high use of children's work have lower potential of economic growth[39]. Instead measures for market openness and the confession of a religion have a positive effect on development. All in all we can infer that the first 2

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[38] See Baas(2004); Post (2002); Mendelievich (1979); Beleque, Boyden (1988)
[39] There is abundant literture on inequality, fractionalisation and polarization that also supports this view. See Alesina (2004), Esteban-Marquillas, Garcia-Montalbo and Reynal-Querol (2002). In spite of the overwhelming interest of this literature here it is not our focus of interest and stress.

factors, children's work and political instability, blocking the process of human capital accumulation have very negative effects to overcome the poverty trap.

To analyse the stated consequences of children's work on fertility (parts 1 and 2 of this essay) we present in table 3 some of the reasons why the Catalan model does not apply to nowadays developing world. In spite of variables defining human capital (health and education) and children work are highly auto correlated[40] table 3 is explicit enough in what refers several determinants of fertility in poor and rich countries. According to model (1) a first variable having a high positive impact on fertility is children's work. This appears to be a logic conclusion. Being an economic asset for the family parents whish to have additional children. On the opposite direction the main engines leading to the reduction of the size of the offspring according to model (2) are the mothers education (measured by the proportion having primary education completed) and the income and health of the husband. We have seen that in poor countries women's and children's work are obstacles to human capital accumulation of the mothers and offspring. This is why when we restrict our sample to developing countries the effects of the mother education on fertility are nil (model 3). In these last cases the decision to reduce fertility depends on the social status attained by the husband here estimated by his earnings and life expectancy. Notice that the education of the father is not important in fertility decision making. But the earnings of the mother also have an statistically insignificant impact. This last facts square well with the features of the male breadwinning family household that assigns to women all works related to children's education (and child rearing) and household well being.

Higher incomes (and better health) of fathers determine the social status of the family and therefore the possibility to invest in the education of children (and to reduce their number). Nonetheless the education of the mother in directly promoting the education and health of children is contemporaneously an important engine for fertility reduction[41].

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[40] In table 3 the influence of this fact is limited using robust standard errors.
[41] See the quotations in footnote 19.

4. CONCLUSIONS.

In this paper we have reported the engines behind the removal of children's work in the historical scenarios of industrialising Catalonia in Spain and some of the reasons that explain their persistence in nowadays industrialising world. In the first case the specific human capital investment of women employed in the industry had significant effects on increases of labour productivity measured by hourly real wages and the sharp diminution of fertility rates. The increasing opportunity cost of women's time led to the decrease of the number of children conceived which in turn had higher costs to be raised because of compulsory schooling till the age of 14. These sets of economic transformations led to the removal of children from the labour force, increased human capital accumulation and had a remarkable positive feedback on economic growth.

The situation in part of nowadays developing countries is instead different. Here women's (and children's) work is synonymous of poverty. Moreover, the positive role on the economy of high women's participation levels observed in the catalan historical scenarios do not apply to this case. In the picture framed for the Catalan industrialising case women participation levels increase stimulated by of human capital formation and rising labour productivity levels and real wages. They worked full time in the formal economy. Instead the high female participation rates observed in many nowadays developing countries hide low productivity part time jobs. On the other hand paid production must be compatible with high labour intensive domestic chores that absorb most of the available time by women. In addition the over use of women's labor potential has as a main consequence the low human capital formation levels of the children both health and education. Low human capital accumulation blocks the opportunities for further economic progress and to overcome the poverty trap.

According to our evidence economic inequality, in promoting the increase of the gender gap and of children's work participation levels, contemporaneously hinders economic growth. Both women and children's work are associated to higher levels of infant mortality which is used here as an indicator of human capital accumulation. High levels of infant mortality also have further consequences on economic development.

They do not allow for Williamson's demographic gift and for Becker's quantity of life convergence as reported in part 3 of the essay.

As a final finding we have got the result that fertility control decision making depends on the education of the mother and the health and income of the father. In poor countries these sets of conditions are not always fulfilled causing additional bridle to the process of growth of per capita GDP.

DATA SOURCE APPENDIX.

Data on women and children's work, infant mortality, life expectancies can be found in the World Bank datasets. Data on female income, gender gap and women empowerment come from United Nations (2005): Human Development Report. Data on religious beliefs and ethnic diversity comes from the dataset on economic fractionalization built by Alberto Alesina and available at the web. Data on economic inequality come from Klaus Deininger and Lyn Squire (1996): "A New Data Set Measuring Income Inequality", The World Bank Economic Review, 10:3. Data on per capita GDP come from the World Penn Tables.

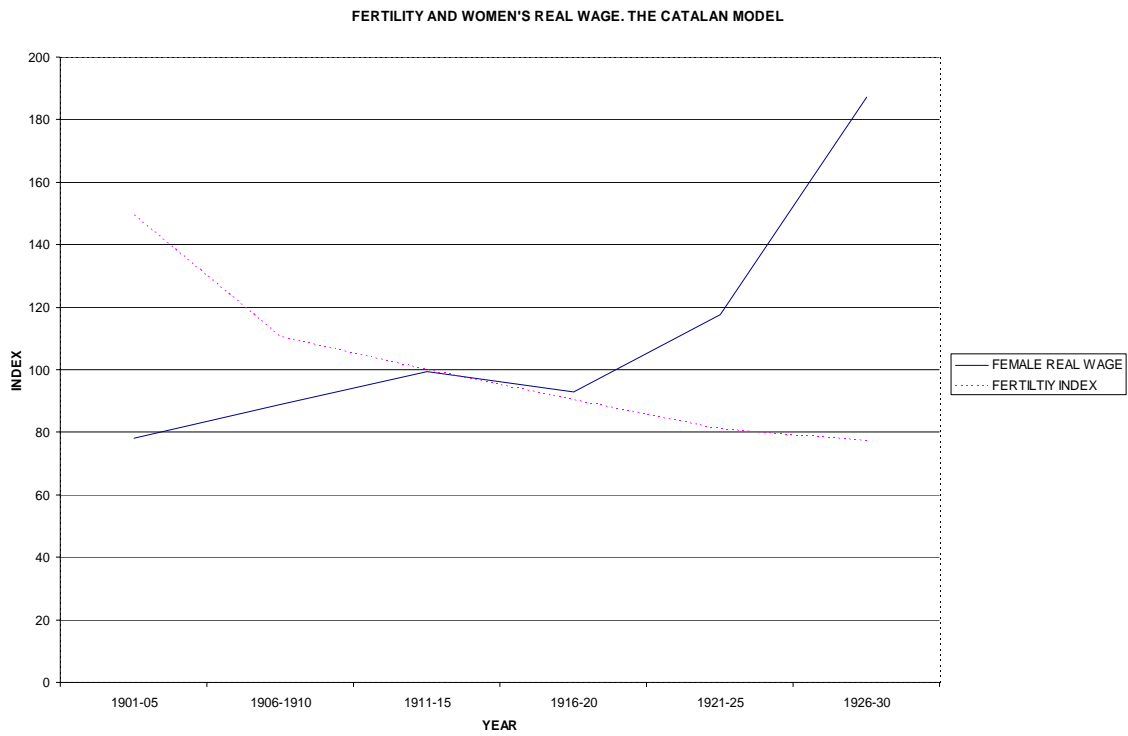**FIGURE 1. Women's real wages and fertility evolution: the Catalan case, 1900-1935.**

FERTILITY AND WOMEN'S REAL WAGE. THE CATALAN MODEL

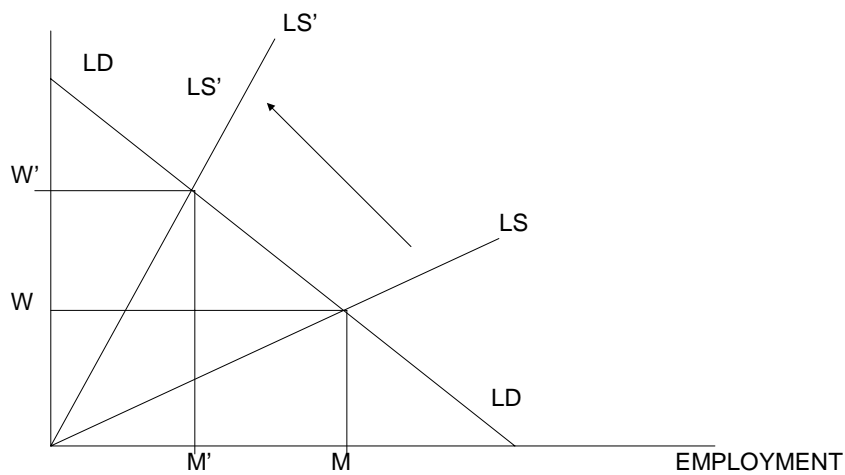FIGURE 2. THE HUMAN CAPITAL TRANSITION AND LABOR MARKET DYNAMICS

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FIGURE 3. CHILDREN'S WORK AND PER CAPITA GDP IN THE DEVELOPING WORLD. (BLUE: AFRICA; GREEN: LATIN AMERICA; RED: SOUTH AND EAST ASIA)

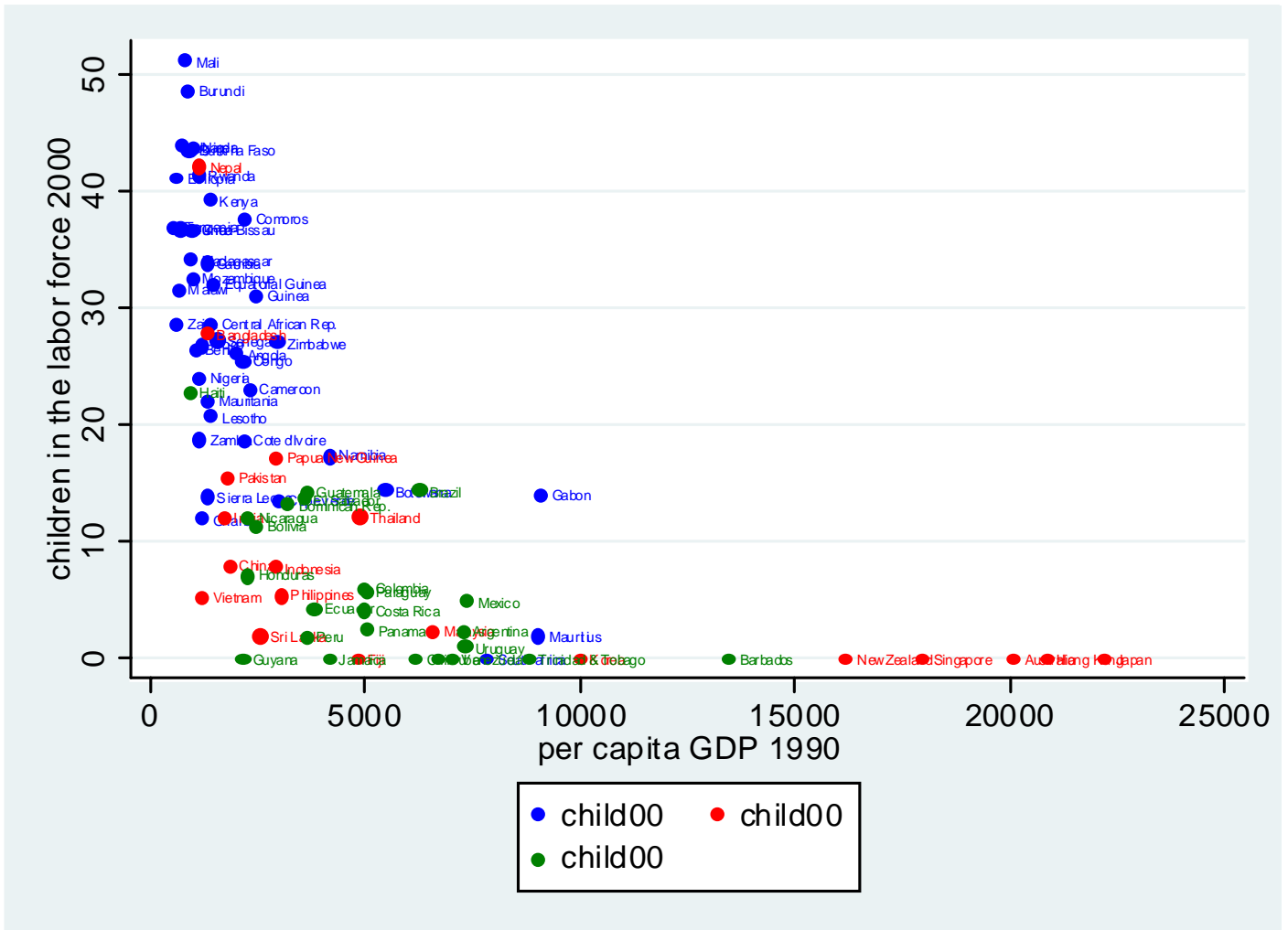**FIGURE 4. CHILDREN'S WORK AS A FUNCTION OF WOMEN'S EARNINGS. WORD WIDE SAMPLE, 2000-2003.**
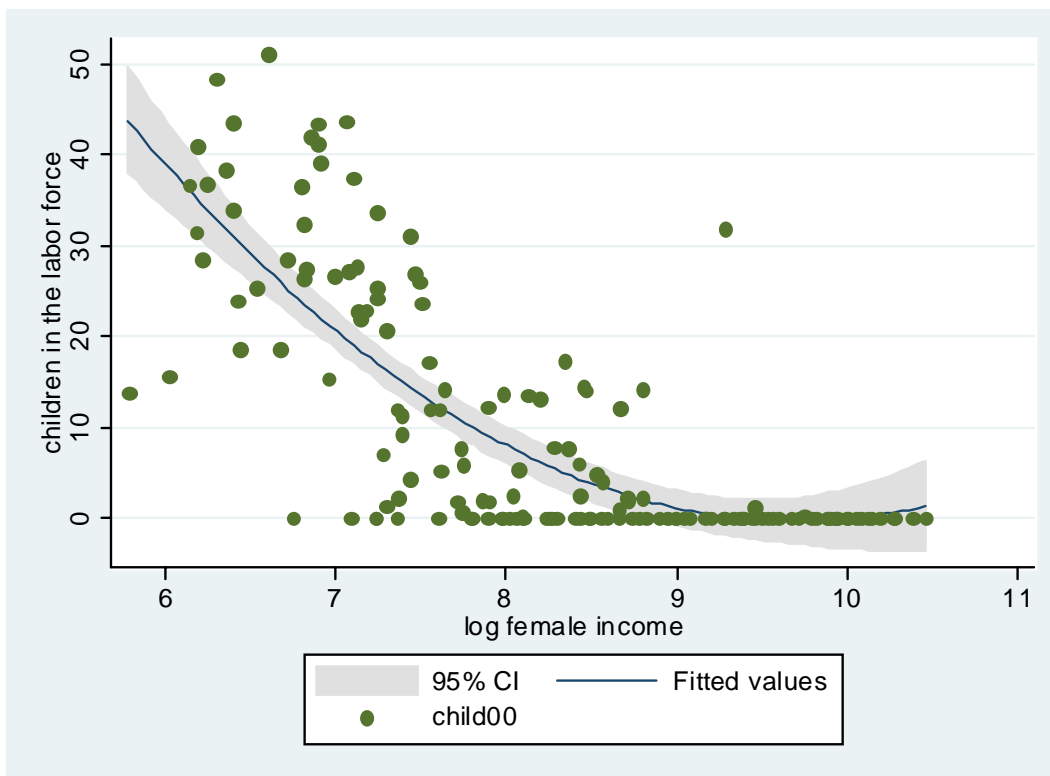
FIGURE 5. LIFE EXPECTANCY AND GDP. DEVELOPING WORLD
(BLUE:AFRICA; RED: SOUTH AND EAST ASIA; GREEN: LATIN AMERICA)
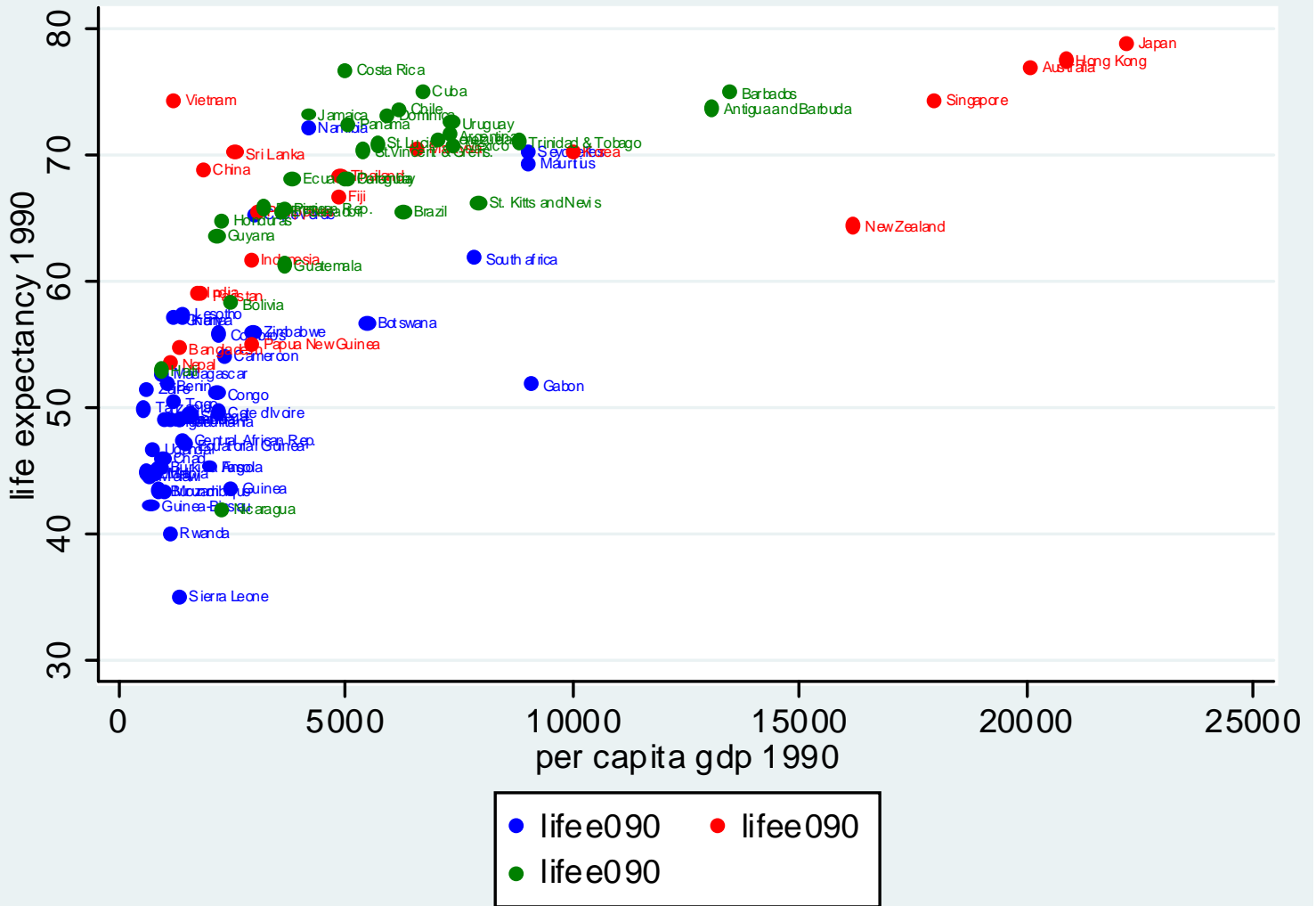
**FIGURE 6. THE U SHAPED FEMALE LABOR PARTICIPATION FUNCTION
IN DEVELOPMENT. WORLD WIDE SAMPLE, 2000.**

FIGURE 7. THE INFLUENCE OF CHILDREN'S WORK ON INFANT MORTALITY. WORLD WIDE SAMPLE, 2000.

FIGURE 8. THE INFLUENCE OF FEMALE LABOR PARTICIPATION IN INFANT MORTALITY. WORLD WIDE SAMPLE, 2000.

FIGURE 9. THE RELATIONSHIP BETWEEN THE GENDER GAP AND ECONOMIC INEQUALITY.

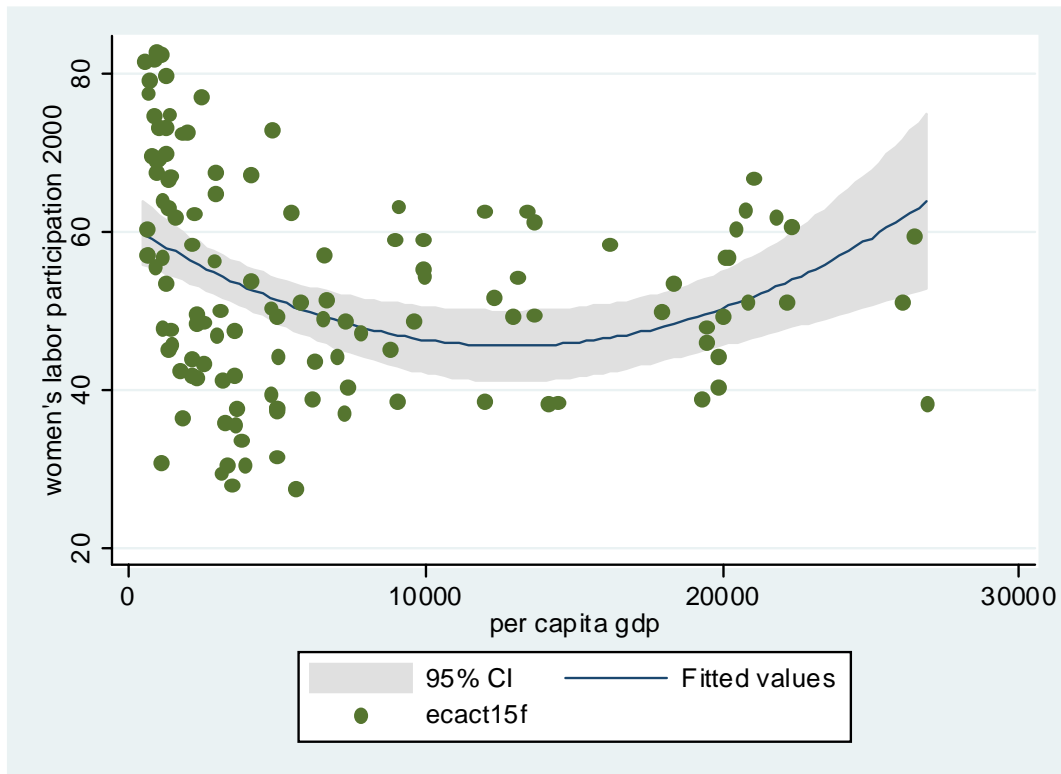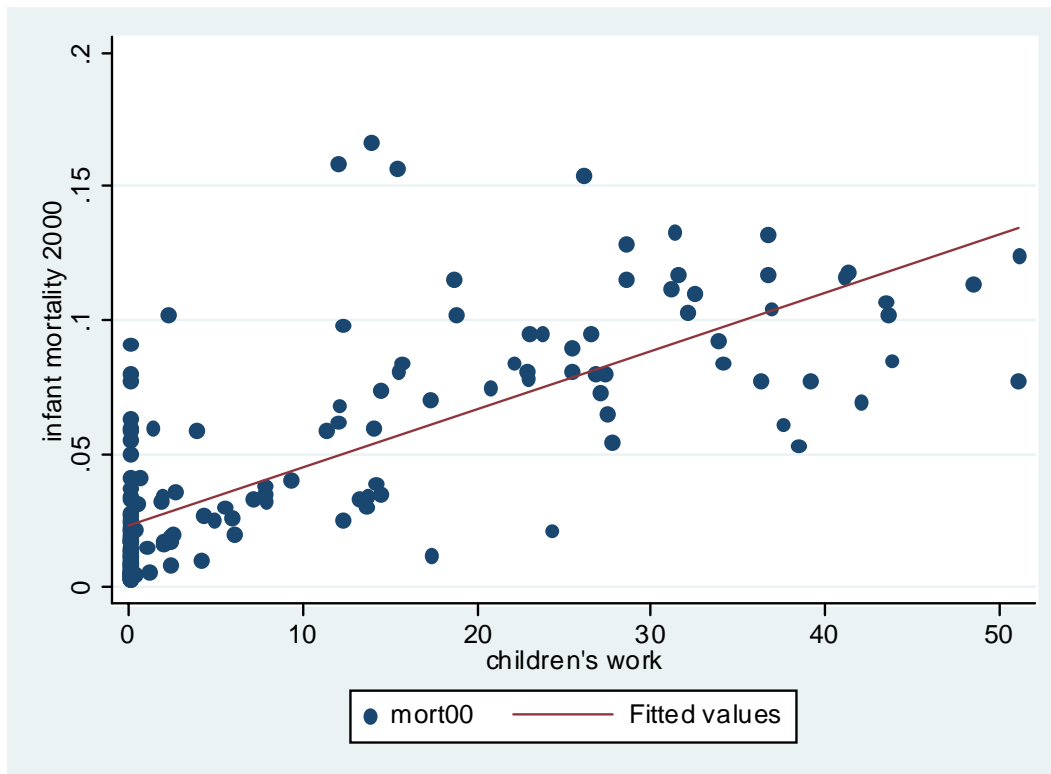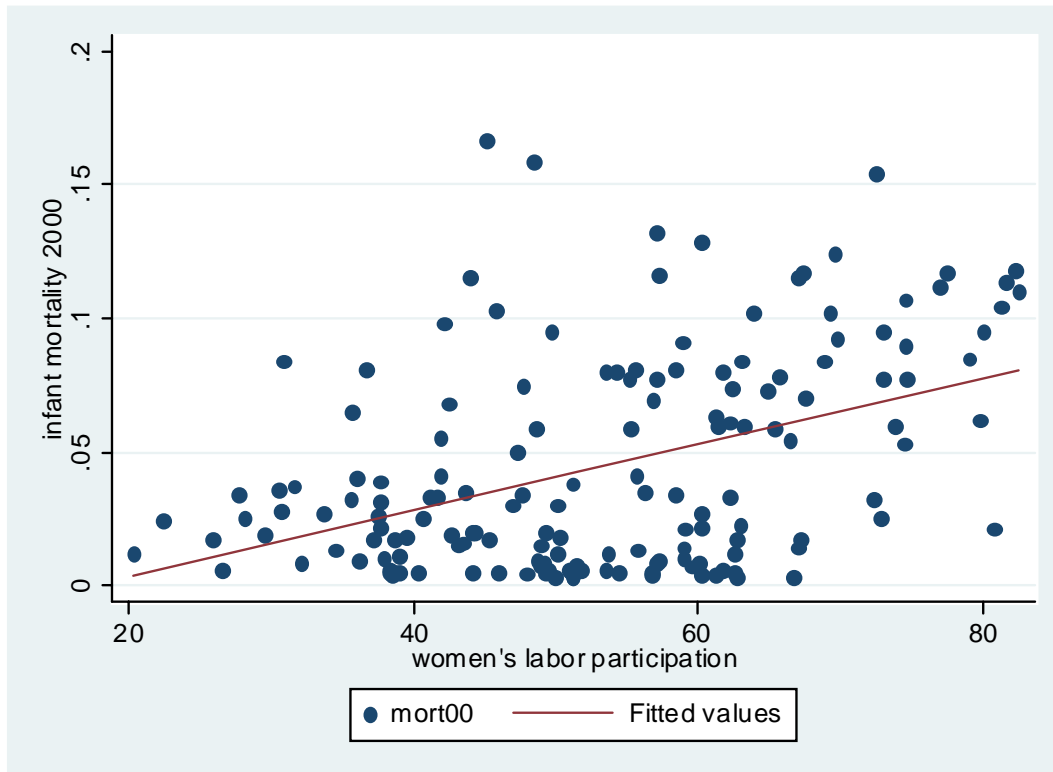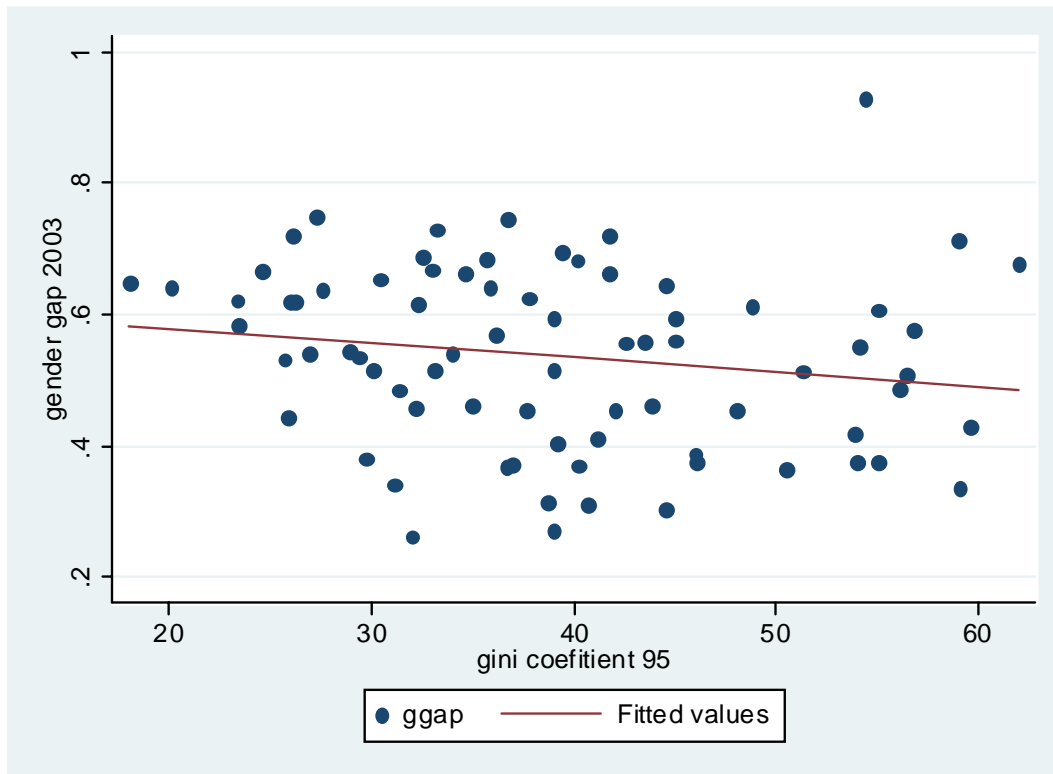**FIGURE 10. THE RELATIONSHIP BETWEEN CHILDREN'S WORK AND ECONOMIC INEQUALITY.**
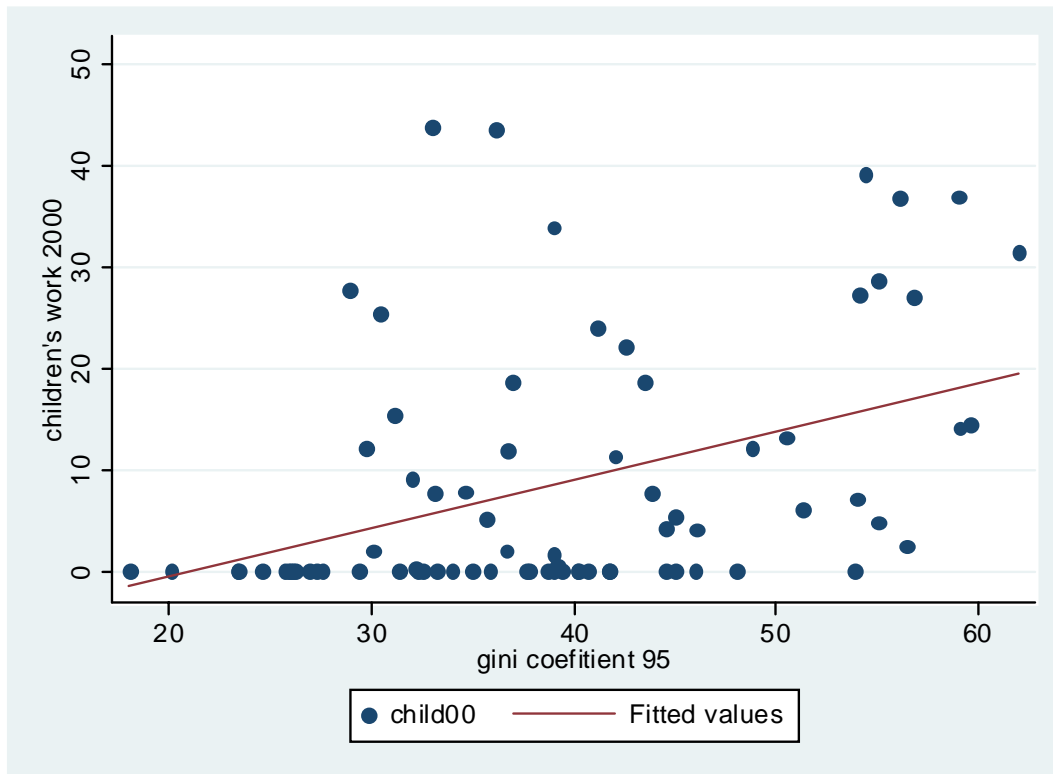
TABLE 1. EXPLAINING CHILDREN'S WORK IN NOWADAYS DEVELOPING COUNTRIES.

Dependent variable:	Whole Sample	Developing	E/S Asia and Latin America
	percentage of children in labor		
	child00	child00	child00
Female life expectancy (2003)	-0,185	-0,172	-0,804
	[0.140]	[0.192]	[0.381]**
log(gdp per capita) (1990)	-7,685	-10,926	-1,627
	[1.427]***	[2.273]***	[3.159]
Catholic	-0,031	0,01	-0,021
	[0.043]	[0.057]	[0.041]
Other Christian	-0,051	-0,031	-0,068
	[0.051]	[0.089]	[0.090]
Muslim	0,008	0,02	-0,027
	[0.047]	[0.058]	[0.059]
Jewish	-0,083	-7,267	-5,2
	[0.086]	[9.538]	[6.400]
Hindu	0,097	0,208	0,347
	[0.112]	[0.139]	[0.257]
Buddhist	0,074	0,102	0,079
	[0.066]	[0.091]	[0.058]
Black	0,009	0,006	-0,292
	[0.035]	[0.047]	[0.122]**
Indian	-0,131	-0,121	-0,112
	[0.054]**	[0.066]*	[0.051]**
Asian	-0,064	-0,062	-0,072
	[0.034]*	[0.042]	[0.032]**
Female labor participation (%)	0,626	0,489	0,011
	[0.120]***	[0.161]***	[0.201]
Constant	62,732	88,918	84,297
	[11.376]***	[18.362]***	[16.138]***
Observations	90	63	33
R-squared	0,85	0,82	0,73

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 2. EXPLAINING GDP: SOCIAL CAPITAL AND CHILDREN'S WORK.

Dependent Var.	Whole sample log(gdp per capita)	Developing	S/E Asia/LA
percentage of chilren labor	-0,049	-0,035	-0,03
	[0.005]***	[0.005]***	[0.024]
measure for openness	3,437	0,281	2,378
	[0.917]***	[1.445]	[3.161]
Catholic	0,002	0,012	0,003
	[0.003]	[0.004]***	[0.006]
Other Christian	0,007	0,016	0,031
	[0.004]*	[0.008]**	[0.019]
Muslim	-0,003	0,007	0
	[0.003]	[0.004]*	[0.007]
Jewish	0,758	-0,131	0,208
	[0.199]***	[0.580]	[0.883]
Hindu	0,005	0,025	0
	[0.009]	[0.009]***	[0.036]
Buddhist	0,013	0,016	0,015
	[0.005]**	[0.005]***	[0.008]*
measure for political instability	-0,819	-0,395	-1,167
	[0.283]***	[0.271]	[0.663]*
women in gov(%)	0,01	-0,008	0,001
	[0.006]*	[0.009]	[0.015]
Constant	7,482	7,227	7,43
	[0.341]***	[0.369]***	[0.767]***
Observations	68	46	26
R-squared	0,85	0,79	0,65

Standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 3. EXPLAINING FERTILITY CONTROLLED BY HUMAN CAPITAL AND RELIGION. DEVELOPED VS DEVELOING COUNTRIES.

DEPENDENT VARIABLE: FERTILITY RATES 2000
OLS REGRESSORS. ROBUST STANDARD ERRORS.

	(1) All sample	(2) All sample	(3) Developing
Child work 2000	0.0501		
	(0.0125)***		
Prim School Compl. Women 1980	-0.0184	-0.0398	-0.02804
	(0.0146)	(0.0173)**	(0.0301)
Prim School Compl. Men 1980	0.0105	0.0251	0.008308
	(0.0173)	(0.0194)	(0.03383)
Life exp. Wom. 80	0.0112	-0.0119	0.0304
	(0.02679)	(0.0505)	(0.03918)
Life exp. Men 80	-0.0763	-0.1060	-0.11020
	(0.0323)**	(0.0534)**	(0.03874)***
Earnings Wom. 2003	0.000045	0.0001	0.000129
	(0.000035)	(0.00005)**	(0.00020)
Earnings Men 2003	-0.000054	-0.000084	-0.00021
	(0.000032)*	(0.000048)*	(0.00010)**
Catholic	0.0335	0.00334	0.00824
	(0.0031)	(0.00492)	(0.00756)
Muslim	0.0047	0.00042	0.0078
	(0.0052)	(0.00691)	(0.0086)
Non religious	-0.0046	-0.00436	-0.00119
	(0.0081)	(0.01528)	(0.03593)
Jewish	0.4805	0.54721	2.6434
	(0.2449)**	(0.36633)	(0.9708)***
Hindu	-0.01131	-0.00541	0.00161
	(0.0036)***	(0.00565)	(0.00844)
Buddhist	0.0048	0.00550	0.05479
	(0.0098)	(0.01386)	(0.04701)
Religious fraccion.		–0.65452	0.30831
		(0.68809)	(0.91307)
Years Wom right vote		-0.00655	
		(0.00632)	
Constant	6.7936	11.23975	8.7110
	(1.4653)***	(1.3000)***	(1.7005)***
Observations	63	63	50
R-Squared	0.863	0.824	0.7998

Standard errors in brakets
* significant at 10%   ** significant at 5%   *** significant at 1%

TABLE 4. MATRIX OF AUTOCORRELATION COEFFICIENTS.

	pricf80	pricm80	lifeem80	lifeef80	in~f2003	in~m2003	catholic
pricf80	1.0000						
pricm80	0.8560	1.0000					
lifeem80	0.6688	0.5761	1.0000				
lifeef80	0.6560	0.5560	0.9603	1.0000			
incomef2003	0.4836	0.3336	0.7534	0.7869	1.0000		
incomem2003	0.5483	0.4281	0.8136	0.8411	0.9596	1.0000	
catholic	0.3173	0.2069	0.2787	0.2902	-0.0142	0.0270	1.0000
muslim	-0.2954	-0.2223	-0.3975	-0.4130	-0.3344	-0.3436	-0.5171
nonreligious	0.2144	0.1781	0.2515	0.3563	0.4154	0.4690	-0.0093
jewish	0.0990	-0.0183	0.2936	0.3016	0.5011	0.5133	0.1035
hindu	-0.0185	-0.0439	-0.0823	-0.1207	-0.0777	-0.0808	-0.1379
buddhist	0.0896	0.1266	0.2122	0.2443	0.2539	0.3610	-0.2167
fracreligion	-0.2000	-0.0934	-0.0668	-0.0519	0.1781	0.1159	-0.2103

	muslim	nonrel~s	jewish	hindu	buddhist	fracre~n
muslim	1.0000					
nonreligious	-0.1863	1.0000				
jewish	-0.1330	0.1624	1.0000			
hindu	-0.0644	-0.0498	-0.0370	1.0000		
buddhist	-0.0506	0.3212	-0.0488	0.0132	1.0000	
fracreligion	-0.4039	0.2315	0.1541	-0.1017	0.1540	1.0000
.						
.						

(obs=63)

	fert00	pricf80	pricm80	lifeem80	lifeef80	in~f2003	in~m2003
fert00	1.0000						
pricf80	-0.6595	1.0000					
pricm80	-0.5552	0.8560	1.0000				
lifeem80	-0.8840	0.6688	0.5761	1.0000			
lifeef80	-0.8632	0.6560	0.5560	0.9603	1.0000		
incomef2003	-0.6981	0.4836	0.3336	0.7534	0.7869	1.0000	
incomem2003	-0.7714	0.5483	0.4281	0.8136	0.8411	0.9596	1.0000
catholic	-0.1894	0.3173	0.2069	0.2787	0.2902	-0.0142	0.0270
muslim	0.3867	-0.2954	-0.2223	-0.3975	-0.4130	-0.3344	-0.3436
nonreligious	-0.3228	0.2144	0.1781	0.2515	0.3563	0.4154	0.4690
jewish	-0.2261	0.0990	-0.0183	0.2936	0.3016	0.5011	0.5133
hindu	0.0331	-0.0185	-0.0439	-0.0823	-0.1207	-0.0777	-0.0808
buddhist	-0.2527	0.0896	0.1266	0.2122	0.2443	0.2539	0.3610
fracreligion	0.0124	-0.2000	-0.0934	-0.0668	-0.0519	0.1781	0.1159

	catholic	muslim	nonrel~s	jewish	hindu	buddhist	fracre~n
catholic	1.0000						
muslim	-0.5171	1.0000					
nonreligious	-0.0093	-0.1863	1.0000				
jewish	0.1035	-0.1330	0.1624	1.0000			
hindu	-0.1379	-0.0644	-0.0498	-0.0370	1.0000		
buddhist	-0.2167	-0.0506	0.3212	-0.0488	0.0132	1.0000	
fracreligion	-0.2103	-0.4039	0.2315	0.1541	-0.1017	0.1540	1.0000

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