Comparative policy perspectives of happiness and parenthood

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D R A F T A N D I N C O M P L E T E

Abstract

This paper discusses the links between parenthood, happiness and policies, taking a comparative perspective. Its motivation derives from recent analysis suggesting a positive relationship between happiness and fertility. Taking a multilevel approach, we find that parental happiness, and thus wellbeing associated with childbearing, depends on a series of country characteristics – ranging from economic prosperity, trust, social capital and gender equality. We reflect on its policy implications and highlight the fact that direct measures of child friendliness, such as the supply of public childcare – though important – appear to matter less than for instance gender equality.

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1. Introduction

Comparative analysis of European fertility levels reveals astounding differences, ranging from a total fertility rate (TFR) of 1.9 in Norway and close to 1.2 in Bulgaria. For policy makers a key concern is that the TFR is well below the replacement rate in a number of European countries. There are many explanations on offer for the observed fertility differentials, ranging from individuals gaining new value orientations where childbearing is no longer the essential utility parameter it used to be – to deficiencies in welfare provision that makes childbearing and rearing arduous. An interesting addition to the literature concerns the relationship between happiness and childbearing (Kohler et al 2004; Aassve et al 2011, Margolis and Myrskale 2011, 2012; Billari and Kohler 2009). Large-scale comparative data source, such as the European Social Survey, will reveal that the correlation between average levels of happiness and TFR is strong and positive. Thus, in countries where overall fertility is high individuals are also on average happier. It is also the case that in "happy countries" public welfare is also more generous. The latter would suggest that high fertility in the Nordic countries is driven by welfare provision that favours and enhances the wellbeing of parents with young children (McDonald 2000). This argument builds on the idea that policies must matter and that in those countries where policies are geared towards childbearing – fertility is also higher – presumably because potential parents in those countries predict happiness associated with childbearing to be higher – all else equal. This is however, a hotly contested issue in the demography literature. More often than not, it is argued that there is little evidence to suggest that policies have any significant impact on demographic behaviour – and certainly not on fertility. The analysis by Gauthier (Gauthier 2007), which suggest that policy impact on fertility is small, is the key reference for those supporting this view. On the other hand, the re-interpretation of McDonald (McDonald 2002), suggests that the effect may not be so small after all. The role of policies on demographic behaviour remains an unsettled issue.

Our paper follows up on this debate by taking a broad perspective on policy, acknowledging that couples' childbearing decisions depend on a range of factors, the most important being their own personal circumstances, but also on the characteristics of the setting where they reside. We provide a country comparison of happiness and parenthood, which we hold against characteristics of the societies in which individuals and couples reside. However, these characteristics include not only the usual suspects discussed as policy measures for fertility. The key is that childbearing decisions are irreversible, long lasting and life changing, and as such, very different from most other

consumption choices individuals deal with. Thus, couples' childbearing decisions will depend on other factors than the mere financial benefits generated through welfare support. As highlighted by Gauthier (2007), childbearing decisions are influenced by individuals' characteristics, by social norms and culture at different contextual levels. Hence, the entire political and cultural system of a country might matter for whether a country becomes more "children prone" and family-friendly. Thus, a tapered discussion of cash benefits for children, is not very fruitful if the aim is to understand why countries differ so substantially in terms of fertility. Rather, ones fertility decisions may more generally depend on individuals' subjective assessment of the environment and society in which they will raise their children. For instance, parenthood, and the satisfaction associated with it, may in addition to general economic prosperity, also depend on social capital, trust and state governance and its predictability for the future. Without making any causality statements, our aim is to bring to light those aspects that are not often considered important for individuals' childbearing decisions and hence overall fertility. We discuss the possible mechanisms for why these factors may matter for individuals' childbearing decisions.

We support our arguments by conducting a comparative analysis based on the European Social Survey (ESS). Differently from other studies, we consider the policy perspective of parenthood by holding childbearing experiences against individuals' reported happiness (as opposed to economic wellbeing). We use a simple multilevel model where the dependent variable is respondents' level of happiness, and the key explanatory variable is parenthood interacted with key country level characteristics. The results are interesting in that parents are generally less happy than non-parents in unfavourable country circumstances. Instead, parents are always happier in societies which score highly on social capital, trust, good functioning of institutions, gender equality, and more generally economic prosperity. However, this is only the case for mothers. Fathers in contrast, are always happier than non-fathers – no matter the circumstances of the country where they reside. Importantly, the interaction between happiness and parenthood (i.e. childbearing) is consistent with patterns of fertility across Europe. Moreover, factors such as gender equality, trust, social capital appear to distinguish mothers' happiness better than the supply of childcare facilities for instance.

2. Theoretical background

The recent fertility decline in Western countries is well documented (Billari et al, 2007; Billari, Kohler, Ortega, 2002; Goldstein et al., 2009). Italy, Spain, Portugal and Greece, often referred to as the lowest-low fertility countries, have experienced a sustained decline in childbearing with the TFR dropping to 1.3 at the end of the 20th century. They have been followed (sharply) by former communist countries of Central Europe – with an average TFR of 1.28, and more recently by Germany and Austria with TFR levels of 1.35 and 1.40 respectively. In contrast, Anglo-Saxon and the Nordic countries (UK, Norway, Finland, Sweden, Denmark and Iceland) have maintained higher fertility rates – though also here it is in most cases lower than replacement levels. In reaction to these patterns of low fertility, rich theoretical perspectives have been developed.

The basic line of explanation is that industrialization and urbanization led to a decline in mortality, followed by a decline in fertility (Notestein, 1953). However, the emergence of lowest-low fertility cannot be easily explained by the mechanism underlying the demographic transition. As highlighted by Myrskale et al (2009), among developed countries, fertility is now rebounding in those countries where development is very high, indicating that there is no simple linear relationship underlying fertility trends (Thevenon, 2011). Complementary to the more traditional explanations of fertility decline, we find the ideas of the second demographic transition (Lesthaeghe and Van de Kaa 1986). The SDT theory stresses how self-fulfilment, self-realization and happiness lie in the autonomy of the individual from constraining institutions, family included, and who set his or her own well-being as prior to the one of his or her children (Billari, Philipov, Baizan, 2001). Interpreting the SDT thesis literally one would conclude that its emergence should lead to lower fertility, simply because postponement of parenthood reduces the chances of completing ones desired fertility and it will necessarily have an impact on observed fertility rate. However, recent fertility trends show the opposite. Those countries that appear to have progressed farthest on the path of the second demographic transition, also appears to have higher fertility (Sobotka 2008; Aassve et al 2012). Any satisfactory explanation of fertility differentials clearly needs to go beyond the standard SDT arguments.

The underlying assumption in our analysis presented here is that childbearing indeed make a couple happier or more satisfied, and therefore act as the key motivator behind having children in

the first place. There is now a burgeoning literature considering the links between happiness and childbearing (Myrskale and Margolis 2010, 2012; Kohler et al (20__); Billari and Kohler 2009; PAA paper), whereas the literature concerning childbearing and economic wellbeing is more extensive (see Aassve et al 2006 and references therein). A useful approach to analyse happiness and childbearing is to start from prospect theory (Kahnemann and Tversky, 1979). Couples predict their level of happiness associated with childbearing and act accordingly. In other words, if individuals predict their level of happiness to increase from having children, they will also go on and have children, whereas those who have a negative valued prediction will not – or at least be less likely to do so. Thus, children should be positively associated with happiness. Naturally, individuals and couples differ in their precision of such predictions. Moreover, heterogeneity in these predictions might be dependent upon observed individual characteristics and social networks (and their experiences of childbearing). More relevant in the comparative perspective is that the characteristics of the societies where couples reside may have an impact on their assessment of wellbeing associated with childbearing and therefore influence their childbearing decisions. This line of arguments is consistent with the idea of Billari and Kohler (2009) who argue that subjective well-being and fertility depends both on micro and macro level factors. The main idea is that the quest for happiness, and the compatibility between happiness and childbearing, is the "commonality" that may clarify why fertility levels are so heterogeneous across developed countries. The perception of an enhancement in happiness from having a child is a key factor driving the decision to become a parent, as well as expectations of drops in one's own satisfaction can dissuade people from having a child. People can gather information through social networks on the effects that childbearing might have on parents' happiness and form their own opinion, or they have already experienced parenthood in the past.

The key interest lies in understanding the broad policy perspective of happiness and parenthood, and we start by considering the more standard policies issues that relates to benefits related to childbearing, and more generally welfare provision to parents with young children. We then move on to discuss the role of gender equity and equality, for then to discuss trust, social capital and functioning of institutions, all of which have been considered more esoteric in the fertility discussions, but in our mind equally important for understanding satisfaction associated with childbearing, and therefore fertility differentials.

2.1 Welfare policies and state support

Governments' policies and welfare generosity are often claimed as key driving forces behind higher levels of fertility in Nordic relative to Southern European countries (Neyer and Andersson 2008). The underlying assumption is that individuals and couples have more children because the state provides generous support, which implicitly assumes that subjective well-being associated with childbearing is higher if more support is provided. However, Kalwij (2010) using information across countries over time finds that direct benefits geared towards children has only a modest effect on overall fertility levels. More important is the support package. For instance, cash and in-kind benefits, needs to be held together with family allowances, maternity and parental leaves benefits and child-care facilities. Moreover, it is argued that labor market policies aimed at creating opportunities for women to combine family and employment are critical for maintaining higher fertility (Chesnais 1996; Neyer 2006). The empirical evidence is however somewhat mixed, in part driven by the inherent difficulties in measuring the composite nature of such policies. Some studies show small positive effects, while others find no statistically significant effect. Yet others suggest that policies tend to have impact only on the timing of childbearing and not on the completed cohort fertility (Gauthier 2007; Neyer and Andersson 2008).

2.2 Gender equity and equality

The issue of welfare benefits and support refers in part to income effects, in the sense that generous welfare help the economic situation of parents with young children. But it is widely argued that welfare systems interacts importantly with gender equality. The vast majority of family policies in Scandinavian countries have been geared towards improving gender equality – and not as a means to increase fertility directly. In other words, high fertility appears to be by product of increased gender equality. In order to understand the importance of gender equality one needs to start by one of the most important structural changes that has taken place in recent decades – namely expansion in education – and in particular the increase in women's education. Currently women attend higher education in equal number as young men, and if anything, recent trends would suggest that the enrolment rate among women in tertiary education is even higher than that of men. When thinking of women's education, and more generally women's revolution, it is important to bear in mind that not so many decades ago, the male breadwinner model was also dominant in Scandinavian countries. The move towards a gender egalitarian society where both men and women

gain higher education in equal manner has certainly changed the dynamics of couple-relations – and generated a society where gender equity and equality become of paramount importance. What then is the implication for the nexus between happiness and parenthood? The key here lies in understanding the compatibility between women's aspirations and opportunities. In an egalitarian society where women aspire both to parenthood and pursue a successful working careers, policies geared towards gender equality would increase women's satisfaction – simply because aspirations are fulfilled and should lead to greater happiness. A similar argument holds for the male breadwinner model. Here women would not attend higher education and work much less. However, since aspirations are consistent with social norms and the actual opportunity structure, happiness from parenthood would be greater. These arguments would suggest that happiness associated with parenthood would be both high in the pure male breadwinner model and in the egalitarian society. The kind of society where happiness would be lower is where there is a mismatch between women's aspirations and their opportunities. Examples would be societies where education among women has increased, but where gender equality has not followed suit. The way government facilitate gender equality differs widely. As an example, Italy arrives at rank 72 in the gender gap index, whereas Sweden is at the top. Interestingly, the two countries do not differ much in terms of women attending higher education. Whereas improvements in gender equity indeed did improve in "individual-oriented institutions", such as educational attainment, labour force participation and so on, it is not necessarily followed by similar (or comparable) changes in "family-oriented institutions". If the burden of housework and care remain mainly on women's shoulders, it will generate a "dual-burden" which most likely affect negatively on women's subjective assessment of wellbeing from childbearing (McDonald 2000; Mencarini and Sironi, 2010). These arguments are are consistent with the U-shape of fertility trends reported by Myrskyla et al. (2009), in which countries where fertility is very low are characterized by a mismatch between aspirations and opportunities. In countries where women's enrolment in high education is expanding, but at the same time where institutions facilitating gender equality - that helps women to combine work and family- are poorly developed (e.g. Italy), fertility is very low (Mencarini and Sironi, 2010).

2.3 Trust, Social Capital, and Governance

Childbearing is a life defining and irreversible decision, and as such is very different from any other consumption decision individuals tend to make. Thus, it may not only be the content of a

policy itself that matters, but also whether it is stable and predictable, reducing the uncertainty about the future, which makes long term planning easier, which again would affect childbearing decisions (Morgan, 2003; Billari, 2009). If a society has a history of interchanging and unpredictable policies, then new policies may not be given much credit despite it being highly favourable towards fertility. In such circumstances a newly introduced policy, which substantially improves the economic situation of families with young children, may have little effect, simply because individuals do not trust the policy will be sustained, but where sustainability matters crucially because of the long-term consequence of having a child. Individuals' trust might be a good proxy for whether policies are predictable or not. It turns out that empirically, trust has a very strong correlation with fertility levels (Aassve et al 2012). For instance, trust is very high in Scandinavian countries but very low in Mediterranean and the former communist countries of East Europe. Whereas trust might influence fertility in different ways, the basic argument is that if it is high – either towards institutions, governments or other people in general, young couples are more willing to accept the economic loss that may come with a child as it is not damaging their aspirations (Thévenon, 2008; Toulemon et al, 2008; Bjornskov, 2010). Of course, identifying any causal effects is difficult, and we are not making any attempts to do so in our empirical analsis. Another important aspect of trust is that it may play an important role in individuals' willingness to outsource traditional family activities, such as caring for children and/or the elderly, to other people – possibly through external institutions (Aassve et al 2012). External childcare is a prime example. The idea here is that if trust is high, young people are more prone to outsource childcare services away from their own family and to pursue their objectives in terms of employment and career improvements.

3 The relationship between happiness and parenthood across Europe

3.1 Data

Assessing the arguments put forward in section 2 requires information on individuals' well-being and their parenthood status together with information concerning childcare support, gender equality and equity and measures of social capital, generalized trust and state governance. We take this information from the European Social Survey (ESS). The ESS is representative of the European population aged 15 and over, resident within private households in each participating country. In

our analysis, we use the fourth round that has been released on 24 March 2010 and includes 28 countries. The main aim of the ESS is that of outlining the attitudes of the different European regions towards religion, politics, and moral issues, while also depicting their social habits and how they are changing over time. We focus the analysis on people between 20 and 50 years of age, in order to have a more homogeneous sample on important life aspects, such as subjective well-being and fertility choices. Our sample counts 26,576 individuals, of which 53% are females. As we can observe in Table 1, countries belonging to the sample are very diverse. Happiness is measured through the question "Taking all things together, how happy would you say you are?" and the answer is given on an ordinal scale, ranging from 0 (extremely unhappy) to 10 (extremely happy). People in the sample, on average, report fairly high levels of happiness (see Table 2.A in the Appendix for further details).

Table 1 shows the key contextual variables all measured at the country level. Childcare availability is measured by the number of children aged 0-3 years, enrolled in child-care centres per 100 children and the availability of places in child-care centres (ratio of the number of places available for children aged 0-3 years in child-care centres per 100 children). Gender equity is measured by the Global Gender Gap of 2008[2] and the percentage of women members of the national parliament. The measures of social capital and trust are constructed by aggregating individual level variables concerning trust and social capital. Trust is constructed through a factor analysis based on a battery of six questions: "most people can be trusted or you can't be too careful", "trust in country's parliament", "trust in the legal system", "trust in the police", "trust in politicians", and "trust in political parties" (see Appendix for more details). The same procedure has been followed to build an indicator of *social capital*, using three variables: "How often socially meet with friends, relatives or colleagues", "Take part in social activities compared to others of same age" and "Anyone to discuss intimate and personal matters with" (see appendix for details related to the factor analysis). Finally, socio-economic development is covered by three different indicators: per-capita GDP in 2007 (in US $ purchasing power parity), the Human Development Index in 2007 that considers life expectancy and level of education other than per-capita GDP, and

[2] It ranks economies according to their gender gaps and their scores can be interpreted as the percentage of the gap between women and men that has been closed. Gaps are measured based on economic participation and opportunity, educational attainment, health and survival sub index and political empowerment.

the Corruption Perception Index of 2008, which reflects the degree to which corruption is perceived to exist among public officials and politicians[3].

[3] This Index has been published since 1995 by Transparency International and corruption is defined as "the abuse of entrusted power for private gain".

TABLE 1: Contextual Indicators

	GDP pc - ppp US$ (2007)	HDI (2007)	Corruption Perception Index (2008)	Global Gender Gap (2008)	Women in Nat. Parliam. (2008)	Enrolment Rate of children < 3 year (2007-2008)		Place availability for children 0-3, per 100 children	
Country	**Value**	**Value**	**Score**	**Value**	**%**	**%**		**(2007-2008)**	
Belgium	34,935	0.95	7.30	0.716	35.30	32.0		30.00	*2003
Bulgaria	11,222	0.84	3.60	0.708	21.70	13.0		11.00	2006-2007
Switzerland	40,658	0.96	9.00	0.736	28.50	.		-	
Cyprus	24,789	0.91	6.40	0.669	14.30	21.0		-	
Czech Republlic	24,144	0.90	5.20	0.677	15.50	6.0		-	
Germany	34,401	0.95	7.90	0.739	31.60	18.0		8.50	2002-2003
Denmark	36,130	0.96	9.30	0.754	38.00	66.0		58.00	*2003
Estonia	20,361	0.88	6.60	0.708	20.80	34.0		31.00	2006-2007
Spain	31,560	0.96	6.50	0.728	36.30	50.0		5.00	*2003
Finland	34,526	0.96	9.00	0.820	41.50	14.0		23.00	*2003
France	33,674	0.96	6.90	0.734	18.20	28.0	* Oecd 02	44.00	2005-2006
UK	35,130	0.95	7.70	0.737	19.50	27.0	* 2006-2007	2.00	*2003
Greece	28,517	0.94	4.70	0.673	14.70	5.0		-	
Croatia	16,027	0.87	4.40	0.697	20.90	16.0		-	
Hungary	18,755	0.88	5.10	0.687	11.10	5.0		6.00	2005-2006
Israel	26,315	0.94	6.00	0.690	14.20	30.0		-	
Latvia	16,377	0.87	5.00	0.740	20.00	16.0		-	
Netherlands	38,694	0.96	8.90	0.740	39.30	51.0	* 2006-2007	16.00	2004-2005
Norway	53,433	0.97	7.90	0.824	36.10	48.0		41.90	2005-2006
Poland	15,987	0.88	4.60	0.695	20.20	2.0		2.40	2005-2006
Portugal	22,765	0.91	6.10	0.705	28.30	23.0	* Oecd 04	12.00	*2003
Romania	12,369	0.84	3.80	0.676	9.40	3.0		2.10	2005-2006
Russian Fed.	14,690	0.82	2.10	0.699	14.00	18.0		-	
Sweden	36,712	0.96	9.30	0.814	47.00	49.0		37.00	*2003
Slovenia	26,753	0.93	6.70	0.694	12.20	44.0		-	
Slovakia	20,076	0.88	5.00	0.682	19.30	17.0	* Oecd 03	12.00	1990
Turkey	12,955	0.81	4.60	0.585	9.10	-		-	
Ukraine	6,914	0.80	2.50	0.686	8.20	15.0		-	
Source	UN Stats Division: data.un.org	UN Stats Division: data.un.org	transparency.org	GGG Report: www.weforum.org	UNECE Statistics: unece.org/stats	UNECE Statistics: + OECD Family Database		UNECE Statistics: unece.org/stats + Del Boca - Wetzel '07	

Simple eyeballing of Table 1 reveals systematic differences across countries. Starting with socioeconomic development, we find the Scandinavian countries, together with Netherlands, France and Switzerland at the top. Eastern European countries are lagging behind, with the remaining Continental European countries located in between. The level of gender equity is highest in Norway, followed by Finland and Sweden, while it is lowest in Greece, Cyprus and Turkey. Countries with the highest percentage of women working in the national parliament are again Nordic countries (Sweden, Finland, Denmark and Netherlands), as opposed to Eastern European ones (Hungary, Romania, Turkey and Ukraine). As for childcare provision, the picture is somewhat more mixed. Scandinavian countries are still in top positions, but there are some Eastern and Continental European countries, which seem to have good childcare provision (e.g. Estonia). We have to be careful when analyzing these data, first because information is missing for some of the countries in the sample and secondly because they have been taken from different sources. Looking at the aggregate index of trust (Figure 1.A in the Appendix), we observe more or less the same ranking we found for the other contextual indicators. Countries with the lowest degree of trust in people, government and political parties are those in Eastern Europe. In South and Continental Europe level of trust is higher, whereas the Nordic countries are clear winners in trust and social capital.

3.2 Bivariate analysis

In line with arguments put forward in section 2, we investigate the effects and the role of country level characteristics in connection between happiness and parenthood. In order to do this, we first look at the bivariate relationship between average happiness in different countries and contextual variables, distinguishing parents and non-parents. We start by considering childcare institutions, meaning the enrolment rate in childcare centres of children between 0 and 3 years of age and place availability in these centres per 100 children (Figure 1). For each country, we compute the average happiness for parents (blue coloured dots) and for non-parents (red coloured dots). We then fit a regression line for each sets of dots. Figure 1 shows that in general, the happiness that people derive from parenthood is positively associated with availability of childcare, a feature that is reflected by the positive slope of the fitted lines. Any conjecture concerning overall fertility is totally qualitative, as this is based on the location of the countries in the graph – bearing

in mind country specific fertility rates. For instance, in Figure 1 we tend to find high fertility countries in the upper right hand side corner where happiness associated with parenthood is large. In contrast, where happiness associated with parenthood is lower, located in the lower left hand corner, we tend to find countries where fertility is low, examples being those of East Europe and the Mediterranean. A key point we can discern from Figure 1 is that when childcare institutions are not diffused, mothers are *less* happy than non-mothers. When enrolment rate and place availability increase, the relationship change, and mothers become happier, on average, than non-mothers. Conversely, fathers are happier than non-fathers, no matter the extent of childcare provision. The positive slope and the fact that it crosses for mothers and non-mothers is an important feature, not least because the same pattern emerges when we consider the other aggregate measures.

FIGURE 1: Happiness, Childbearing and Childcare Institutions

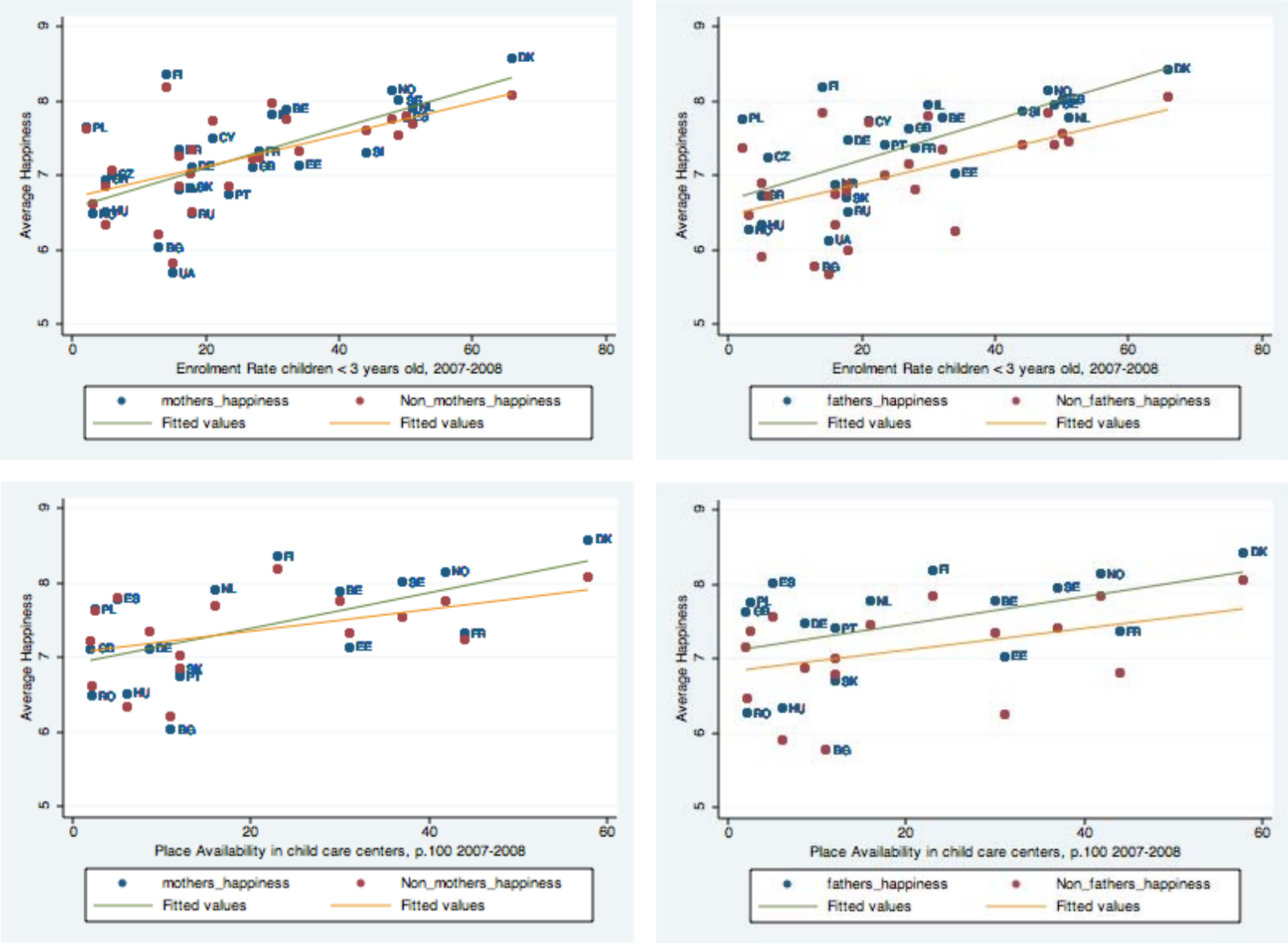


Figure 2 plots trust against happiness for parents and non-parents, separately for men and women. The pattern is very similar to what we observed in Figure 1. When trust in people and institutions is high, average happiness of mothers is higher than that reported by non-mothers, while the opposite is true when trust is low. Fathers are always happier than non-fathers independent of the level of trust. That said, the positive gradient reflects that in countries where trust is high, men are on average happier – as are women. The difference between men and women is important, as the results would suggest that institutions and the general political and cultural climate have no influence on the relationship between happiness and childbearing for men, whereas it does matter for women. The picture is the same if we consider instead socio-economic development in place of trust or childcare provision. The relationship is plotted in the two lower panels in Figure 2.

We consider next the relationship between happiness and gender equity – holding them against parenthood. The Global Gender Gap (GGG) and the percentage of women in the national parliament, as depicted in Figure 3, have the same impact on the relationship between happiness and parenthood as the other country level factors. When considering the GGG it is clear that the observations do not form a strong linear relationship and the fitted line is strongly influenced by Turkey, which we find in the lower left corner. At the other end, we find three Scandinavian countries where both happiness and GGG are high. The fitted lines for mothers and non-mother do again cross, meaning that mothers are happier than non-mothers when GGG is high, but again is driven in large part by the inclusion of Turkey. In other words, the relationship is less clear when considering the GGG also because fertility is higher in Turkey than in the other countries included. When instead considering the number of women in parliaments we find a stronger linear relationship with happiness and parenthood. Again the fitted line for women crosses, meaning that in countries where a larger number of women take part in the parliament, mothers tend to be happier than non-mothers, and the opposite being the case when participation of women in parliaments is low. In the top right corner we find the Scandinavian countries where fertility is high, whereas in the bottom left corner we find East-European and Mediterranean countries, where fertility is much lower. The outlier is again Turkey, which we again find in the bottom left corner, but where we know fertility is higher than any of the other countries.

FIGURE 2: Happiness, Childbearing, Trust in institutions and Human Development Index

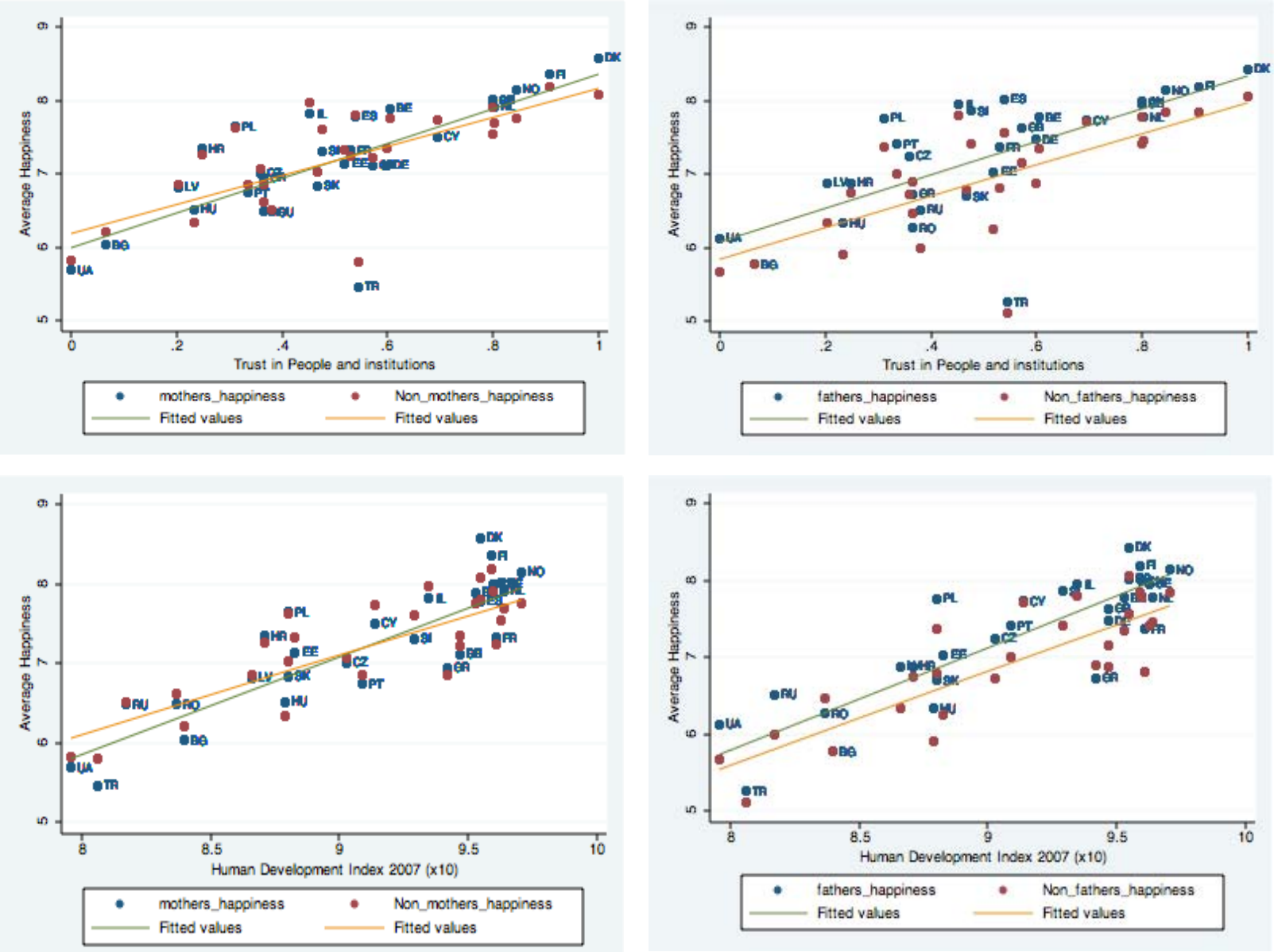
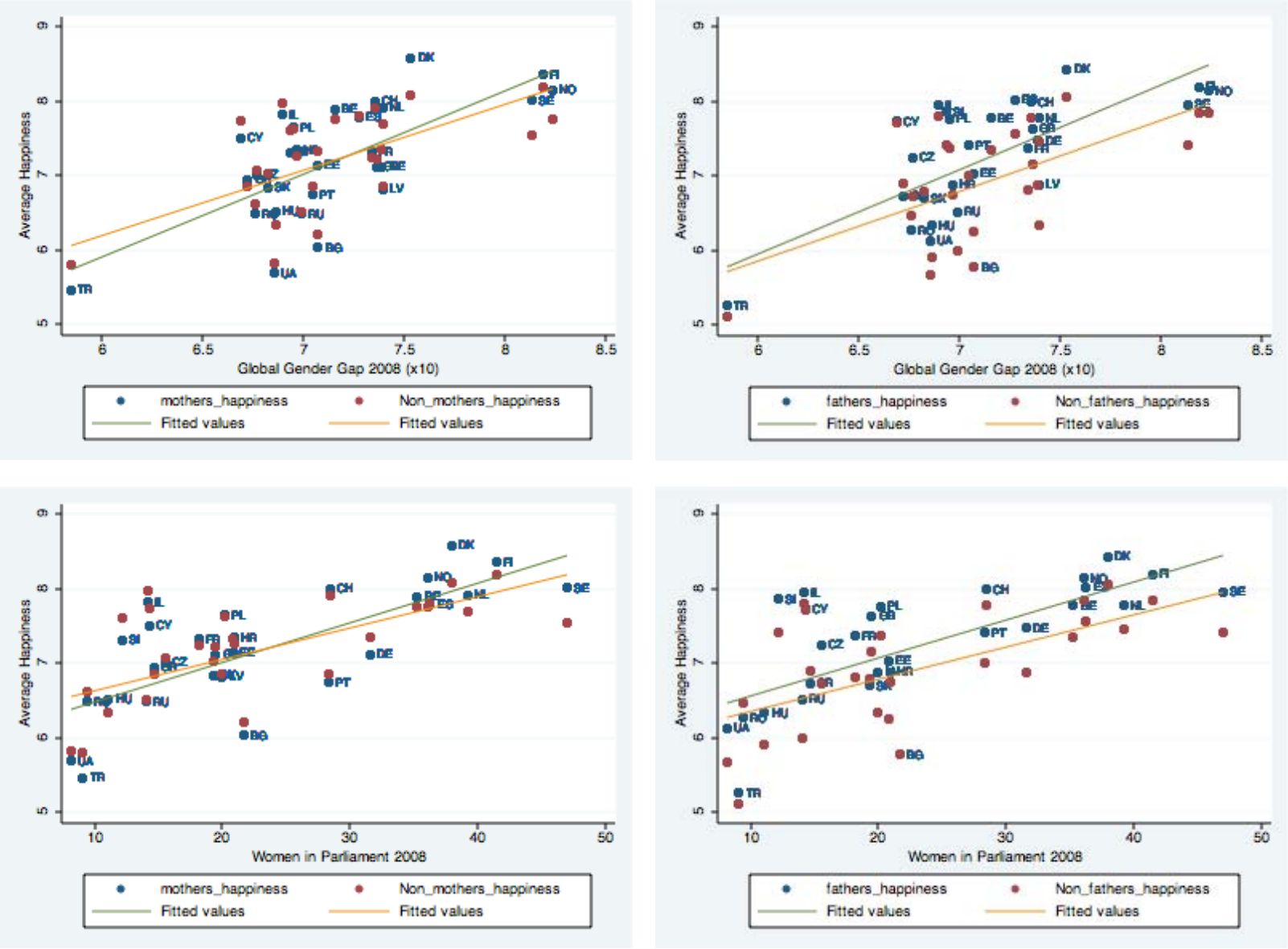


FIGURE 3: Happiness, Childbearing and Gender Inequality



3.3 Multivariate analysis

The results presented in section 3.2 are intriguing, but are nevertheless based on bivariate descriptive analysis. Here we devise a statistical model where we can test the key findings in 3.2. Of key importance is to test 1) whether the relationship between happiness and parenthood is increasing in the macro variables, and 2) to test if the fitted lines for mothers and non-mothers indeed cross. One benefit of the statistical model is that we can include a wide range of control variables. Moreover, we do not have to limit the analysis to assessing the difference between parents and non-parents. Instead, we include the number of children as a key explanatory variable. We implement a simple multi-level regression model with two levels, which is appropriate given the hierarchical structure of the data, where respondents are nested within countries. Individuals of the same country share both observed and unobserved macro-contexts. The multi-level statistical model facilitates such hierarchical structure through a decomposition of the error term, one being individual specific and the other being country specific (Goldstein 2003). Our model can be written as follows:

$$Happy_{ic} = \beta_0 + \beta_1 Child_{ic} + \beta_2 X_{ic} + \beta_3 Trust_c + \beta_4 Dev_c + \beta_5 Gender\ Eq_c + \beta_6 Childcare_c + u_{0c} + \varepsilon_{ic}$$

where $Happy_{ic}$ represents the level of happiness (from 0 to 10) reported by individual *i* in country *c*, Child_{ic} is the explanatory variable related to childbearing (number of children or parity level), and X_{ic} is a vector of individual characteristics including age, education, religiosity, employment and partnership status. $Trust_c$, Dev_c, $Gender\,Eq_c$ and $Childcare_c$ are country level variables, representing respectively the level of trust in people and institutions, the socio-economic development in the country (measured by the Human Development Index, the GDP per capita and the Corruption Perception Index), the level of gender equality (represented by the percentage of women in the national parliament and an index, the Global Gender Gap) and childcare availability. These macro variables are not included in the analysis all together, given the high correlation among them. To avoid collinearity problems, our strategy is instead to introduce the country level variables one by one, and assess their relative importance through considering the intra-class correlation presented below. u_{0c} is the country specific error term, while ε_{ic} is individual specific. The reasons to use this two-level scheme are manifold. First, one

consequence of failing to recognize hierarchical structures is that standard errors of regression coefficients will be underestimated, leading to an overstatement of statistical significance. Secondly, they allow to estimate how much of the variability in subjective well-being is attributable to country level factors and how much to individual level factors. In this way, the role of country characteristics in explaining the outcome is first observed through its direct effect measured by its coefficient, and then through its ability to reduce cross-country variation. The latter effect is computed through the intra-class correlation coefficient ρ, defined as:

$$\rho = \frac{Var(u_{0c})}{Var(u_{0c}) + Var(\varepsilon_{ic})}$$

where is the variance across countries and $Var(\varepsilon_{ic})$ among individuals in country *c*. Regressions' results are reported in Table 2.a and Table 2.b, for women and men respectively[4].

As for the hypothesis of interest, we are particularly interested in the parameter estimates of trust, development, gender equality and provision of childcare. Our hypothesis is that they should all be positive, which would reflect the positive slopes reported in Figures 1 to 3. In order to test if the slopes for mothers and non-mothers cross with respect to the macro variables (as is suggested by Figures 1 to 3) we do need to introduce a cross level interaction term. In particular, we interact the number of children with the macro variables. A positive (and significant) coefficient on these interaction terms will indeed reflect that happiness associated with parenthood diverges (from those not being parents) as the macro variables are increasing.

The results are presented in Table 2a and 2b. The regressions include controls for age and its quadratic, years of education, activity status and church attendance. The tables report estimates from 6 models, each with a different macro variable included. In addition, we include the number of children (the first row), the macro variables and their interaction with the number of children.

[4] Results showing the association of individual-level variables and happiness are reported in the Appendix (Table 5.A and 6.A, for women and men respectively). As previously mentioned, given that we have 28 countries, it is not possible to include all country level variables in the same regression, simply because the degrees of freedom become small, moreover many of the country levels are correlated, meaning that we cannot easily identify the country specific effects if included at the same time.

TABLE 2.a: Results of two-level regressions with contextual variables, Women

WOMEN (20-50)	Enrollment	Place Availability	Trust people & Institutions	HDI	Global Gender Gap	Women in Parliament
# Children	-0.029	-0.04	0.008	-0.667**	-0.607***	-0.080*
	(0.029)	(0.029)	(0.016)	(0.234)	(0.179)	(0.032)
Enrollment Rate Children < 3 years	0.022***					
	(0.006)					
Enrollment Rate * # Children	0.002*					
	(0.001)					
Place Availability Children < 3 (p. 100 children)		0.016*				
		(0.008)				
Place * # Children		0.004***				
		(0.001)				
Trust people & institutions (Country level)			0.887***			
			(0.151)			
Trust*# Children			0.068*			
			(0.028)			
HDI (2007) [*10]				1.026***		
				(0.125)		
HDI * # Children				0.074**		
				(0.026)		
Global Gender Gap (2008) [*10]					0.787***	
					(0.209)	
Global Gender Gap * # Children					0.087***	
					(0.025)	
% Women in National Parliament (2008)						0.040***
						(0.008)
% Women in Parliament * # Children						0.004***
						(0.001)
Constant	8.224***	8.630***	8.502***	-0.806	2.913	7.595***
	(0.336)	(0.405)	(0.296)	(1.169)	(1.521)	(0.354)
Country level Variance	0.226	0.269	0.176	0.109	0.274	0.221
Individual level Variance	3.203	3.065	3.374	3.374	3.374	3.374
ICC	0.066	0.081	0.050	0.031	0.075	0.062
N	12926	8429	14214	14214	14214	14214

Note: standard errors in parenthesis. P-values: +p<=0.10:*+p<=0.05:**+p<=0.01***. Controls : age, age^2, years of education, living with a partner, working status, church attendance.

TABLE 2.b: Results of two-level regressions with contextual variables, Men

MEN (20-50)	Enrollment	Place Availability	Trust people & Institutions	HDI	Global Gender Gap	Women in Parliament
# Children	0.001	0.009	0.066***	-0.075	-0.250	0.004
	(0.031)	(0.032)	(0.018)	(0.241)	(0.173)	(0.034)
Enrollment Rate Children < 3 years	0.021***					
	(0.006)					
Enrollment Rate * # Children	0.003**					
	(0.001)					
Place Availability Children < 3 (p. 100 children)		0.016*				
		(0.009)				
Place * # Children		0.004***				
		(0.001)				
Trust people & institutions (Country level)			0.885***			
			(0.178)			
Trust*# Children			0.031			
			(0.029)			
HDI (2007) [*10]				1.151***		
				(0.13)		
HDI * # Children				0.016		
				(0.026)		
Global Gender Gap (2008) [*10]					0.845***	
					(0.224)	
Global Gender Gap * # Children					0.045	
					(0.024)	
% Women in National Parliament (2008)						0.039***
						(0.010)
% Women in Parliament * # Children						0.003*
						(0.001)
Constant	8.277***	8.402***	8.638***	-1.794	2.61	7.747***
	(0.343)	(0.412)	(0.307)	(1.21)	(1.629)	(0.381)
Country level Variance	0.244	0.333	0.253	0.118	0.320	0.299
Individual level Variance	2.974	2.824	3.158	3.158	3.158	3.158
ICC	0.076	0.105	0.074	0.036	0.092	0.087
N	11273	7594	12362	12362	12362	12362

Note: standard errors in parenthesis. P-values: +p<=0.10:*+p<=0.05:**+p<=0.01***. Controls : age, age^2, years of education, living with a partner, working status, church attendance.

The findings of the multilevel regressions confirm the picture observed in Figures 1 to 3 above. Starting with women, we see that the direct effect of children on happiness is always negative, although not always significant. When we estimate the models with either HDI, GGG or the number of women in parliaments, the negative direct effects of children on happiness are significant. In Figures 1 to 3 these negative effects are reflected by the gap between the fitted lines at the lower left part of Figures 1 to 3. Moving on to the effects of the macro variables we see that they are all positive and statistically significant, which in Figures 1 to 3 is reflected by the positive slopes of the fitted lines. The macro variables are measured at different scales, so the coefficients are not informative about their relative strength. However, we can discern to some extent their relative importance by looking to the country level variances. The lower they are, the higher is the explanatory power. Out of the macro variables, we see that HDI has the strongest power in explaining happiness, followed by trust, and then childcare enrollment and number of women in parliament. The key lies however in the estimated coefficient of the interaction terms. They are all positive, meaning that the happiness associated with children diverges. That is, as the value of the macro variable increase – the difference in happiness from having few or no children compared to those having many children also increases. With a direct negative effect of children on happiness, this means that for very low values of the macro variable, those with fewer children are happier than those with many children, whereas the opposite is the case when there is a large value of the macro variable. This is exactly what we observe in Figure 2 for instance. For low values of trust, mothers are less happy than non-mothers, but the opposite is the case when trust is high.

For men (Table 2) the results are different in two important ways. Frist, the number of children never has a direct negative effect on happiness. More importantly however, the interaction terms are never statistically significant, meaning that the fitted lines for happiness never cross – exactly as we saw in Figures 1 to 3.

One should point out that the effects of these macro variables are generally large. In all the tables reported above, we included the variance of country and individual's error term together with the intraclass correlation coefficient (ICC). Comparing results from regressions where only individual characteristics are included (see Appendix) with all the other regressions' results where a macro variable has been included, we see that the ICC declines substantially, meaning that these contextual indicators are able to explain an important fraction of well-being variability across countries. For instance, the variance of the error term at country level when we just include

individual level variables for women is 0.45 (while the variance of ε_{1c} is 3.456), so that the ICC is equal to 0.115. When we include the Human Development Index, and its interaction with number of children, the variance of unobserved heterogeneity across countries drops to 0.109 and the ICC to 0.031. This means that, taking into account HDI, the variance in women's well-being across countries is just 3.1% (as opposed to 11.5%) and that we are able to explain 73% of the country level variability in happiness among women.

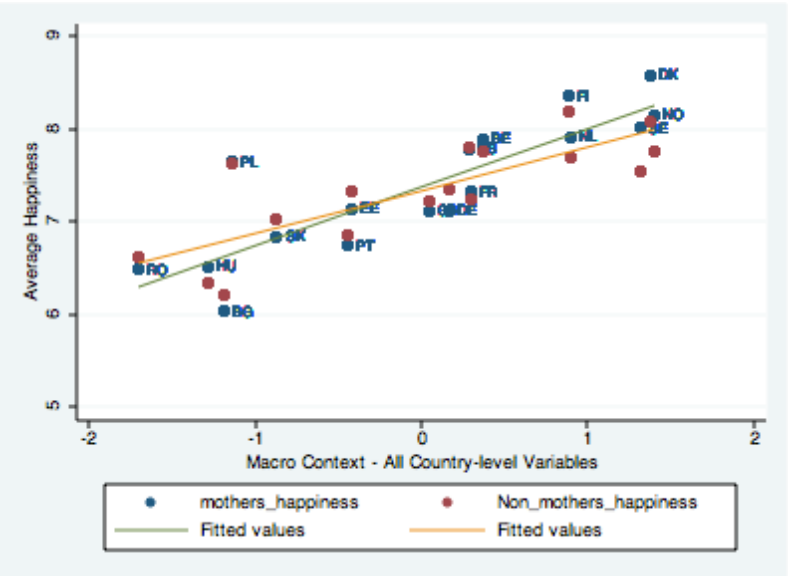
4 Discussion

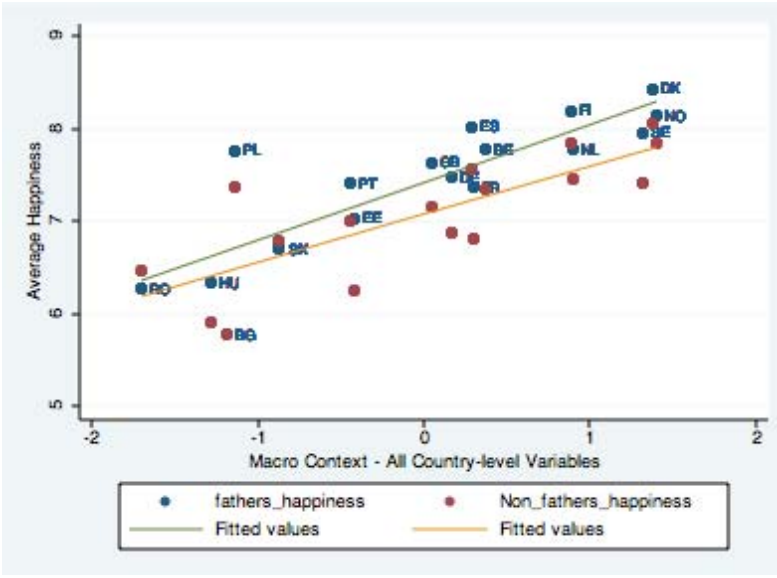
All the contextual variables we have taken into account one by one in the tables and the graphs above are strongly correlated with each other. Countries with a strong sense of gender equality are also very developed from an economic point of view, the average level of education attainment is quite high and usually provide high-quality services for childcare (see Table 1). All these single characteristics then are measures of a broader concept, that can be defined as socio-economic advancement of a country, of its institutions and its culture. Given that all these indicators go together, we performed a factor analysis to get a unique macro-variable that takes into account all the aspect discussed individually above. Unfortunately we do not have information concerning childcare institutions for all countries. Consequently we present the results of two different factor analyses, one that considers all the countries in the dataset excluding the childcare variables, and one including all the variables and excluding the countries for which we miss one or more country-level characteristics (Croatia, Cyprus, Czech Republic, Greece, Israel, Latvia, Russia, Slovenia, Switzerland, Turkey, Ukraine). Not surprisingly we do find very similar results to the ones observed in the figures above.

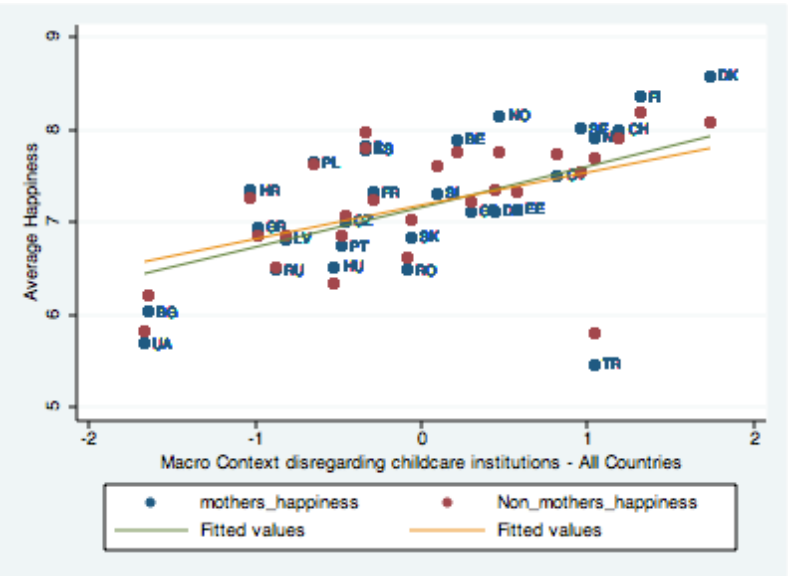
TABLE 3. Macro-Context, Factor Loadings

	"Macro-Context" - All Countries		"Macro-Context" disregarding childcare - All Variables	
Variable	Factor loadings	Uniqueness	Factor loadings	Uniqueness
HDI	0.923	0.148	0.908	0.176
GDP pc (PPP US $)	0.919	0.155	0.939	0.118
CPI	0.938	0.120	0.928	0.139
Trust in people and institutions	0.908	0.176	0.833	0.307
Social Capital	0.860	0.260	0.768	0.410
Global Gender Gap	0.857	0.265	0.794	0.369
% Women in National Parliament	0.868	0.247	0.858	0.265
Enrollment Rate Children < 3 years	0.823	0.323	-	-
Place Availability Children < 3 (p. 100 children)	0.703	0.505	-	-
Missing Countries	-	-	CH, CY, CZ, GR, HR, IL, LV, RU, SI, TR, UA	

FIGURE 4: Happiness, Childbearing and the Macro-Context







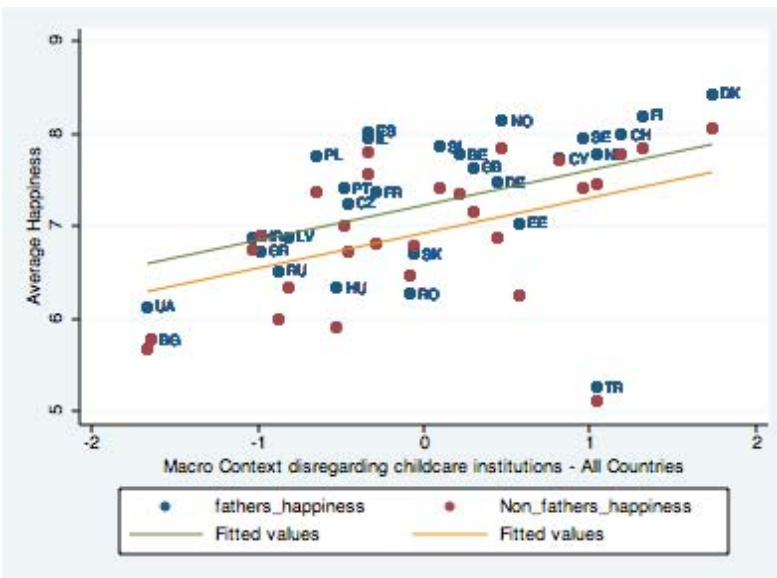


TABLE 8: Macro-Context

	WOMEN (20-50)		MEN (20-50)	
	All Variables	All Countries	All Variables	All Countries
# Children	0.027	0.01	0.042	0.066***
	(0.02)	(0.016)	(0.023)	(0.018)
Macro-Context	0.469***		0.467***	
	(0.082)		(0.093)	
Macro-Context * # Children	0.061**		0.071***	
	(0.019)		(0.02)	
Macro-Context, disregarding Childcare institutions		0.453***		0.419**
		(0.119)		(0.1340
Macro-Context, disregarding Childcare institutions * # Children		0.025		0.019
		(0.017)		(0.017)
Constant	8.927***	8.511***	8.690***	8.641***
	(0.36)	(0.302)	(0.357)	(0.313)
Missing Countries/Variables	CH, CY, CZ, GR, HR, IL, LV, RU, SI, TR, UA	Childcare Institutions	CH, CY, CZ, GR, HR, IL, LV, RU, SI, TR, UA	Childcare Institutions
N	8429	14214	7594	12362
Country level Variance	0.094	0.287	0.127	0.367
Individual level Variance	3.064	3.376	2.821	3.160
ICC	0.030	0.078	0.043	0.104

Note: standard errors in parenthesis. P-values: +p<=0.10:*+p<=0.05:**+p<=0.01***.
Controls: age, age^2, years of education, living with a partner, working status, church attendance.

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APPENDIX

TABLE 1.A: Trend in Total Fertility Rate

Country	1970-1975 TFR	2005-2010 TFR
Belgium	2.02	1.77
Bulgaria	2.17	1.40
Switzerland	1.82	1.45
Cyprus	2.49	1.52
Czech Republic	2.19	1.41
Germany	1.64	1.32
Denmark	1.97	1.84
Estonia	2.15	1.64
Spain	2.86	1.43
Finland	1.62	1.83
France	2.31	1.89
UK	2.04	1.84
Greece	2.32	1.38
Croatia	1.96	1.42
Hungary	2.09	1.35
Israel	3.77	2.81
Latvia	2.00	1.40
Netherlands	2.06	1.74
Norway	2.25	1.89
Poland	2.25	1.27
Portugal	2.75	1.38
Romania	2.62	1.32
Russian Federation	2.03	1.37
Sweden	1.89	1.87
Slovenia	2.19	1.36
Slovakia	2.51	1.28
Turkey	5.46	2.13
Ukraine	2.16	1.31

TABLE 2.A: descriptive statistics of the variables used in the analysis, by country

Country	Num Obs	Happiness		Age	Female	# Children		Years of Education	Working	Living with a partner	Church Attendance (at least once a month)
Code	#	Mean	St. Dev.	Mean	%	Mean	St. Dev	Mean	%	%	%
Belgium	873	7.7	1.5	36.0	49.0	1.1	1.2	13.8	76.1	66.3	8.4
Bulgaria	884	6.0	2.5	36.6	57.5	1.0	0.9	11.9	71.9	67.5	15.2
Switzerland	947	7.9	1.5	36.3	54.3	0.7	1.0	11.7	75.7	52.7	15.3
Cyprus	642	7.7	1.4	35.1	51.1	1.1	1.2	13.6	80.5	63.2	36.4
Czech Republic	958	7.0	1.8	35.7	47.6	0.9	1.0	12.9	79.3	62.1	6.7
Germany	1313	7.2	1.9	37.3	47.7	0.8	1.0	14.4	74.6	61.8	14.4
Denmark	720	8.3	1.3	37.1	51.0	1.1	1.1	14.1	83.5	73.6	6.8
Estonia	779	6.9	1.9	35.1	54.4	1.0	1.1	13.4	73.7	65.6	7.6
Spain	1347	7.8	1.5	35.0	52.6	0.8	1.0	12.9	75.7	61.0	14.6
Finland	1032	8.1	1.4	35.7	48.9	1.1	1.2	14.9	76.6	68.0	8.8
France	1004	7.2	1.8	36.1	54.7	1.1	1.2	14.1	77.5	66.3	6.9
UK	1179	7.3	1.9	36.4	56.0	1.0	1.1	14.5	72.4	56.0	15.9
Greece	1200	6.9	1.8	36.0	57.0	0.8	1.0	12.9	73.9	58.0	30.4
Croatia	722	7.1	1.9	34.6	58.7	1.0	1.2	12.9	60.0	55.7	43.9
Hungary	747	6.3	2.3	34.9	53.0	1.0	1.1	13.2	63.5	60.4	13.7
Israel	1166	7.9	1.9	34.0	54.4	1.7	1.9	13.6	67.3	65.4	31.2
Latvia	901	6.7	1.9	35.9	58.0	1.0	1.1	13.4	62.4	65.8	13.2
Netherlands	865	7.7	1.3	37.0	54.7	1.1	1.2	14.5	81.2	65.0	14.8
Norway	804	8.0	1.5	36.3	48.5	1.2	1.2	14.4	85.6	67.7	8.1
Poland	812	7.6	1.8	34.1	52.2	1.1	1.2	13.6	73.3	65.1	68.3
Portugal	898	7.0	1.8	35.9	58.1	0.8	1.0	10.5	74.4	61.4	33.0
Romania	1077	6.5	1.9	34.6	55.4	0.7	0.9	12.4	64.4	63.3	38.9
Russian Fed.	1165	6.4	2.1	34.6	56.0	0.7	0.8	13.4	78.5	58.2	15.5
Sweden	888	7.8	1.6	35.5	47.6	1.1	1.1	14.0	85.2	68.9	8.0
Slovenia	633	7.5	1.7	35.5	52.3	1.0	1.1	12.8	79.0	62.1	23.2
Slovakia	801	6.8	1.9	36.1	53.6	1.1	1.2	13.3	70.2	62.3	35.6
Turkey	1430	5.4	2.7	33.6	54.1	1.2	1.4	7.5	32.7	71.8	41.0
Ukraine	789	5.8	2.3	35.4	58.9	0.9	0.9	12.8	62.6	65.1	29.5

TABLE 3.A: Factor analysis for Trust in people and institutions

	Factor Loadings
Most people can be trusted or you can't be too careful	0.4738
Trust in country's parliament	0.8588
Trust in the legal system	0.8243
Trust in the police	0.7593
Trust in politicians	0.8824
Trust in political parties	0.8588
Cronbach Alpha	
Average interitem covariance:	3.55
Number of items in the scale:	6
Scale reliability coefficient:	0.8663

FIGURE 1.A: Aggregate measure of trust in people and institutions obtained through a factor analysis

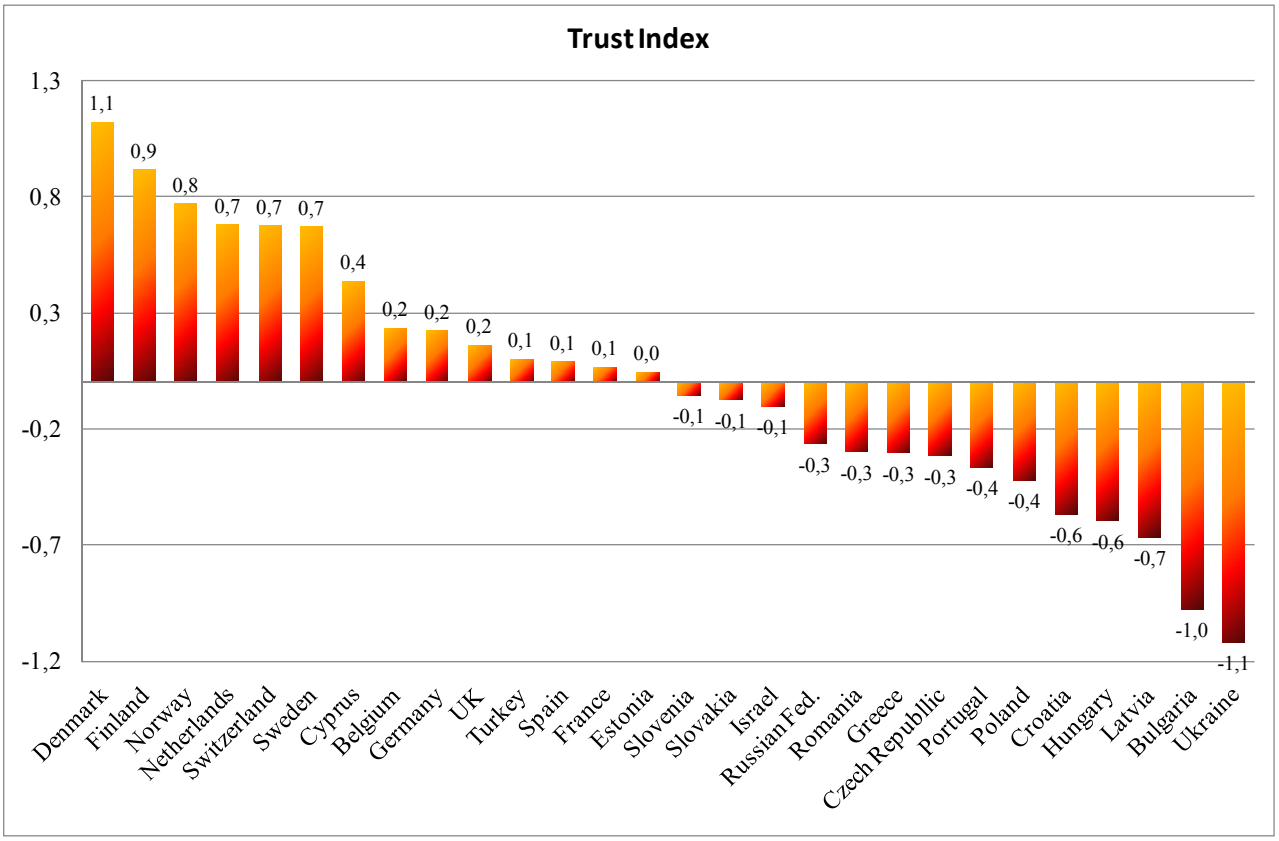

TABLE 4.A: Factor analysis for Social Capital

	Factor Loadings
How often socially meet with friends, relatives or colleagues	0.7686
Anyone to discuss intimate and personal matters with	0.5807
Take part in social activities compared to others of same age	0.7525
Cronbach Alpha	
Average interitem covariance:	0.2385
Number of items in the scale:	3
Scale reliability coefficient:	0.4172

FIGURE 2.A: Aggregate measure of *social capital* obtained through a factor analysis

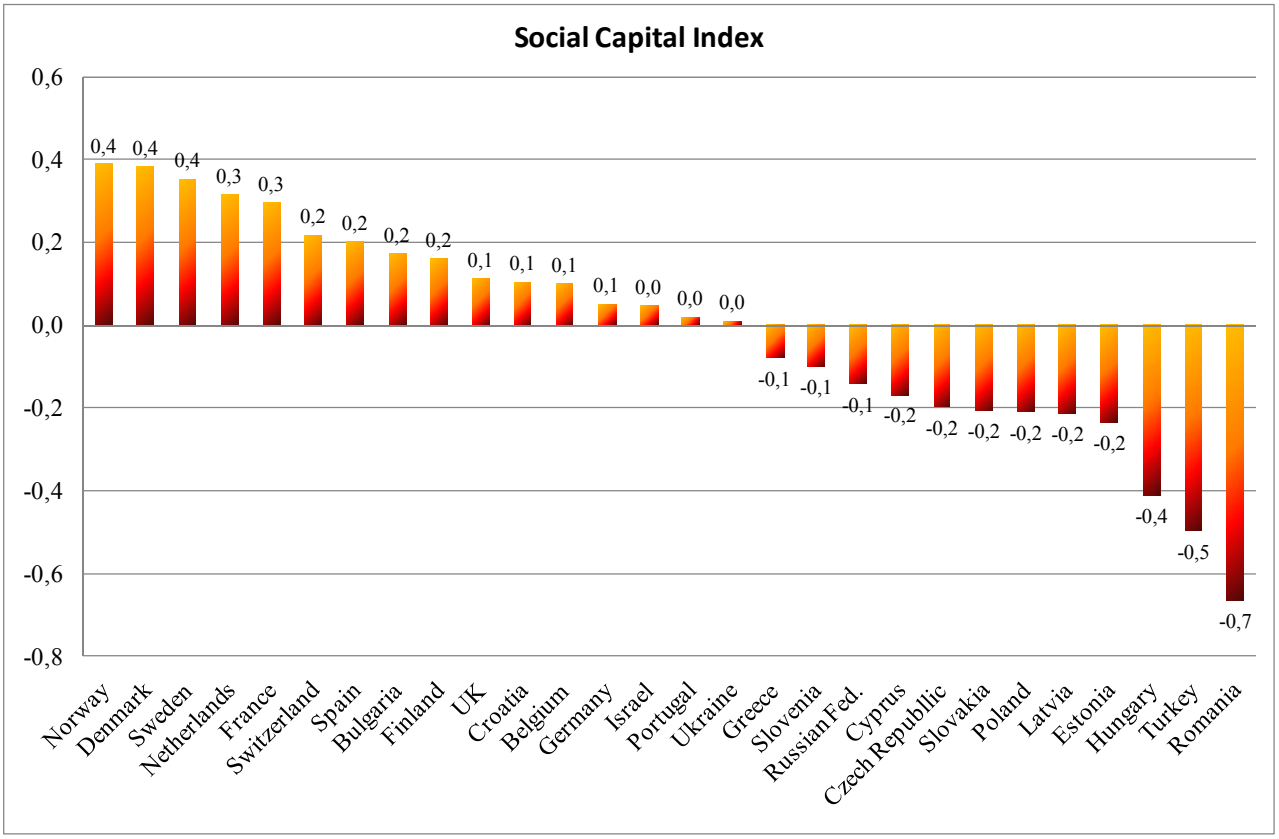

TABLE 5.A: Results of two-level regressions with individual characteristics, Women

WOMEN (20-50), N=14214	# Children	# Children + Partnership	Children-Partnership Interaction	Children-Employment Interaction	Parent vs Non parent	Parity
age	-0.071***	-0.120***	-0.112***	-0.116***	-0.120***	-0.124***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
age^2	0.001*	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
# Children	0.091***	0.011	-0.123***	-0.027		
	(0.015)	(0.016)	(0.033)	(0.022)		
# Years Education	0.057***	0.059***	0.057***	0.058***	0.059***	0.059***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Employed	0.117**	0.117***	0.122***	0.041	0.116**	0.115**
	(0.036)	(0.036)	(0.036)	(0.047)	(0.035)	(0.036)
Living w/ a partner		0.655***	0.534***	0.655***	0.654***	0.647***
		(0.036)	(0.045)	(0.036)	(0.037)	(0.037)
Living w/ a partner*# of children			0.165***			
			(0.036)			
Go to church (≥ once a month)	0.176***	0.163***	0.158***	0.162***	0.164***	0.166***
	(0.040)	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)
Employed*# children				0.067*		
				(0.027)		
At least one Child					0.027	
					(0.038)	
One Child						-0.031
						(0.043)
2 Children						0.106*
						(0.046)
3 Children						0.024
						(0.067)
4 Children						0.130
						(0.121)
5 or more Children						-0.300
						(0.159)
Constant	7.980***	8.525***	8.454***	8.518***	8.522***	8.589***
	(0.313)	(0.312)	(0.312)	(0.312)	(0.312)	(0.313)
Country level Variance	0.450	0.455	0.453	0.453	0.456	0.453
Individual level Variance	3.456	3.374	3.374	3.374	3.374	3.374
ICC	0.115	0.119	0.118	0.118	0.119	0.118

Note: standard errors in parenthesis. P-values: +p<=0.10:*+p<=0.05:**+p<=0.01***.

TABLE 6.A: Results of two-level regressions with individual characteristics, Men

MEN (20-50), N=12362	# Children	# Children + Partnership	Children-Partnership Interaction	Children-Employment Interaction	Parent vs Non parent	Parity
age	-0.106***	-0.157***	-0.157***	-0.154***	-0.159***	-0.160***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
age^2	0.001***	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
# Children	0.194***	0.070***	-0.029	0.011		
	(0.016)	(0.018)	(0.072)	(0.031)		
# Years Education	0.062***	0.060***	0.060***	0.059***	0.060***	0.060***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Employed	0.733***	0.638***	0.639***	0.583***	0.631***	0.633***
	(0.043)	(0.043)	(0.043)	(0.049)	(0.043)	(0.043)
Living w/ a partner		0.642***	0.624***	0.641***	0.603***	0.602***
		(0.042)	(0.044)	(0.042)	(0.046)	(0.046)
Living w/ a partner*# of children			0.104			
			(0.073)			
Go to church (≥ once a month)	0.151***	0.158***	0.156***	0.158***	0.168***	0.165***
	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
Employed*# children				0.077*		
				(0.033)		
At least one Child					0.194***	
					(0.045)	
One Child						0.159**
						(0.053)
2 Children						0.223***
						(0.053)
3 Children						0.218**
						(0.077)
4 Children						0.140
						(0.137)
5 or more Children						0.350
						(0.179)
Constant	7.837***	8.640***	8.634***	8.629***	8.668***	8.683***
	(0.317)	(0.321)	(0.321)	(0.321)	(0.321)	(0.322)
Country level Variance	0.478	0.500	0.501	0.497	0.507	0.505
Individual level Variance	3.222	3.158	3.158	3.158	3.158	3.158
ICC	0.129	0.137	0.137	0.136	0.138	0.138

Note: standard errors in parenthesis. P-values: +p<=0.10:*+p<=0.05:**+p<=0.01***.

FIGURE 3.A: Happiness, Childbearing, Social Capital and Socio-economic Development

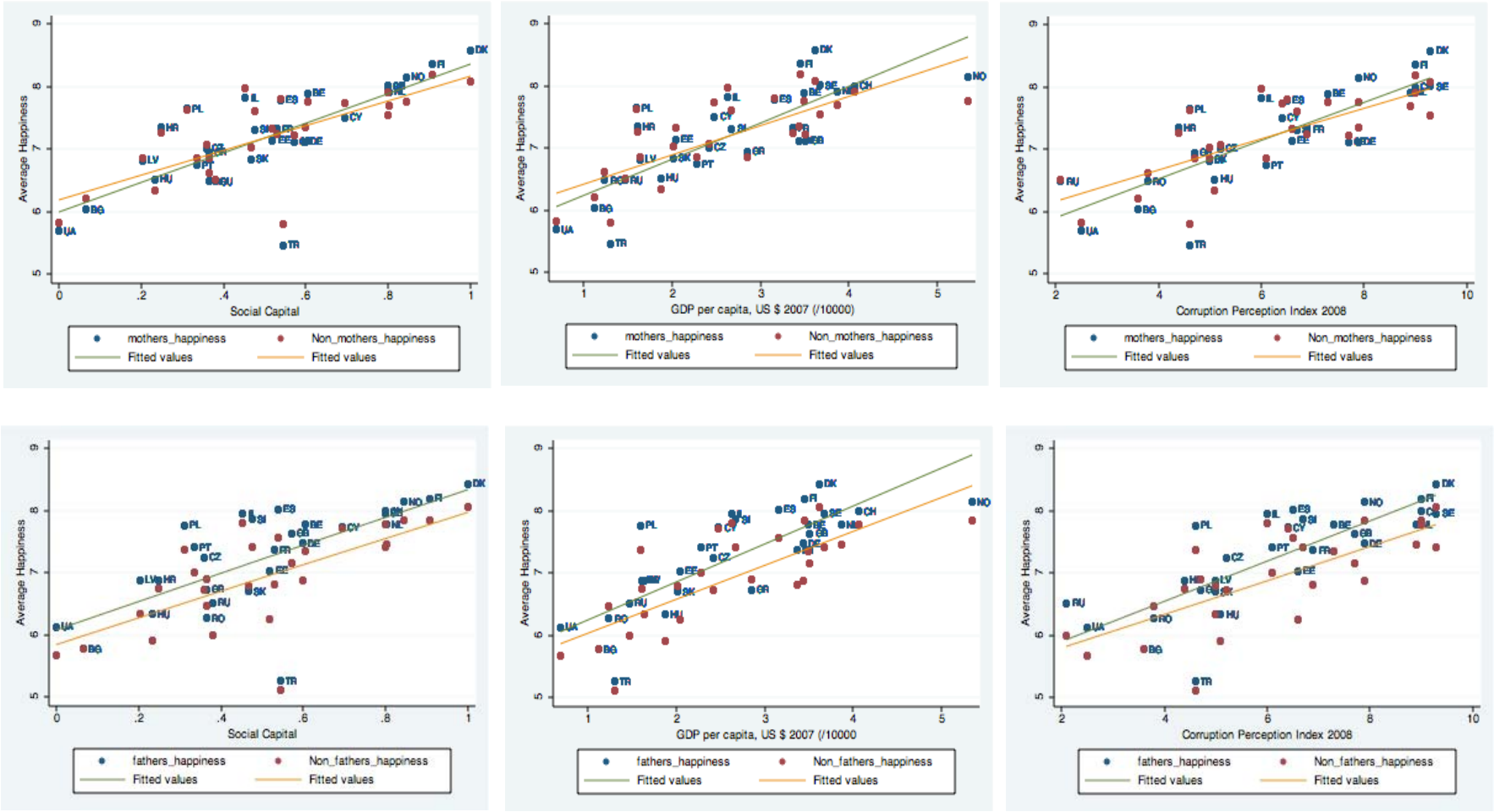

TABLE 7.A, Other Country-level characteristics

	WOMEN (20-50), N=14214			MEN (20-50), N=12362		
	Social Capital	GDP pc	CPI	Social Capital	GDP pc	CPI
# Children	0.012	-0.100*	-0.130**	0.070***	0.031	-0.015
	(0.016)	(0.039)	(0.05)	(0.018)	(0.041)	(0.053)
Social Capital (Country level)	1.472***			1.584***		
	(0.39)			(0.412)		
Social Capital * # Children	0.125*			0.075		
	(0.052)			(0.052)		
GDP pc (PPP US $), (2007) [/10,000]		0.456***			0.504***	
		(0.073)			(0.079)	
GDP*# Children		0.042**			0.014	
		(0.013)			(0.014)	
CPI (2008)			0.254***			0.266***
			(0.038)			(0.043)
CPI * # Children			0.023**			0.013
			(0.007)			(0.008)
Constant	8.525***	7.319***	6.935***	8.650***	7.337***	7.009***
	(0.302)	(0.348)	(0.371)	(0.31)	(0.364)	(0.401)
Country level Variance	0.280	0.160	0.143	0.316	0.189	0.194
Individual level Variance	3.374	3.374	3.374	3.158	3.158	3.158
ICC	0.077	0.045	0.041	0.091	0.056	0.058