



No Country for Young Girls:  
Market reforms, gender roles, and pre-natal sex  
selection in post-Soviet Ukraine

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October 2016

**WORKINGPAPER SERIES**

Number 425

**POLITICAL ECONOMY  
RESEARCH INSTITUTE**

## **No Country for Young Girls: market reforms, gender roles and pre-natal sex selection in post-Soviet Ukraine**

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## **Abstract**

Amartya Sen's seminal "100 Million Missing Women" brought to light the rapid increase of sex-selective infanticide in India. Since then, interest in the related problem of pre-natal sex-selection has proliferated. Most analyses of the phenomenon, however, have been restricted to developing countries and been carried out at the national or large sub-national region. Pre-natal sex selection is understood as a product of the pull to reduce family size caused by a "demographic transition" combined with the swift spread of modern scanning technology within a still traditional culture or kinship structure that prioritizes male children. This article opens up the analysis of sex-selective abortion geographically, methodologically and theoretically. Using household surveys, we demonstrate high levels of sex-selection in Ukraine, a country without any tradition of son preference. Detailed analysis of household data suggests that pre-natal sex selection can be understood in the altruistic acts of mothers seeking to protect their unborn daughters from the hardships associated with being a woman under postcommunist capitalism. Thus, theoretically, we move away from a reliance on demographic, cultural and technological explanations towards a political economy analysis.

Amartya Sen's seminal "100 Million Missing Women" brought to light the rapid increase of sex-selective infanticide in India (Sen 1989). Since then, interest in the related problem of pre-natal sex-selection has proliferated within the academy, think tanks, international organizations, NGOs and the popular press (UNFPA 2012; Giles and Feldman-Jacobs 2013; Economist 2010, 2013; Al Jazeera 2013; Douthat 2011; CDC 2006). Most analyses of the phenomenon, however, have been restricted to "developing countries", such as India, China, Vietnam, Pakistan, South Korea, the Caucasus and the Balkans (Zhu et al. 2009; Jha et al. 2010; Michael et al. 2013; Duthé et al. 2012; Guilmoto 2012; UNFPA 2012).<sup>1</sup> This focus on developing countries is consonant with the central assumption of the dominant account in the literature that emphasizes *dyssynchronous modernization*. Pre-natal sex selection is understood as a product of the pull to reduce family size caused by a "demographic transition" combined with the swift spread of modern scanning technology within a still traditional culture or kinship structure that prioritizes male children. The unintentional byproduct of this rapid technological diffusion within a culture of son-preference is pre-natal sex-selection against girls, when "new technology" is used to satisfy "old desires" (Duthé et al. 2012; Guilmoto 2012; Attané and Guilmoto 2007; Das Gupta et al. 2001; Bhat and Halli 1999; Hesketh and Zing 2006; Zhu et al. 2009; WHO 2011).

Despite a large literature, pre-natal sex-selection remains a poorly understood phenomenon at the sociological level, as no large-scale qualitative or quantitative research has been undertaken so far to describe parental motivations. Although some of the literature has pointed to general "population rules" that act as prerequisites for pre-natal sex selection—availability of cheap screening methods, access to abortion facilities, fertility decline, patrilocal household structure and son preference—demographers and sociologists have not engaged in more nuanced and dynamic explanations. In particular, academics interested in the topic have shied away from political-economy explanations, and focused their efforts on more cultural, demographic and technological factors.

In part, the preference for these apolitical explanations can be traced to technical statistical issues. Census data often contains problems and biases of a political and administrative nature, such as the ones described in the first section of the essay, while household surveys limit the types of plausible analyses because of their relatively small sample sizes. For instance, in our analysis below, disaggregating by mother's birth cohort and child's birth cohort, or by wealth quintiles and birth order, many cells were reduced to such small population sizes that no statistically significant results could be reached even when the trends indicated the strong presence of pre-natal sex-selection. These technical constraints have channeled the locus of analysis to the national level, where the sample is large enough to produce representative and statistically significant results. Thus, the greater the level of detail sought in understanding the

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<sup>1</sup> There is also concern that Indians and Chinese immigrants bring pre-natal sex selection with them to Europe. Much legislation has been discussed in the UK and the US to restrict abortion rights, an agenda pushed for particularly by the anti-abortion, Christian right (see DoC 2013; Barot 2012).

phenomenon of pre-natal sex-selection, the more unlikely it is to be statistically significant; the more sociologically substantial the story, and the less likely it is to get published. With larger sample sizes come greater odds of statistical significance (Frické 2015), and thus a systemic bias towards explanations that can indiscriminately apply to general populations, rather than to more specific sub-samples. Cultural explanations—such as “patriarchy” or “son preference”—are suited to such, population-level explanations, as they are indeterminate enough to embody a ‘national’ spirit that applies to the whole sample.

This article contributes to this literature in two main ways. First, we discuss evidence that pre-natal sex selection is occurring in Ukraine—a relatively “developed” country devoid of any cultural or kinship features currently believed to lead to son preference. Second, using household surveys, we paint a portrait of the types of families that are more likely to engage in pre-natal sex-selection. This detailed analysis of the Ukrainian household data suggests that pre-natal sex selection can be understood in the altruistic acts of mothers seeking to protect their unborn daughters from the hardships associated with being a woman under postcommunist capitalism.

This article has 3 sections. In the first, we discuss the evidence for pre-natal sex selection in Ukraine based on very high sex ratios at birth (SRBs) derived from two independent household surveys. We also discuss some reasons behind the failure of official statistics in Ukraine to adequately capture these elevated SRBs. In the second, we delve into the analysis of the household surveys. We find that the households that are most likely to engage in pre-natal sex selection are the more affluent and educated, have the greatest income inequality between spouses, and are where mothers are most likely to be subjected to higher workloads and severe physical abuse. Finally, mothers belonging to the age cohort that witnessed the collapse of the Soviet Union at the peak of their reproductive years seem to have been the most affected so far. In the conclusion we reflect on what these results mean methodologically and theoretically for our understanding of pre-natal sex selection from the perspective of political economy. We are not arguing that the existing understanding of pre-natal sex selection is wrong, only that it is incomplete. We argue for an opening up of the study of pre-natal sex selection to dynamic political and economic explanations, and that scholars should look for it outside of “traditional” societies.

### **Pre-Natal Sex Selection in Ukraine: fact or artifact?**

We believe that prenatal sex-selection in the Ukrainian case has gone unnoticed within professional demography for two major reasons. First, official registration data do not indicate that the sex ratio at birth (SRB) is outside the bounds of demographic normalcy. While the SRB did rise from 1.054 in 1988 to 1.067 in 2012 (WHO 2014), these rates are still far lower than the 1.11 in China or 1.12 in India (WB 2014). Second, Ukraine does not neatly fit into any of the dominant explanations of sex-selection that relies on *dyssynchronous modernization*. Neither cultural/traditional nor technological/demographic theories appear to have much purchase over this particular setting.

Although the Total Fertility Rate (TFR) decreased significantly in the period under consideration, as for much of the post-Soviet Bloc, Ukraine cannot be said to have experienced a “demographic transition” characterized by economic growth, smaller family sizes, and longer life expectancy. While fertility did indeed drop (the TFR was around replacement level in 1989, and it decreased steeply to 1.1 by 2000) this was accompanied by a drastic *increase* of the mortality rate and a collapse of standards of living. In 1993, for instance, inflation reached 10,000% while in 1994 real GDP growth was at -20%, and remained negative until 2000 (Ganguli and Terrell 2005). By 1995, the minimum wage had collapsed from 30% to less than 1% of the average wage (Brainerd 2001:143). At the same time, life expectancy had plunged from 70.5 years in 1989 to 67 in 1995. By 2007, the year the DHS was carried out, it had barely climbed back to 68, and today stands at 70.2 (WB 2015). Further, widespread access to screening technology also long predated the 1991 collapse of the Soviet Union (Cowan 1987; Woo 2010).

Nor did Ukraine have a culture of son preference. Ukraine underwent a very rapid cultural “modernization” in the post-1920s period, and has an historical record of high gender parity—often above its European neighbors—in terms of the wage gap, parliamentary representation, or education levels (Rueschmeyer 2011). According to nationalist lore, Ukraine has always been closer to a matriarchal than a patriarchal society (Rubchak 1996, 2009)<sup>2</sup>. In terms of kinship structure, Ukraine can hardly be characterized as “patrilocal.” Using Demographic Household Survey data, Grogan (2013) shows that a greater proportion of married women live with their family of origin than their in-laws (Grogan 2013:16, table 1). According to the DHS (our calculations), for the general population of younger women, about 40% stayed at home as opposed to 30% who moved to their in-laws. Finally, none of the extant literature suggests that Ukraine has a tradition of son preference.

### *Official Statistics in Ukraine*

Official registration data around the globe indicate that few countries significantly depart from the ‘natural’ human sex ratio of 105 boys born for every 100 girls, except for sub-Saharan Africa, where the ratio is closer to 103 boys for every 100 girls<sup>3</sup>. The recorded exceptions in the scholarly literature have now attained global fame. There are reasons, however, to doubt official data. Nationally reported data is compiled from registration systems whose coverage varies widely. According to the UN, a minority of countries (around 40%) has

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<sup>2</sup> The extent of such claims should not be taken too seriously, as the historical evidence is scarce and the notion of a matriarchal myth has been popularized against that of patriarchal Soviet internationalism. Yet, Rubchak—herself a powerful critic of the authenticity of the nationalist myth of the *Berehynia*—recognizes the suspicious importance of the survival of this myth.

<sup>3</sup> The reason for these below average sex ratios at birth has to do with the relative “fragility” of male fetuses, i.e. their higher rates of intra-uterine and perinatal deaths relatively to female fetuses, usually estimated at 120:100 (Naeye et al. 1971; Chahnazarian 1988), and compounded by highly stressful environmental, political and economic conditions.

sufficiently invested in their registration system to cover more than 70% of their population, at least in registering deaths (Mahapatra et al. 2007). Although the registration of births is technically easier and the coverage usually more extensive than for deaths (UNICEF 2014), perinatal mortality statistics—including fetal deaths, still births and neonatal deaths—are still highly problematic and have a great impact on birth registration because at age 0, births and deaths are intimately related<sup>4</sup>. At a legal level, the widely differing definitions of these vital events prevent fruitful comparisons between countries. Whether life begins at 28 weeks or 22, or whether a fetus is viable at 1000g or at 500g, is a matter of legal and political dispute. Countries undergoing rapid political changes, such as those of the former soviet bloc, displayed a peak in infant mortality in 1992, mostly because of changes in classification of stillbirths and livebirths more in line with the WHO's International Classification of Disease (ICD)-10 (Gourbin and Masuy-Stroubant 1995). Even technological changes can lead to confusion within these data. For instance, in the past few decades, the emergence of new obstetric practices—such as cesarean delivery—have led to a higher incidence of still births or a greater rate of non-registration of the vital event, for events previously recorded as miscarriages. Finally, countries that allow for registration or notification delays for the birth/death event, heavily underrepresent their neonatal mortality rates. In France, for instance, a survey carried out in Calais showed a discrepancy of 12% between registered and non-registered neonatal deaths (Gourbin and Masuy-Stroubant 1995).

For the post-Soviet Bloc, these trends were severely compounded by a number of other issues. Completeness of registration of births fundamentally relies on providing legal privileges and welfare provisions (maternity/paternity leave, help with burial, birth allowance, etc.) to both parents and children. Where social welfare cutbacks have been implemented systematically—as in the post-Soviet bloc (PSB)—the appeal of such incentives has been severely reduced, and consequently a much greater rate of unregistered neonatal deaths is to be expected (Yengenyanyan et al. 2001; Manchini and Marnie 2007:35). A second problem specific to the post-Soviet bloc has to do with legal definitions and categorization. Most countries in the region have by now adopted the international criteria stipulated in the International Classification of Disease 10<sup>th</sup> revision (ICD-10), but still insist on more stringent measures for registering a live birth. Instead of defining fetal viability by weight (1000g), or height (35 cm), or gestational age (28 weeks), a great majority of Post-Soviet Bloc countries require all three criteria to count a live birth (Andreev 2012; Velkoff and Miller

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<sup>4</sup> The UNICEF widely uses an indirect method based on Multiple Cluster Indicator Surveys (MICS) rather than direct registration of live births in many poorer countries. With this method, instead of calculating neonatal and perinatal death rates from registration figures, the government extrapolates from small representative surveys, and extrapolates neo/peri-natal mortality rates by comparing the number of children ever born to a woman and the number of children that have survived. This allows for fairly accurate estimates, *assuming the surveys were carried out appropriately*. Even minor errors in these small sample surveys can lead to major errors in national level child mortality rates (Mahapatra et al. 2007).

1995). Children born under such legal definitions are also required to survive for a specified period before being registered. This further specification can lead to high underrepresentation of neonatal mortality (Gourbin and Masuy-Stroubant 1995). Finally, if a delay of notification or registration is acceptable up to 24 hours in France, the post-Soviet bloc accepts much longer time spans, ranging from two weeks in Russia to four weeks in Ukraine (Andreev 2012; State Registration Services of Ukraine 2014<sup>5</sup>); and the longer the delay, the higher proportion of preterm fetuses will go unregistered. In 1992, according to official statistics only 5% of children who died did so within 24 hours of their birth in Russia, as opposed to 30% for a rich country like Switzerland where registration delays are not legal. As a result, a great majority of children who died before the legal delay were simply not registered at all, reducing the incidence of child mortality in Russia, a potential political goal of many state officials (Gourbin and Masuy-Stroubant 1995).

In Ukraine, the specific political and historic situation adds another layer of opacity to the accuracy of the civil registration system. Most prominently, the Ukrainian state has historically discriminated against two large minorities, the Roma and the Tatar, representing about 10% of the entire population, in terms of their access to registration (Dow 1998; Kuzio 2009). This could heavily bias the data to an extent that it is hard to calculate prenatal mortality with any accuracy given the absence of survey data about these specific subgroups.

Beyond this, separated couples where the mother has custody of the children—even if they remain on speaking terms—may take a long time to mobilize and get together to register a child. Given that article 212 of the Ukrainian Family Code imposes a penalty averaging two months' salary for any registration later than 30 days after official birth, this could contribute to disenfranchising poorer parents from official registration systems (State Registration Service of Ukraine 2014<sup>6</sup>). The very rapid increase in labor migration after 1992—with patterns of seasonal migration for male workers—makes this problem a potentially widespread issue. Combined with the possibly lower coverage of the civil registration system after the collapse of the USSR because of lower allocation of funding—thereby increasing the possibility of understaffing, of fluctuating operational hours, of the introduction of fees for registration of birth and death events, of corruption for child traffic and illegal adoption—this paints a rather bleak picture of the validity of the official registration data (see UNICEF 2002 for more on these trends)<sup>7</sup>.

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<sup>5</sup> Article 144 of the Family Code of Ukraine states: “The parents shall register the child’s birth in the body of state registration of civil status acts without delay but not later than one month after the child has been born” (State Registration Service of Ukraine 2014)

<sup>6</sup> Article of 212 of the Code on Administrative Offences of Ukraine reads thus: “State registration of child’s birth conducted untimely with no valid excuse by parents at the bodies of state registration of civil status acts shall entail imposition of a penalty ranging from one to three non-taxable citizens’ income”.

<sup>7</sup> For example, the TransMonEE database compiled by the UNICEF using national statistics often indicates up to 110% of children enrolled in primary or



Administrative manipulations of the data could also have introduced significant bias in favor of female births in the official data. At the height of the Cold War, political pressures introduced severe manipulations in all aspects of vital statistics, ranging from birth or mortality rates to sex ratios at all ages of the population (Tolts 2008). In the context of the post-Soviet social crisis, regional as well as central statistical offices have been noted to be prone to statistical manipulations of mortality (Gavrilova et al. 2008). The current nationalist anxiety around a post-Soviet fertility crisis could have given birth to political directives exaggerating upwards the absolute number of births for the population, or directly covering up the sex ratio at birth imbalance, which Western media, academics, and politicians have systematically portrayed as a marker of “lower development”, and therefore a source of national shame.<sup>8</sup> Another main cause of administrative manipulation could be economic. Pro-natalist policies encouraging traditional family models—such as the maternity capital program in Russia or the extremely generous lump-sum maternity grants in Ukraine (Wesolowski and Ferrari 2012; Council of Europe 2005, 2005a)<sup>9</sup>—could have encouraged regional statistical offices to modify the number of births upwards in order to secure more grants from the government—with or without parental cooperation. In all three cases—whether to deflect the political pressures of a fertility crisis, a sex-ratio imbalance or for purely financial reasons—administrators would most likely increase the number of births by using a 1:1 or a 1.05:1 ratio. Whichever method they use, the official SRB will be biased downwards in relation to the real figures.

#### *Household Survey Data*

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secondary schools in Ukraine (as a percentage of the total population of children)! See UNICEF 2014 table 5.2.2 for more on this.

<sup>8</sup> When the first author presented these findings at a conference in Moscow, he was directly accused of such imperialist maneuverings—accusations that many other authors have faced when presenting similar findings in the Post Soviet Block (Hrvistendahl 2009; Guilmoto 2010).

<sup>9</sup> In their comparative piece on European family policies, Wesolowski and Ferrari (2012) note that Ukraine has the highest such regime of welfare support for childbearing amongst all its European neighbors, and by a large margin. The Ukrainian maternity grant currently replaces 70% of the net average worker’s yearly wage, as opposed to 8% in Russia or 1% in Northern Europe and 2% in Anglophone countries or Japan!! The latter group of countries usually prefer to use fiscal benefits, or other methods to encourage child bearing. Such high maternity grants are exceedingly rare in welfare regimes. Soviet policies had introduced maternity grants since 1944, but few countries kept it to such high levels after the collapse of the USSR. Russia, in its own way, follows as a close second through its maternity capital program, providing more than 300,000 rubles for mothers for any child after the first. Because this “capital” is not given to the mother in cash, but rather as a subsidy for housing, for the education of the child, or as a compensation for unearned funds towards her retirement, it might be a bit more difficult for Russian provincial officials to take advantage of these provisions. In Ukraine, the direct cash benefits to families make the process described above a very distinct possibility.

We believe pre-natal sex selection to be substantially higher than official statistics indicate based on an analysis of two independent household surveys, the Demographic and Household Survey (DHS) as well as the Reproductive Health Survey (RHS). The first dataset is an international multiple indicator cluster survey producing a nationally representative probability sample reproduced for the past 20 years in more than 60 “developing” countries focusing on household reproductive health, family planning strategies, as well as a series of socio-economic and attitudinal indicators. It is funded by USAID and carried out by the consulting firm ICF International, in partnership with Johns Hopkins Bloomberg School of Public Health, amongst others. In Ukraine it was carried out in 2007. The second, while similar, has a slightly more limited scope in space and time, and slightly different set of indicators. It is funded by USAID and carried out with technical assistance provided by the Center for Disease Control and Prevention in 1999. It is not a probability sample—despite the similar sample size—because of the absence of a primary sampling unit.<sup>10</sup> The DHS records data for 8007 children and 4811 mothers aged between 15 and 49; the RHS 8110 children and 5950 mothers aged between 15 and 44. Both are highly reputed and rigorous international datasets, used in hundreds of scholarly articles. Throughout this study, however, the DHS—due to its representativeness —will be given precedence over the RHS, which will be used to confirm main trends.

## Sex Selection at Birth in Ukraine

**Table 1: Sex Ratio At Birth For All Births and By Birth Order**

	DHS	DHS (weighted)	RHS
SRB total	1.134 (CI: 1.130-1.138) P-value = 0.007 N = 8007	1.131 (CI: 1.128-1.135) P-value= 0.003 N = 7649.02	1.169 (CI: 1.146-1.193) P-value: 0.0000 N = 8130

<sup>10</sup> Due to the massive dislocation of households in the wake of Soviet collapse a new census was only completed in 2001.

SR first birth order	1.134 (CI: 1.124-1.145) P-value= 0.004 N = 4811	1.145 (CI: 1.14-1.149) P-value= 0.008 N = 4758.91	1.181 (CI: 1.151-1.211) P-value: 0.0000 N= 5027
SR second birth order	1.150 (CI: 1.134-1.164) P-value = 0.012 N = 2500	1.129 (CI: 1.123-1.135) P-value= 0.101 N = 2302.57	1.181 (CI: 1.138-1.223) P-value = 0.0017 N = 2534
SR third birth order	1.016 (CI: 0.986-1.046) P-value = 0.3588 N = 494	0.989 (CI: 0.988-0.99) P-value= 0.548 N = 423.08	1.030 (CI: 0.931-1.128) P-value = 0.5983 N = 412

*Note: Significance tests in all tables related to the Sex Ratio at Birth are binomial tests ascertaining that the observed outcomes are different from the expected outcomes (1.05) in a statistically significant way.*

*The number of births differs from the figures presented in the text because twins were dropped out of the data. Their numbers represent a fraction of the births (0.05%), and thus have a negligible impact on the analysis.*

Both surveys estimate very high SRBs, well above the typical ratio of 1.05 or the official ratio of 1.07, and indeed well above the national average for India and China<sup>11</sup>. These differences are highly statistically significant. Moreover, the bulk of any sex selection seems to be occurring at the first and second birth, with both estimates demonstrating statistical significance and being well within the confidence intervals of the overall SRB estimate. This contrasts with most accounts of elevated SRBs elsewhere, where prenatal sex selection seems to be occurring at later births (Das Gupta 2005; UNFPA 2012). The convergence of the overall figures, collected in 2007 and 1999 respectively, strongly indicates that the trend is no statistical artifact. The robustness of the results was further corroborated by placing various restrictions on the dataset—such as 1, 5, 10 or 15 year limits from last birth to day of interview, or single-birth and male completed birth histories, with the same findings (see table 1a in Appendix). On the basis of this data, it seems extremely likely that prenatal sex-selection is taking place in Ukraine on a large scale.

The increase in the official SRB from 1.054 to 1.067 from 1988 to 2012 is probably a substantial underestimation of the actual rise in the SRB, and thus of prenatal sex-selection. However, even the conservative official increase of 0.013 translates into about 25,000 “missing woman” for the period between 1988 and 2012. Basing this projection on the DHS SRB estimate of 1.132, the number of missing women in Ukraine would jump up to approximately 200,000, for the same period! This would mean that approximately 4% of all girls born in Ukraine over a period of 15 years have been aborted before birth. In the next section, we delve into the household data to glean insight into meaningful mechanisms behind this phenomenon.

#### *Portraits of prenatal sex selection*

The use of household surveys for the study of SRBs is quite rare, and has often been limited to calculating SRBs by birth order, to test whether the probability of having a boy increased at later birth orders depending on the sex

<sup>11</sup> But not above the highest *regional* averages in India and China

of the earlier children. These analyses usually rely on an implicitly homogeneously causal argument, namely, that independently of the causal mechanism(s) all households within the country are affected with a similar, average rise in the SRB. However, great variations occur between households, and these variations have so far not been taken into serious consideration.

In this article, we go beyond this type of homogeneous causal effect model to study the characteristics of groups of respondents with different SRBs, and to paint a portrait of average sex-selecting households. Which households seem most likely to perform sex-selection at birth? Why would that be the case? This allows for a relaxation of overly generalizing assumptions. Sex-selection at birth is a heterogeneous phenomenon and might mean very different things for very different groups of people. The assumption that it is always the result of one set of factors—such as decline in fertility, in the presence of son preference and greater technological access—paints an overly deterministic and mechanistic picture of human action and, in particular, of fertility decisions, which tend to be complex, dynamic, and charged with subjective expectations, symbolism, conflicts, etc. The section below will demonstrate the ways in which this sociological approach to pre-natal sex-selection can be necessary to make sense of patterns in the data.

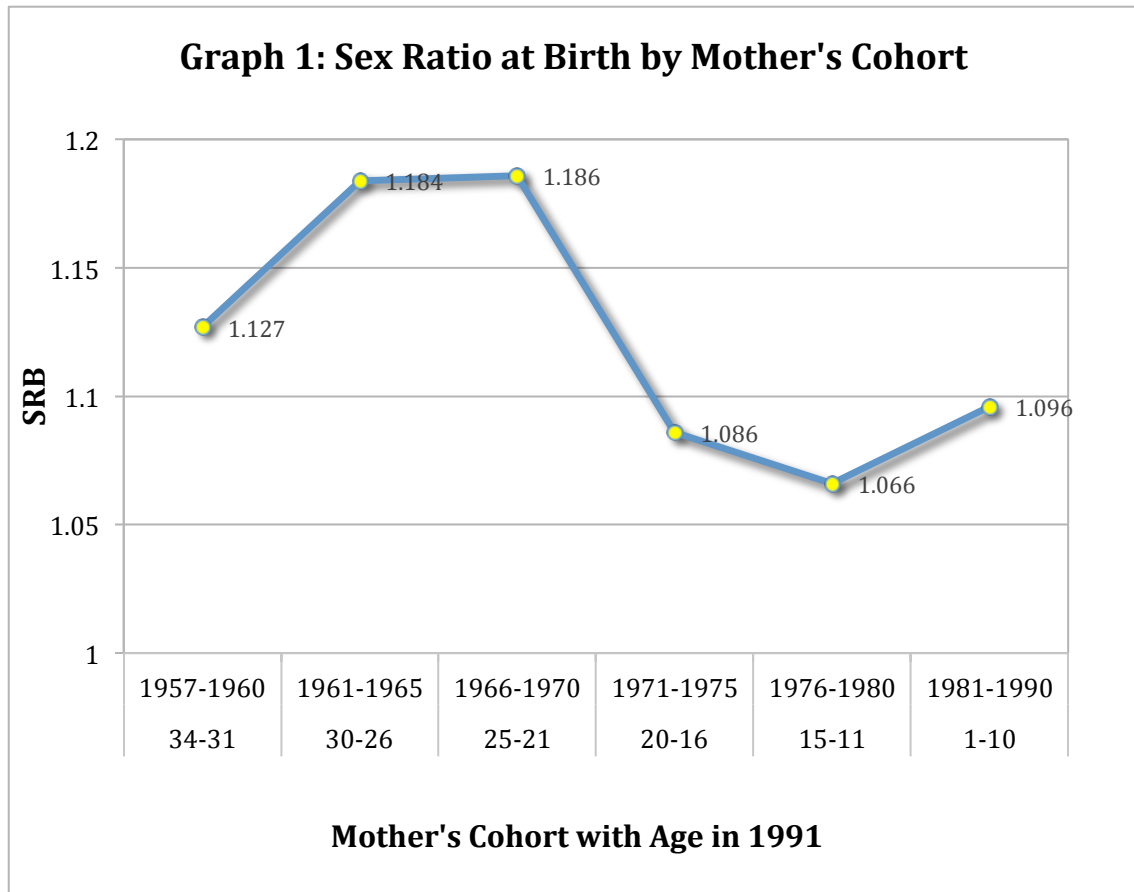
### *General Characteristics:*

#### *Age*

Disaggregating by cohort of mother and child, SRBs are most elevated for mothers who were in their prime child bearing age around the time of the transition from communism to capitalism, roughly during the decade spanning 1991 and 2001 (see graph 1)<sup>12</sup>. Using traditional thresholds for statistical significance, mothers who were of prime reproductive age at the time of the transition (born from 1966-1975), i.e. 21-30 in 1991, seem to have engaged in prenatal sex selection to a much greater extent than others.

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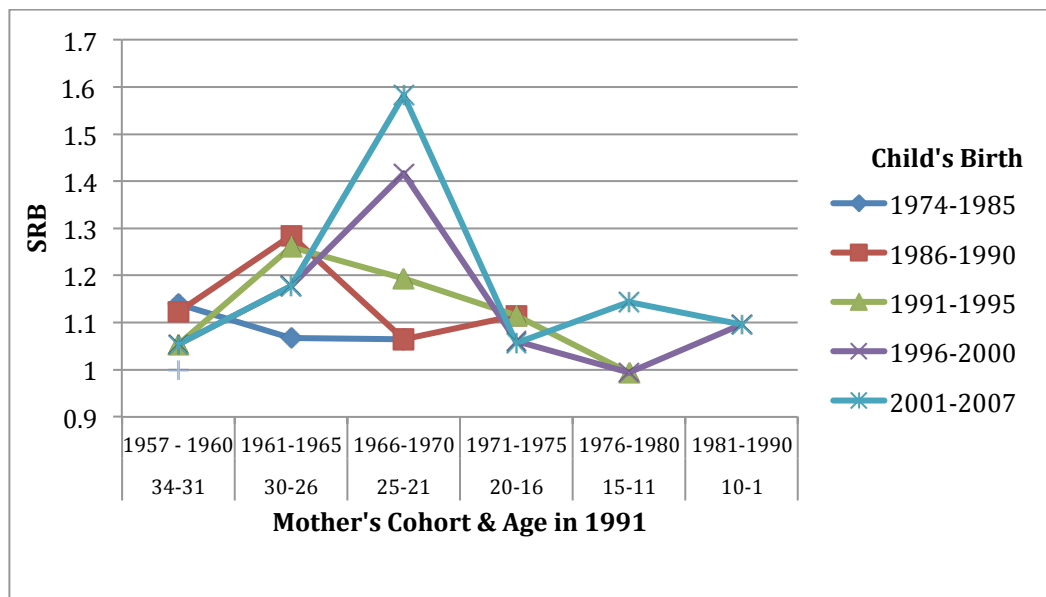
<sup>12</sup> Strikingly, the two datasets converge almost seamlessly, despite their differences in sample selection, and despite the time lag in data collection, 1999 for the RHS and 2007 for the DHS. See Appendix Table 3



Source: DHS 2007

In graph 2 below we look at SRBs by both mother's age and child birth cohort. The parallel peaks for these two cohorts are very visible: Mothers who were 26-30 in 1991 see their SRB peak for the 1986-1990 and for the 1991-1995 birth cohorts, whereas mothers who were 21-25 in 1991 show a peak for the 1996-2000 and the 2001-2007 birth cohorts. The SRBs in these peaks are statistically significant at the 5% level.

**Graph 2: SRB, disaggregated by Mother's and Child's Cohort**



Source: DHS 2007

### *Socio-Economic background*

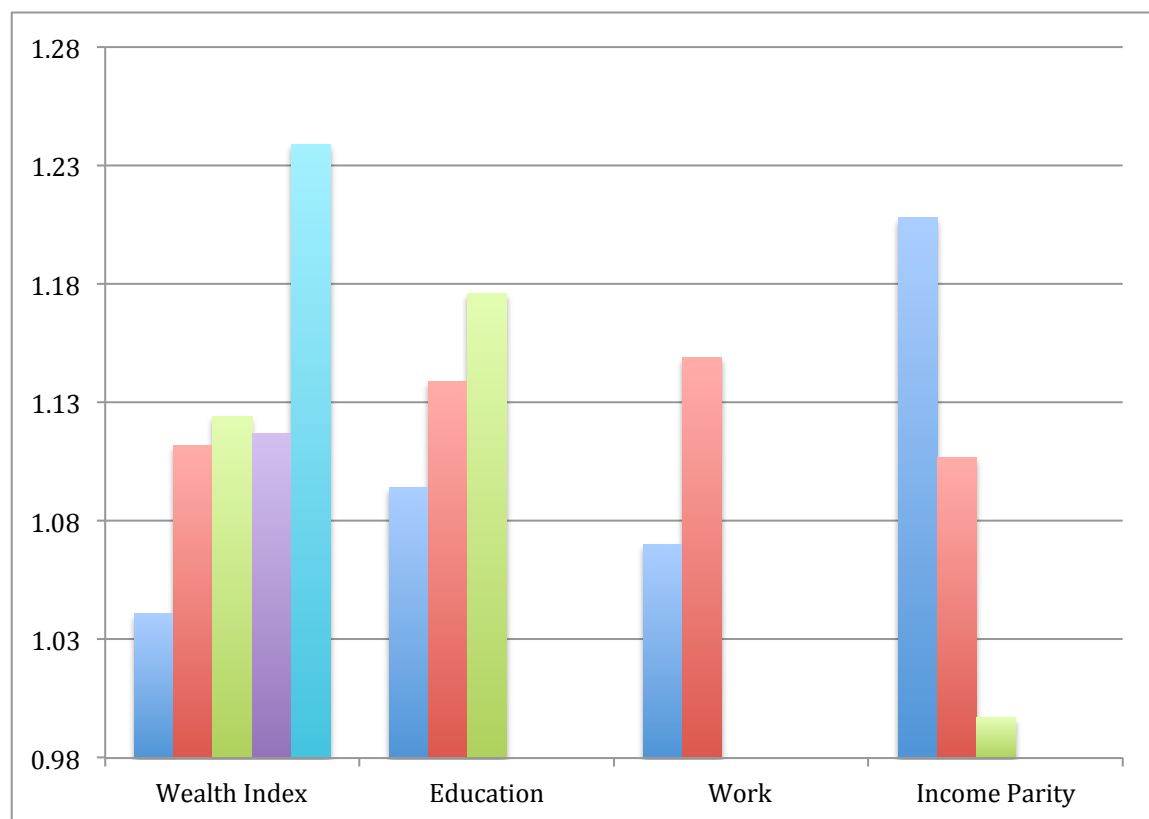
The basic socio-economic indicators for Ukrainian mothers most likely to engage in pre-natal sex-selection point to wealthy, educated, and employed mothers. As can be seen in Graph 3, the wealth gradient for the SRB is remarkably steep, with SRBs ranging from 1.04 for the poorest mothers to 1.24 for the richest in an almost linear progression (statistically significant difference at  $p=0.033$ ). The same goes for education, ranging from 1.09 for mothers without a university degree to 1.18 for mothers with a PhD ( $p=0.05$ )<sup>13</sup>. In other contexts, similar skews have usually been attributed to lack of access to screening technology or abortion clinics for poorer populations (see Jha et al. 2010 for instance). In Ukraine, however, such an interpretation is unlikely, as abortion clinics are very accessible, both spatially and economically. Within the DHS, Ukrainian women display relatively high abortion rates. At around 1 abortion per mother on average, and with a fairly flat distribution—58% of the poorest women report never having had an abortion against 55% of the richest—the socio-economic skew towards the richest, employed and most educated women has to find another explanation than lack of access to screening technology or abortion clinics.

Work status provides an important piece to this puzzle, as it is a particularly strong indicator of pre-natal sex-selection that is only mildly correlated to household wealth levels ( $r(8000)=.25$ ;  $p=0.000$ ): mothers who do not work display relatively normal SRB level, at around 1.07, whereas mothers

<sup>13</sup> Education in Ukraine is only moderately correlated to affluence levels [ $r(8000)=.36$ ,  $p=0.000$ , cf. Appendix 2], and therefore the “education gradient” in the SRB should be taken independently of the issue of household income. The correlation is further complicated by the fact that mothers’ age also strongly negatively correlates with education [ $r(8005)=-.64$ ,  $p=0.000$ ].

who work display high SRBs, at 1.15 ( $p=0.002$ ). Amongst working women, self-employed mothers as well as mothers employed by strangers exhibit much higher SRBs than mothers employed by relatives—following a gradient from most stressful to least stressful work type in the literature<sup>14</sup>. At the same time, working mothers who report earning less than their husbands present much higher SRBs (1.20;  $p=0.000$ ) than mothers who report earning more than their husbands (1.00;  $p=0.625$ ) or earning the same (1.1;  $p=0.429$ ). All these trends are intensified for the two cohorts of mothers most affected by the transition. Within these cohorts, the difference between working and non-working mothers in SRB climbs to 1.20 and 1.07. Taken together, these trends point to a correlation between female labor force participation, wage inequality and pre-natal sex-selection, indicating the Ukrainian labor market might be creating propitious conditions for higher rates of pre-natal sex-selection.

**Graph 3: SRB, disaggregated by socio-economic indicators**



*Note: All categories above are grouped from least to most: poorest to wealthiest quintiles, lowest to highest degrees, absence of work vs working, lower to higher income relative to partner; Source: DHS 2007.*

## Discussion

<sup>14</sup> Self-employed women have been noted to exhibit extremely high levels of stress, anxiety, depression, and self-harming tendencies around the world. Conversely, women who find employment within extended family networks tend to stand at the opposite end of the stress spectrum (see Jamal 1997; Blanchflower 2004 for a review of the literature).

Ukraine presents us with a case of sex-selection that defies explanations developed in other contexts. Piecing together the survey results presented above and the larger historical qualitative literature on post-Soviet society allows us to shed light on some of the uncommon trends under observation. It is possible that a number of mothers increasingly opted against female pregnancies because of the perceived difficulties they faced in assuming the role of woman in a transitional space that devalued female labor and life. Amongst this group, mothers who were in the early phases of their reproductive cycle were particularly negatively affected in that their expectations about career, housework, and participation in the public sphere suffered a sharp unraveling—as opposed to mothers who were near the end of their reproductive cycle or who hadn't entered their reproductive cycle at the time of transition, and whose fertility decisions were significantly less affected by these life-course disruptions.

### *Son Preference and the Second Shift*

Households that are prone to sex selection at birth share a few common characteristics underlined in the previous section, namely, they are more affluent, more educated, have greater income inequality between spouses in favor of the male, and the mothers are more likely to be subjected to higher workloads and severe physical abuse. Finally, mothers belonging to the age cohort that witnessed the collapse of the Soviet Union at the peak of their reproductive years seem to have been the most affected so far.

This household disaggregation of pre-natal sex-selection in the DHS coincides with a number of trends within post-Soviet Ukraine. In this context, it is important to note that non-working mothers are almost entirely unaffected by the rise in SRBs, suggesting that working conditions and remuneration must play a very important role in our understanding of pre-natal sex-selection. As noted above, by 1995, the minimum wage had collapsed from 30% to less than 1% of the average wage, a trend that was partially reversed by political decree after 2003 (Brainerd 2001:143). Women were predominately affected by this collapse of the minimum wage as they occupied the bottom of the wage distribution. At the same time, working women with the highest income are also strongly negatively affected by glass ceiling effects as the wage gap differential widens most intensely at the top of the distribution curve (Ganguli and Terrell 2005). Finally, the crowding out of women from the highest paying sectors within the labor market has been prevalent in favor of their male counterparts (Brainerd 2000; 2008). At first birth, it is the average woman who has been pushed out of relatively better paying jobs for devalued professions that earn them lower pay.

Another important issue facing women's career trajectory has to do with domestic labor. Post-Soviet feminists agree that the amount of hours dedicated to household chores and care labor increased so much in the aftermath of the transition as to constitute what they have dubbed a "second shift" (Ashwin 2000). This increase in gendered household labor is in large part connected to the collapse of state welfare provisions: as the Soviet state privatized some of its basic welfare functions, such as daycare, healthcare, or elderly homes, tasks such as caring for children, the sick or the elderly were rapidly taken up by post-



Soviet women (Ashwin 2000; Buckley 1997; Ashwin and Lytkina 2004). In Ukraine, for instance, the percentage of 0-2 year olds in nurseries went down by 50% between 1989 and 1993, from 30% to 15% of the child population, and has remained at that level ever since due to the discontinuation or privatization of nurseries (UNICEF 2014). For the elderly, the devaluation of savings due to inflation, coupled with a large cutting of pensions down to 20% of the minimum wage, led to the extreme pauperization of this segment of the population. According to a 2004 large-scale survey, about 97% of Ukrainian elderly (above 60 years) were incapable of affording medical care (Blyumina 2005:45). The multiple consequences of the second shift on women's lives are hard to fully chart out, however, some historical accounts, outside of Russia, have linked an increase in domestic violence and a public devaluation of female gender roles and care work as a necessary precondition for obtaining free extra labor from women (Federici 2000).

Given the great leaps in domestic violence levels in post-Soviet Russia as well as the newly negative depiction of women in the public sphere, this historical pattern carries some purchase. Domestic violence levels reached unimaginable proportions after 1992, claiming more than 14,000 female lives per year, a figure about 30 times higher than prevalent rates in the US, and which constitutes approximately 50% of all female death by homicides in Russia (HRW 1997, Johnson 2001). Under-reporting and police cooperation however made estimations quite unreliable, and the figure above probably stands on the more conservative side. Forced cohabitation with a former partner, as well as increasing dependency on husbands were identified as the main factors driving up the shocking rates of domestic violence across the FSU (Atwood 1997). At the level of representation, other forms of physical and psychological violence against women have proliferated since 1992: the porn industry has spread like wildfire (particularly in Hungary and Russia), prostitution rates skyrocketed—with up to 64% of males using such services in Russia for instance (Roschin and Zubarevich 2005:35)—as well as sexual slavery, human trafficking, and exports of brides (Buckley 1997; Aral and St. Lawrence 2004). At the same time, representation in parliament dropped from a 30% mandatory quota system in the mid-1980s to less than 1% in the first national elections in 1994 (Andreenkova 2002). From great workers and mothers, the heroines of the Soviet Union devolved quickly into porn stars, sex-workers, and mail brides.

All in all, claiming that women who grew up under the much more egalitarian Soviet system have undergone a massive shock in their expectations of gender roles remains a great understatement<sup>15</sup>. Under such circumstances,

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<sup>15</sup> The above-mentioned changes in public representations of women, the reprivatization of motherhood, the unprecedented explosion of domestic violence and prostitution, the disappearance of women from the political scene and the reinforced occupational segregation have inspired some Russian and Western observers to use the term “patriarchal renaissance” (Azhgikhina, 2007) to characterize the socio-cultural process by which men have been reasserting the power of the husband, father and the “strong male” over the female members of their family, reviving gender-roles that belonged to a mythical, unsullied past

giving birth to a girl might indeed come to be viewed by some of these mothers—particularly the ones who began their fertility cycle in the midst of socio-economic collapse of an order that had shaped their life expectations, well-off and educated, working but paid less than their husbands—as unacceptable. In an environment where women abruptly started suffering from systematic social, economic, political discrimination; being subjected to massive commodification of their looks and decommodification of their labor, to extreme forms of domestic violence and sexual trafficking, would it be ethical to bring a girl into the world? If the hyper-exploitation of female labor has been an integral part of the post-Soviet state-led transition to market rule, then can sex-selection against girls be understood as a form of political protest, a voting with the uterus<sup>16</sup>? What sex-selection in Ukraine suggests is the possibility that gender has become the new frontier of politicized selection at birth for biological parents. Under circumstances that need greater specification, being a female can be perceived as a disability against which some parents—for instance, mothers whose life expectations have been heavily disappointed—may want to protect their future child, and themselves, from greater expected suffering.

### *Ukrainian Exceptionalism?*

While the mortality crisis and the “patriarchal renaissance” offer important clues as to a number of diverse pathways to pre-natal sex-selection in Ukraine, they suffer from some limitations. Notably, similar trends in mortality and gender shocks did befall other post-Soviet societies without registering spikes in their SRBs. What explains this Ukrainian exception then? Further, the

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before the Soviet era or to what is often perceived as “Western” practices (Atwood, 1997). This “patriarchal renaissance” also brings to mind associations with a number of other socio-cultural backlashes following the transition period, such as the rise of neo-nationalist movements, of religious fundamentalisms and of ethnic fragmentation and violence

<sup>16</sup> This is not unheard of. Parents make qualitative decisions about children all the time, in particular when it comes to adoption or abortion. On the “adoption market”—as economists like to refer to the matter—parents can express all sorts of eugenicist “preferences” based upon race or cognitive/physical impairment, and sometimes sex, without facing social pressure or exclusion, and without recognizing the politically determined nature of their preferences, and in particular the collusion of state regulations in the matter (Bertholet 1993; 1998). For instance, it is well known that white US-American parents prefer to adopt phenotypically white or Asian children, on the grounds that it will facilitate social integration for both children and their parents. US-American parents also by and large prefer to adopt girls (Chandra et al.1999), because they fear the teenage crisis that an adolescent boy would unleash upon them. Cognitively or physically impaired children tend to be left-out of the ‘adoption market’, and remain in orphanages and special homes for most of their childhoods (Chandra et al. 1999; Bertholet 1998; Barth 1997; see Ertman 2003 for a defense of such outcomes). Abortions in Euro-America also follow similar trends, mostly selecting against cognitive-physical impairments.

possibility of biological explanations in critical socio-economic contexts cannot be ruled out. While answering these questions in a systematic manner lies outside of the purview of this article, a perusal of extant datasets and of the SRB literature allows for some preliminary answers to these questions.

Regarding the question of Ukrainian exceptionalism, SRB developments in Ukraine seem in line with SRB trends in other post-Soviet states. Looking through official birth data (UNPD 2006), a noticeable rise in the SRB can be detected across a selection of post-Communist states between 1990 and 2005: from 1.052 to 1.062 in Russia, 1.042 to 1.058 in Slovakia, 1.059 to 1.062 in Romania, for instance. Considering the general stability of SRB levels for large populations over long periods of time, these stable trends—although of a slight nature—should not be taken lightly. In many Central and Eastern Europe countries that did not display a rise in the SRB, a noticeable increase in female infant mortality can be observed right after the transition while male infant mortality decreased (see Table 2 in Appendix). Where smaller household surveys are available, we find similar patterns of spikes in SRB after 1990—most spectacularly in the Caucasus and the Balkans (Michael et al. 2013; Meslé et al. 2007; Guilmoto 2012), which official birth registration statistics also reflect, to a lesser extent.

Thus, one could entertain two possibilities. On the one hand, official statistics—although they register some of the rise of the SRB—conceal a great spike in the SRB because of similar issues as the ones described above for Ukraine, ranging from incomplete registration to official and informal statistical manipulations. Although many of these trends are likely to impact estimates of the Total Fertility Rate in a minor way, they could, however, have a significant impact on the sex ratio balance of the population at birth. The underrepresentation of neonatal mortality in the official data—by a factor potentially as high as 50% (Aksyonova and Kostova 2013)—is very likely to under-represent official male births. This is due to the now widely accepted hypothesis of male fetal “fragility”, i.e. their higher rates of intra-uterine and perinatal deaths relatively to female fetuses, usually estimated at 120:100 (Naeye et al. 1971; Chahnazarian 1988). From our calculations using the DHS this has a mild effect (reducing the sex ratio at birth from 1.14 to 1.12, i.e. a 20% reduction in the likelihood of having a boy over the natural ratio), it is unlikely to be the main cause of the discrepancy between the official and household data (see appendix 1).

On the other hand, Ukraine could be unique among the former Soviet-style economies. Data indicates that women experienced greater levels of psychosocial stress than in other FSU states. From nationally-representative data on stress levels gathered in 2001, Ukrainian women reported experiencing the highest levels of stress from a sample of post-Soviet countries—about 15% higher than Russian women, 19% than Belarusians, and 30% than Kazaks (Cockerham et al. 2006:2387). Ukraine experienced a particular severe and prolonged economic and mortality crisis after the transition to capitalism, potentially accounting for this divergence.

## *Conclusion*

Our analysis above suggests that the disruption of life course expectations for parents might constitute a better explanatory model than the dyssynchronous modernization hypothesis in the Ukrainian case. Despite the near axiomatic certainties found in the dominant dyssynchronous modernization hypothesis, it is just as easy to posit that parents are in fact altruistic actors concerned for the well-being of their future child: in environments where being a girl is perceived as a competitive disadvantage, caring parents might select against it. After all, parents regularly do this with children with disabilities, or children of color—a fact readily accepted on Euro-American adoption markets. What we are suggesting is that gender might have come to be perceived, in some environments, as precisely such a handicap, and that parents might have come to act as adoptive parents towards their biological progeny. The exact features of the environments that produce such a perception of gender-based disadvantage remain to be analyzed, as well as the parental actor best positioned to make such an assessment. To the latter question, we argue the mother, the parent in the subordinate familial and societal position, is structurally better placed to wish to refrain from transmitting the difficulties and struggles associated with her gender position to a future daughter.

In our view, pre-natal sex-selection in Ukraine could thus well be a transitional phenomenon. Only more analysis, especially of household surveys as well as ethnography, will shed light on this matter. However, the analysis presented here, we hope, will have contributed to providing an alternative to the parental self-interest hypothesis, as well as the apolitical tendency of explanatory models common in the SRB literature. Only a much more sustained research agenda on the matter will really be able to provide a plausible answer to these questions. In the meantime, the Ukrainian case certainly suggests the need for a reconsideration of the hypotheses and narratives that have dominated the academic and policy conversations so far.

## Appendix

**Table 1a: Sex Ratio at Birth in relation to years to last birth and to number of children ever born.**

Years to Last Birth	DHS	DHS (weighted)
<i>0 to 5</i>	1.055	1.059
<i>5 to 10</i>	1.153	1.139
<i>10 to 15</i>	1.095	1.096
<i>15 to 20</i>	1.245	1.27
<i>More than 20</i>	1.135	1.096
<b>Number of Children Ever Born</b>	<i>(completed fertility cycles, i.e. age 40+)</i>	
<i>1</i>	1.180	1.234
<i>2</i>	1.173	1.153
<i>3</i>	1.100	1.071
	<i>(incomplete fertility cycles, under 40)</i>	
<i>1</i>	1.110	1.124
<i>2</i>	1.140	1.113
<i>3</i>	0.826	0.85

*Source: Demographic and Household Survey 2007*

As we can see in table 1a above, recollection cannot account for the findings of this paper, as, both in the weighted and unweighted tabulations, mothers who had their last births 5 to 10 years before the interview reported higher SRBs than mothers who last gave birth 10 to 15 years before the interview. Further, the fact that mothers with only one child report much higher SRBs than mothers with two or three children confirms that the bulk of sex-selection happens at first birth, for mothers who desire one male child only. Notice that the difference between mothers who have completed their fertility cycle with only one child and with two children is much greater than for mothers who have not completed their fertility cycle.

**Table 1b: Correlation Matrix**

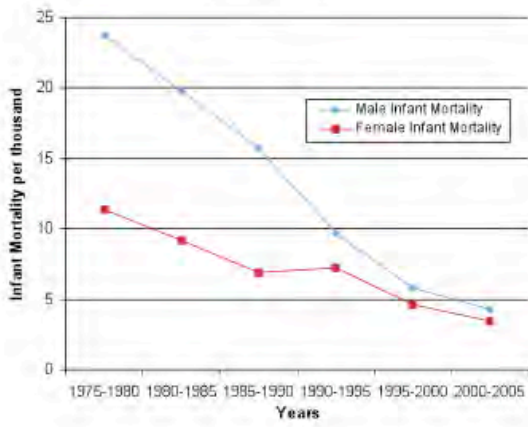
This correlation matrix reveals a number of important trends for the variables within the DHS. Notably, it shows that most of the observations made throughout the dataset apply to the greatest majority of mothers, given that most of variables correlate weakly with one another ( $r < 0.3$ ). The few exceptions are highlighted in yellow. Most surprising, perhaps, is the fact that older mothers are very strongly correlated with poorer households, and more moderately correlated with lower levels of education. This could signal a cohort structure typical of abrupt socio-political changes, such as lesser employment security and greater investment in education within a less socialist, more market-oriented economy.

	Sex of Child	Wealth Index	Mother's Age	Mother's Education	Partner's Education	Number of Children Born	Work Status	Income Inequality Between Spouses
Sex of Child	1.000 N=8007							
Household Wealth Index	0.0187 p=0.0938 N=8007	1.000 N=8007						
Mother's Age	0.0040 p=0.7199 N=8007	-0.6425 p=0.0000 N=8007	1.000 N=8007					
Mother's Education	-0.0026 p=0.8193 N=8002	0.3679 p=0.000 N=8002	-0.3071 p=0.000 N=8002	1.000 N=8002				
Partner's Education	0.0037 p=0.7437 N=7792	0.3784 p=0.000 N=3638	-0.3110 p=0.000 N=7792	0.5273 p=0.000 N=7788	1.000 N=7792			
Num of Children	-0.0166 p=0.2991 N=8007	-0.2606 p=0.000 N=8007	0.2205 p=0.000 N=8007	-0.2523 p=0.000 N=8002	-0.1667 p=0.000 N=7792	1.000 N=8007		
Work Status	0.0087 p=0.4370 N=7993	0.2454 p=0.000 N=7993	-0.1941 p=0.000 N=7993	0.2391 p=0.000 N=7988	0.1858 p=0.000 N=7778	-0.1653 p=0.000 N=7993	1.000 N=7993	
Income Inequality	-0.0093 p=0.0156 N=4528	0.1003 p=0.000 N=4528	-0.1128 p=0.000 N=4528	-0.0368 p=0.0132 N=4527	0.0762 p=0.000 N=4486	-0.0559 p=0.002 N=4528	-0.0093 p=0.5308 N=4524	1.000 N=4528

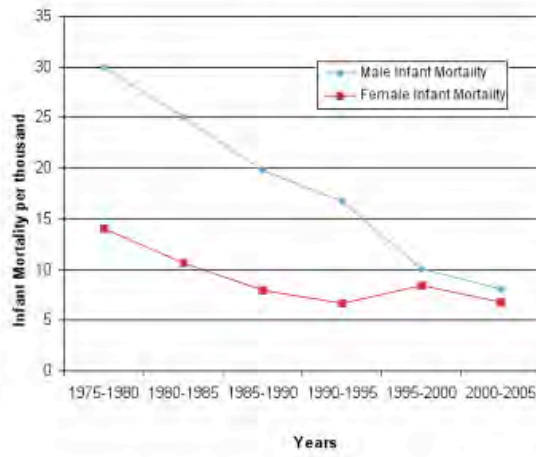
Source: Demographic and Household Survey 2007

**Table 2. Changes in Infant Mortality by Gender, 1975-2005**

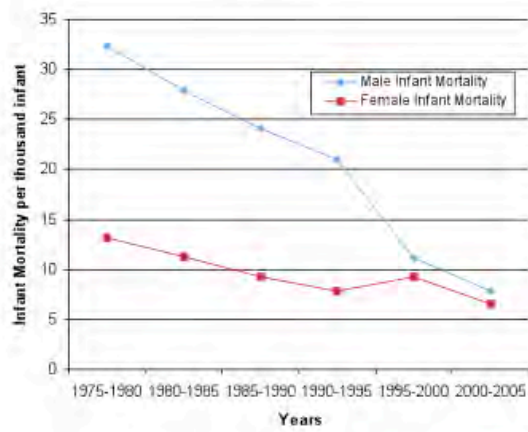
**Czech Republic**



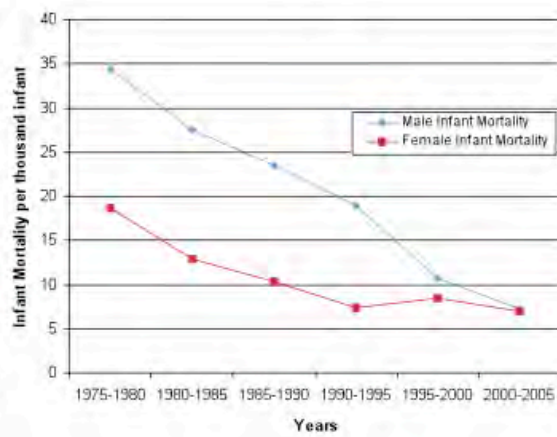
**Slovakia**



**Poland**



**Hungary**



**Table 3: Ukrainian Sex Ratios at Birth disaggregated by age cohorts**

	DHS 2007	DHS 2007 (weighted)	RHS 1999
<b>Mother's Birth Cohort</b>			
<i>1981-1985</i>	1.082 (CI: 1.076-1.087) p=0.628 N=1072	1.055 (CI: 1.051-1.058) p=0.943 N=1035.27	1.096 (CI: 0.989-1.202) p=0.3605 N=374
<i>1976-1980</i>	1.099 (CI: 1.093-1.104) p=0.390 N=1448	1.110 (CI: 1.104-1.115) p=0.289 N=1367.05	1.078 (CI: 1.019-1.138) p=0.3349 N=1167
<i>1971-1975</i>	1.142 (CI: 1.135-1.149) p=0.092 N=1615	1.192 (CI: 1.181-1.204) p=0.023 N=1516.77	1.062 (CI: 1.012-1.112) p=0.4194 N=1639
<i>1966-1970</i>	1.207 (CI: 1.196-1.218) p=0.004 N=1748	1.182 (CI: 1.170-1.194) p=0.053 N=1648.29	1.251 (CI: 1.201-1.301) p=0.0000 N=1929
<i>1961-1965</i>	1.137 (CI: 1.130-1.144) p=0.118 N=1545	1.110 (CI: 1.103-1.116) p=0.325 N=1513.62	1.178 (CI: 1.132-1.223) p=0.0037 N=2224

*Note: Significance tests in all tables related to the Sex Ratio at Birth are binomial tests ascertaining that the observed outcomes are different from the expected outcomes in a statistically significant way. As such, SRBs lower than 1.05 will by definition never have statistical significance.*

*Source: Demographic and Household Survey 2007; Reproductive Health Survey 1999*



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