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## "Missing Girls" in the South Caucasus Countries: Trends, Possible Causes, and Policy Options

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# **“Missing Girls” in the South Caucasus Countries: *Trends, Possible Causes, and Policy Options***

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## ***Abstract***

Sex ratios at birth rose sharply in the South Caucasus countries after 1991, but recent data indicate that this trend is turning. What caused this rise, and what can be done to accelerate its normalization? Traditional kinship systems in the region are similar to those of other settings with sex-selection: structured for collaboration among male kin and dependence only on sons, not daughters. Yet it is anomalous to find sex-selection in a region that under the Soviet Union has for long been substantially urbanized and gender-equitable in public life — factors associated with declines in sex-selection elsewhere. Sex-selection manifested itself only after the sudden economic and governance meltdown following the dissolution of the Soviet Union in 1991. Jobs, basic services, and social protection mechanisms unraveled. People scrambled for coping mechanisms, and sons offer the traditional form of support under uncertainty. Basic services, pensions, and safety nets have been rebuilt, but the process involved years of policy changes. Strengthening these institutions, and maintaining credible continuity of expectations in them, is critical to accelerating normalization of sex ratios.

JEL codes D13, H31, H55, J13, J16, P31.

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## *Introduction*

The ratio of boys to girls rose in the South Caucasus countries in the 1990s to levels second only to China. Many parents have clearly practiced sex-selection to ensure that they have a boy. The phenomenon was not manifest in the data from preceding decades, and has thus generated a good deal of debate about what may underlie it and above all what policies might help reduce it.

This paper begins by describing the levels and trends in sex-selection in these countries, based on the country census and vital registration data, and survey data.<sup>2</sup> After sharp rises in child sex ratios, the trend seems to be turning.

Section 2 discusses whether sex-selection would be expected to be found in this region. On the one hand, traditional kinship systems in the region are similar to those of other regions with strong son preference. On the other hand, the region has been over 50 percent urbanized for decades, and has a high level of gender equity along many dimensions: characteristics that have helped reduce sex-selection elsewhere in Asia.

What then might have caused the sudden rise in sex-selection in this region? As discussed in Section 3, the timing indicates it is related to the severe economic and other shocks experienced after the dissolution of the USSR. Similar responses have been seen in China in response to severe stresses. In the 1990s, an economic collapse in this region led to heavy out-migration in search of work, and sharp fertility decline. There was much forced migration as the newly-independent countries re-aligned themselves along ethnic lines. Territorial conflicts added to the upheavals. Systems of service delivery, pensions, and safety nets, that had been highly dependent on transfers from other parts of the USSR, were badly affected. Levels of poverty were very high in the early 2000s. Under these circumstances, one coping mechanism is to fall back on traditional family ties for cooperation and support — and in this region traditional family ties are strongest among male kin, and a dependence on sons rather than daughters to support their parents.

Much progress has been made in rebuilding basic services and safety nets, and levels of poverty have come down substantially. This may have contributed to the recent trend of slowing and even reversal of levels of sex-selection.

Section 4 discusses policy options for the region. Options being considered in this region include restricting access to sex-selective technology — a policy strongly advocated by the Council of Europe (2011, 2014) — but there is little evidence from other settings that this has much effect. Media advocacy is being tried in some countries in the region such as Armenia, and while these efforts have not yet been formally evaluated there, they have been found to be very effective elsewhere in altering a wide range of norms and behaviors. Since the region evinced sex-selection only when people were faced with the chaos following the dissolution of the USSR, the key to reducing sex-selection would seem to lie in continued re-establishment of economic security, and confidence that the security will be sustained. Section 5 concludes.

## *1. Levels and Trends in Sex-Selection*

Child sex ratios as shown in the South Caucasus country censuses from 1959 to 2010 show a sharp rise after the dissolution of the USSR, but the situation seems to be improving now (Figure 1). The initial rise in the 1990s was the sharpest in Armenia, but since then it seems to have plateaued and declined a little. Child sex ratios continued to rise in Azerbaijan and Georgia until around 2010, but since then they seem to have fallen quite sharply in Georgia, while rising at a much slower pace than before in Azerbaijan. The child sex ratios are the least sensitive to random fluctuation, since they comprise a 5-year age group.<sup>3</sup>

The region shows the patterns found in other settings with strong son preference. Figure 2 shows the classic pattern of rising sex ratios at birth with birth order,<sup>4</sup> as parents become increasingly concerned to ensure that they have a son. Duthe et al (2012) first noted this pattern in this region.

The quality of vital registration deteriorated just after the dissolution of the USSR, but has improved.<sup>5</sup> The Demographic and Health Surveys (DHS) and Reproductive Health Surveys (RHS) indicate that birth registration is now fairly complete in these countries,<sup>6</sup> so estimates based on them are robust.

Another classic pattern in such settings is excess female mortality after birth,<sup>7</sup> especially where people have low physical or financial access to prenatal sex-selection technology. Successive demographic surveys in this region show that mortality at ages 1-11 months was a little higher among girls than boys in Armenia and Azerbaijan — contrary to the biological norm — but this is found in only one of three surveys in Georgia (Table 1). However, other measures of gender equality are high (Section 2).

## *2. Would sex-selection be expected to be found in this region?*

On the face of it, one would not expect to find high levels of sex-selection in the South Caucasus countries. Although the main ethnic groups in the region had traditional kinship systems like those that make for strong son preference in other parts of Asia, the region was transformed under the USSR. It has long been quite urbanized and there is considerable gender equality in indices of participation in public life: factors that the literature indicates help make sons and daughters more equally valuable to their parents. For example, with its blistering pace of urbanization and development, the Republic of Korea experienced a rapid turnaround in sex-selection from among the highest levels in Asia in the mid-1990s, to almost none today (Chung and Das Gupta 1997).

### *2.1 Traditional kinship systems*

Where sex-selection has been found elsewhere in Asia, the traditional kinship systems are strongly patrilineal, in which daughters are transferred to their husband's family at the time of marriage, and expected to care for their in-laws rather than their parents (Das Gupta et al 2003). This makes daughters less valuable to their parents than sons. It also means that cooperation and support is primarily among those who are related through the male line, and far less among kin by marriage.

The ethnographic data indicate that the main ethnic groups in the South Caucasus (Armenian, Azeri, Georgian) had similarly rigidly patrilineal kinship systems. The ethnographic data, at least in the English language, are limited. However, they clearly document that daughters were transferred to the husband's families at the time of marriage and that mutual cooperation and support was among kin related through the male line. See, for example Ishkanian (2003) and Matossian (1962) on Armenian family systems, Heyat (2002) on Azeri family systems, and Dragadze (1988) on Georgian family systems.

Despite decades of vigorous Soviet effort to instill gender equality (Section 2.2), changes were slow at the deepest levels of kinship. Matossian (1962:187) notes that by 1960 it was no longer considered acceptable to express condolence when a baby girl was born. Studies in Azerbaijan argue that the Soviet policy was to revolutionize women's position in public life but to intervene less in domestic life, so the latter continued to be governed by the old mores (Heyat 2000; Tohidi 2000). Figure 3 and the qualitative studies below suggest that the USSR may have had this policy across the South Caucasus of bringing women into the public sphere while intervening less in the private sphere.

Recent qualitative studies across the region describe persistence in rigidly patrilineal mores (Dudwick 2015; Guilmoto 2014; and Yüksel-Kaptanoğlu et al 2014). They note the continued tradition in the late Soviet period of wanting a son; of viewing girls as useless because they leave home at marriage; of feeling it shameful to be looked after by a daughter; of the intense shame of a man who lives with his wife's family; and other norms deeply familiar from ethnographies of the other parts of Asia with strong son preference. These views are still reported by many today, but others express less interest in having a son and note that daughters-in-law are becoming less subservient while daughters are staying more in touch with their parents, especially if the son(s) have gone elsewhere to work.

## *2.2 Transformations under the USSR: Urbanization and women's participation in public life*

The region was radically transformed under the USSR, from largely peasant societies in which women worked for their husband's family to more urbanized societies with considerable gender equality in public life.

The region has been quite urbanized for decades. Already by 1960 just over half the population of Armenia and Azerbaijan and 43% of that in Georgia was estimated to live in urban areas, and by 1990 this applied to two-thirds of the population of Armenia and over half the population of Azerbaijan and Georgia. During the Soviet period, urbanization was not far behind that of Southern Europe, and far ahead of China, which is the only country with higher levels of sex-selection than this region (Table 2).

Urbanization and industrialization shake up peasant family systems, by creating conditions where people work and live in the impersonal settings of urban areas and are less subject to the constant pressure of their kinsmen to have sons to continue the family line (Chung and Das Gupta 1997). They are more exposed to new ideas and norms. Besides, since their sons may well move to work in another city, the chances are more equal that sons or daughters will live near them in their old age. The new structure of employment also offers people more opportunity to save for their own old age. Pension plans offer financial support in old age,

independent of children. Matossian (1962:14) describes how the extended family broke up with urbanization in Armenia.

Vigorous efforts were made under the USSR to bring women into public life, since at least the 1930s. During the Soviet era, gender equality was greatly increased in schooling, laborforce participation, political representation, and laws relating to inheritance and the family.<sup>8</sup>

While gender gaps have emerged since the 1990s, especially in the area of political and economic participation (Table 3), there remains considerable gender equality in schooling in all three countries (World Bank 2014a, b, and c). Primary and secondary enrollment rates are high for both sexes. Between 1990 and 2011, gross tertiary enrolment ratios declined among men but not among women, so women outnumber men in tertiary education in all three countries (Table 3a).

Laborforce participation rates have declined between 1990 and 2011 in Armenia, especially among women, but have increased among women in Azerbaijan, where they are now the highest in the South Caucasus region (Table 3b).<sup>9</sup> In all three countries, as also in the Euro area, women working in the non-agricultural sector are largely in the service sector, not the manufacturing sector (Table 3c). Women's parliamentary representation also dropped sharply in Armenia between 1990 and 2011, from a level well above that of the Euro area to one well below it (Table 3d).

Success in bringing women into public life is also evidenced in the attitudes expressed in the Caucasus Barometer 2010 survey, but attitudes in the domestic sphere remain much more conservative. High proportions of respondents in all three countries stated that a university education is equally important for boys and girls, and were comfortable with a woman as an immediate boss, though they tended to feel that men should have more right to a job *when jobs are scarce* (Figure 3a). However, respondents in other countries such as Indonesia, which do not show son preference, also feel men should have priority in jobs when jobs are scarce (Figure A.1). Yet attitudes towards women in the domestic sphere remain conservative (Figure 3b).

The Pew Research Center's Global Attitudes Project 2010 included some questions that were also in the Caucasus Barometer 2010 survey. Cross-country (and cross-regional) comparisons of the responses to such subjective questions are difficult to interpret, but Georgia ranks high among the countries in gender-equal views on employment and education — well above Russia on job equality (Figures A.1 and A.2). Armenia ranks much lower. Azerbaijan ranks a little lower than Armenia, but not lower than some countries which show no sex-selection: for example, it ranks higher than Indonesia for job equality, and similar to Poland for schooling equality.

Georgia may be somewhat of an outlier in the region. It shows little evidence of postnatal sex-selection (Table 1). Reported gender equality in views on access to jobs and schooling are far higher than many other countries surveyed by the Pew Research Center (Figures A.1 and A.2). It also appears to be the first country in the region to show a sharp drop in sex-selection (Figure 1).

### *3. What may have caused the rise in sex-selection in this region?*

The rise in sex-selection in the South Caucasus countries began after the dissolution of the USSR, and is not evidenced in the 30 years preceding that (Figure 1). This suggests that it was triggered by the sudden and severe disruptions accompanying the dissolution. This is consistent with the pattern in other regions with strong underlying son preference, where the manifestation of son preference rises when people face severe stresses that force them to make hard choices about which children to raise (Figure 4). And the region's low levels of fertility add to the mix by limiting the number of "throws of the dice" possible before having the desired son.

#### *3.1 The disruptions following the dissolution of the USSR*

The dissolution of the USSR in December 1991 caused enormous disruption.<sup>10</sup> The economies of the USSR had been closely integrated, and the disruption of these ties led to a sharp economic contraction in all the CIS countries. The contraction was especially severe in the South Caucasus region (Figure 5). Transfers from the Soviet Union also ended. During the Soviet era, "guaranteed employment, generous public transfers, largely free and universal social services, and subsidies on food, housing, utilities and other necessities meant that income poverty rarely translated into severe deprivation. However, poverty appears to have increased substantially during the 1990s, mainly as a result of the dramatic economic collapse." (World Bank 1997: online summary).

Jobs which people had expected to have for life suddenly dissolved, along with many subsidies such as for fuel. Safety nets were sharply affected (World Bank 1996). Other basic services such as health services were also sharply affected, though they were gradually built up again.

Taking the health sector as an example, under the USSR the population was guaranteed free medical assistance and had access to a comprehensive range of secondary and tertiary health care (World Bank 2003: 109). A plunge in spending brought the public health care sector near collapse, contributing to sharply increased incidence of malaria and tuberculosis in Armenia and Georgia during the 1990s (World Bank 2003:109-110).

One example of the difficulties faced in basic services is that education and health services in Armenia became increasingly privatized and fee-based in the 1990s, with inadequate support for the poor to access health services (World Bank 2003:109-120).

The dissolution of the USSR triggered a sharp drop in GDP per capita in almost all the CIS countries (Figure 5). The pressures facing the South Caucasus region may have been greater than those facing other parts of the CIS, since this region experienced an especially sharp economic squeeze in the mid-1990s (Figure 5). This accentuated the economic stress caused by the disruption of the Soviet Union's social insurance and social protection mechanisms. By comparison the drop in GDP per capita with the global financial crisis that started in 2008 appears small (Figure 5).

The dissolution was also accompanied by a large volume of forced migration and internally displaced people, as the newly-formed countries of the South Caucasus re-organized themselves

around the dominant ethnic groups. There was a substantial volume of refugees and IDPs (internally displaced persons) (World Bank 2007:34, 39).

There was also a large volume of emigration as people left for other countries in search of employment. Emigration to other countries was especially high in the first years following the dissolution (Duthe et al 2010: Figure 1). Between 1989 and 1999, estimated net migration as a percentage of the population indicates a population loss of around 17% in Georgia, 15% in Armenia, and 3% in Azerbaijan (World Bank 2007: Figure 1.4). In 2004, estimated remittances as a percentage of GDP were over 10% in Armenia, about 7% in Georgia, and about 3% in Azerbaijan (World Bank 2007: 59). Some people seem to have coped with the shocks by depending on the farm, as indicated by the plateauing and slight reversal in urbanization in the region after 1990 (Table 2).

Other major disruptions accompanied and followed the dissolution of the USSR and the establishment of the newly-independent states in the South Caucasus. Conflicts were especially protracted in Georgia, but Armenia and Azerbaijan also experienced territorial conflict.

The combination of large volumes of emigration in search of work, internal displacement for ethnic adjustments, and territorial conflicts exacerbated the effects of the other disruptions following the dissolution of the USSR.

Fertility declined sharply in the early 1990s, as might be expected as households seek to cut down on expenses at times of economic crisis. The UN (2013) estimates indicate that fertility declined from the 1960s across the CIS --- and especially sharply where fertility was high at the outset such as Azerbaijan, Armenia, and the Central Asian Republics (Figure 6). There was some plateauing in fertility rates during the 1980s, followed by another sharp decline in the early 1990s — following the dissolution of the USSR.<sup>11</sup>

Interestingly, while all the CIS countries experienced major economic and administrative disruptions with the dissolution of the USSR, only the countries in the South Caucasus region show rising levels of sex-selection in response to these crises (Figure 7). This would suggest that in the other CIS countries the male line is not the primary source of economic and other cooperation and support in times of need, to be resorted to as a fallback when formal institutions fall apart.<sup>12</sup>

The institutions of governance of the Soviet Union also collapsed. The new states slowly put in place new institutions of governance and service delivery to replace those of the Soviet Union. However, basic institutions of governance seem to have been slower to develop in ways that inspire confidence (Sammut 2013).

The Caucasus Barometer 2010 survey indicates quite pervasive breakdown of trust in key institutions (Figure 8). Only around 15% of respondents in the three countries reported that they “completely agreed” that their country was governed by the rule of law. The percentages who “fully trust” the police were also very low in Armenia and Azerbaijan. It was far higher in Georgia, following radical police reforms in the mid-2000s (Kakachia and O’Shea 2012). Levels of trust in these institutions were lowest in Armenia. However, we do not have access to



comparable data from other ex-CIS countries, so do not know whether the South Caucasus has experienced greater breakdown of trust than the others.

### *3.2 Gradual reconstruction*

The 1990s were the period of the worst chaos, as shown by many indicators. Since then, there has been gradual reconstruction of basic services and economies. Basic services have been gradually re-established and improved over time. The DHS and RHS survey reports document these improvements for maternal and child health services.

Economic conditions are improving. Estimated GDP per capita rose to levels well above their pre-1991 levels in Azerbaijan and Armenia, but not in Georgia which also experienced the sharpest initial decline (Figure 5).<sup>13</sup> However, job growth has lagged economic growth. This requires better matching of training with needed job skills, and stronger institutional support for growth of businesses (World Bank 2013, 2014d, Onder 2013). This may change — for example, Georgia ranked 15 out of 189 countries (just below Germany) in the World Bank's 2015 rankings of the ease of doing business.

Pension payments have risen. In 2000, average pensions were low, constituting only 19% of average wages in Armenia, 25% in Georgia, and 32% in Azerbaijan (World Bank 2003: Table 7.6). In 1999, the average pension in Armenia made only 50 percent of the food poverty line (World Bank 2003:133).

Pension systems and other mechanisms for social protection have been rebuilt and payments increased (Falkingham and Vlachantoni 2012). For example, in 1999 Armenia reformed its social assistance system into a well-administered program, targeting the poorest 28% of households (World Bank 2003:127). In Georgia the Targeted Social Assistance (TSA) program was set up in 2006, and payments doubled in 2009 (World Bank 2011:14). Azerbaijan used its oil resources to fund extensive social protection programs, including a well-targeted TSA program set up in 2006, and raised pension payments by 52% between 2008 and 2009 (World Bank 2010:103-105, Onder 2013). These generous social transfers helped reduce the overall poverty headcount in all three countries, and most steeply in Azerbaijan (Table 4).

That these programs work well is also indicative of improvements in governance. Other specific examples of reform include the police reforms in Georgia (Kakachia and O'Shea 2012), which is part of the reforms that have helped raise the country's ranking in the ease of doing business. Azerbaijan established a sovereign wealth fund to invest its oil revenues and diversify its income sources.<sup>14</sup>

In sum, conditions are improving. There has been economic growth. Pension and social protection systems have been substantially strengthened, and poverty levels have fallen. Governance also shows signs of improvement, though much remains to be done.

#### *4. Policy options*

What policies can reduce sex-selection? Clearly broad efforts to increase gender equity, especially in access to schooling, paid work, credit, inheritance, political representation, and related efforts can help women be economically productive and active in the public sphere. Similarly, as discussed above, urbanization and industrialization undermine traditional kinship systems and help reduce the gap between the value of boys and girls to their parents. Such policies were strongly implemented during the Soviet era in the South Caucasus countries, and the progress made needs to be sustained and intensified.

One direct approach is to restrict access to (or ban) prenatal sex-detection and/or sex-selective abortion. Such bans have been tried in several countries, including the Republic of Korea, China, and India. In all three countries, efforts to implement the bans were intensified over time and sanctions increased. There is no rigorous evaluation of the impact of these bans<sup>15</sup>, and the trends do not suggest much impact. In all three countries, sex ratios at birth continued to rise despite the bans (though the counterfactual in the absence of the bans is not known). After multiple efforts to ratchet up the ban, China began a vigorous effort from 2003 to implement the ban, but this effort showed little impact on sex ratios at birth (Guo et al 2014). Aside from their uncertain effectiveness in reducing sex-selection, such bans can push women into using lower-quality providers --- and paying heavily for using them --- with the potential health threats posed by resorting to such providers.

Another approach tried in India has been to offer financial incentives to raise girls and educate them. There is weak evidence that these help reduce sex-selection (Sinha and Joong 2009; Holla et al 2007). China's Care for Girls program included some incentives, but its impact has not been evaluated (Guo et al 2014). One consideration is what kind of message is given on the value of daughters when the state "compensates" parents specifically for having a girl.

Another consideration is that if parents do not want girls, very substantial transfers would be needed to begin to significantly offset the full costs of raising a girl. Small incentives are unlikely to alter parental choices about having an unwanted child. Also, there might need to be some complex targeting, since only a small proportion of girls are unwanted enough for parents to resort to sex-selection.

Son preference can be reduced by exposure to media messaging. Using a "natural experiment" generated by different timing of the introduction of cable television in India, Jensen and Oster (2009) found access to these media to be associated with reduced son preference, as well as lower fertility and acceptance of domestic violence. The authors argue that this has much to do with the values of the characters typically portrayed on television, accelerating the spread of new ideas among people. Analyzing cross-sectional data (not "natural experiment" data) from India, Pande and Astone (2007) also find that media exposure reduces son preference in India.

Studies using similar "natural experiment" data have also found significant impact of radio and television exposure on fertility behavior. A radio soap opera in Tanzania aimed at increasing contraceptive use was found effective at doing so (Rogers et al 1999). In Brazil, soap operas depicting small successful families significantly lowered fertility among their audiences, especially among women of lower socio-economic status (La Ferrara et al 2012). The power of

media outreach to alter values and behaviors is also shown by “natural experiments” in other spheres, such as public health (Keefer and Khemani 2012, McVey and Stapleton 2000) and voting behavior (DellaVigna and Kaplan 2007).

The messages conveyed by mass communication outreach can influence people’s aspirations, norms, and behaviors. This includes the mass media, print materials, billboards, street art and theater, and advocacy by celebrities. Television and radio soap operas can convey complex messages while gripping their audiences by engaging them in the lives of the characters.<sup>16</sup>

Advocacy to encourage parents to perceive girls to be as valuable as boys has been used in Asian countries with strong son preference. This has largely sought to encourage parents to have small families even if they do not have sons. More recently, some advocacy efforts have focused on the specter of imbalanced sex ratios and shortages of future brides. Messaging showing daughters helping their old parents could also help reduce son preference.

## ***5. Conclusions***

The South Caucasus region had rigidly patrilineal kinship systems very similar to those in other settings with strong son preference. Under the USSR, strong social protection systems reduced dependence on male kin, and high levels of urbanization eroded the male kin groups. Much was done to increase gender equity in schooling and bring women into the labor force and public life, though there seems to have been less intervention for gender equity in domestic life. Recent qualitative studies indicate that the kinship norms and son preference persisted.

Sex-selection was just one of several demographic responses in people’s scramble to cope with the chaos following the breakup of the USSR, with the accompanying sudden economic and institutional collapse and unraveling of jobs, safety nets, and basic services. Having sons offered the traditional form of support in times of uncertainty. Fertility declined sharply, reducing pressure on household budgets but increasing the pressure to sex-select because of the fewer opportunities to have a son. There was heavy emigration in search of work (mostly male). The urbanization trends suggest that some people also moved back to the countryside.

The recent data indicate that the precipitous rise in sex-selection has reversed in Georgia and Armenia, and slowed substantially in Azerbaijan. What policies could help accelerate this trend? Direct approaches to reducing sex-selection, such as bans and financial incentives, seem of uncertain effectiveness. Given that sex-selection manifested itself in the region after the dissolution of the USSR, it should be much more effective to focus on making people’s lives more secure.

Efforts need to focus on generating credible security. The shift from socialist to market-based institutions has not been easy for a region that was already part of the Soviet Union by 1922. There was no living memory of market-based institutions, nor the proximity to Western Europe that helped Eastern European countries recalibrate their systems more quickly. The region was also hit especially hard by the economic collapse following the dissolution of the USSR. Basic institutions of governance seem to have been slow to develop in ways that inspire confidence, and levels of trust in the government are relatively low.

Yet there has been substantial progress on several fronts. There has been considerable economic growth and poverty levels have dropped sharply. Pension and social protection systems have been extensively reformed and payments greatly increased during the 2000s, which should reduce dependence on children's support in old age. Basic services such as health and education have been re-established. Governance is improving, as reflected for example in the well-targeted social assistance programs in all three countries, Georgia's police reforms and the Azerbaijan oil wealth fund. These and other efforts to stabilize conditions may have helped reduce the pressure to have sons.

But the experience of years of policy changes may hinder people's confidence that these new systems will remain in place when they become old. Job growth has not been concomitant with economic growth, reducing people's ability to save to complement their pensions in their old age. This increases the need for social protection.

The task of making people's lives more secure, both in reality and in continuity of expectations, is of the essence for reducing sex-selection, but may take time. Meanwhile, the turnaround in trends in sex-selection can be accelerated by messaging to help parents perceive boys and girls as equally worth raising.

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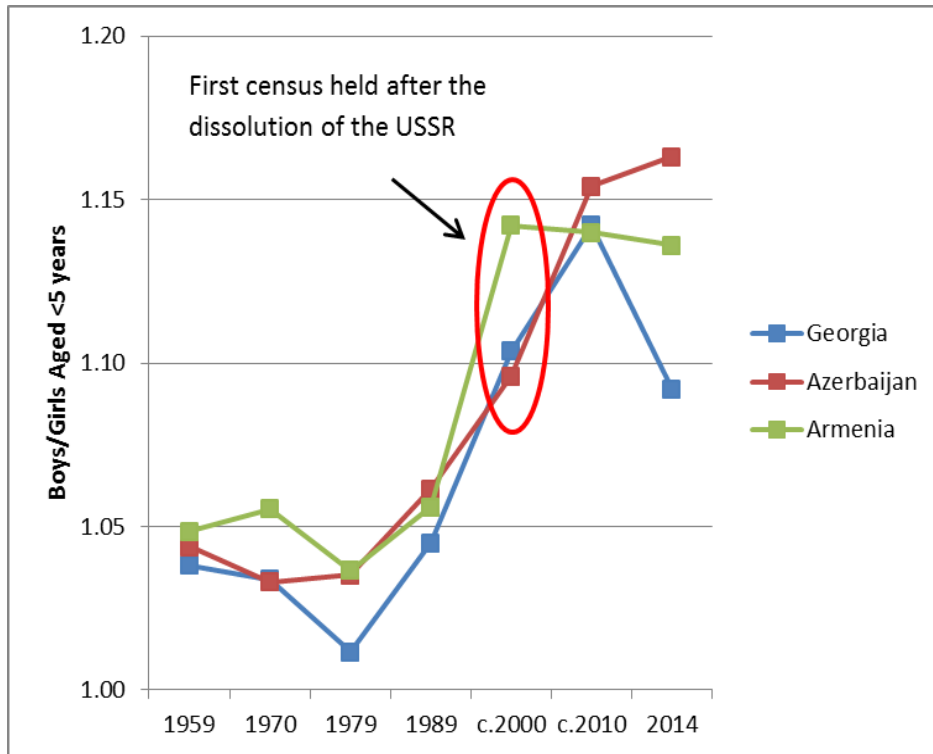
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**Figure 1: Child sex ratios, South Caucasus countries 1959-2014**  
(boys/girls aged <5 years)

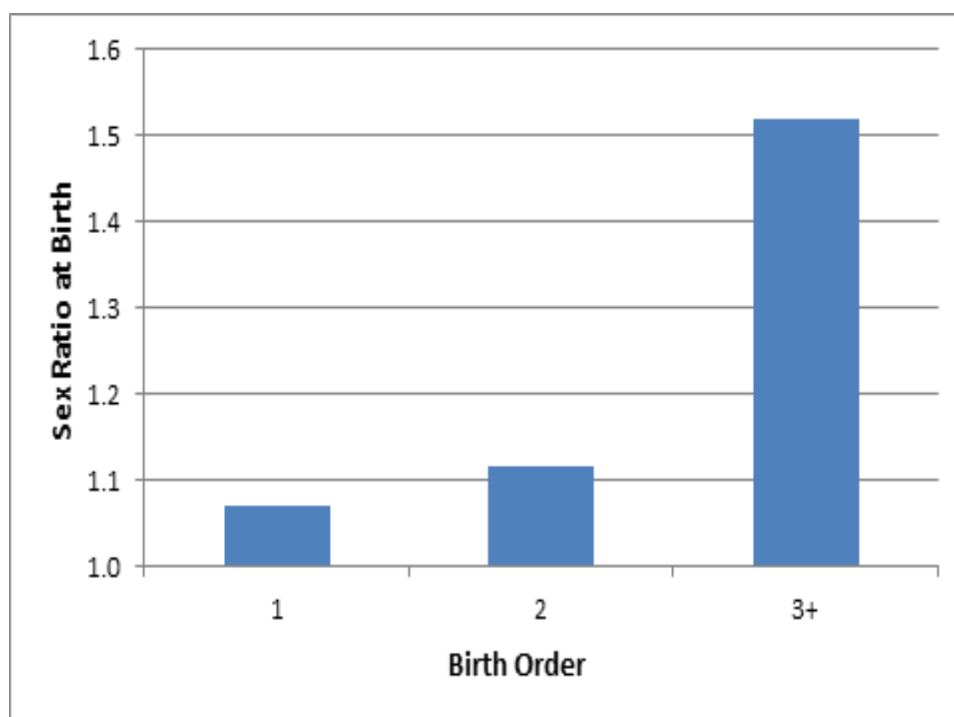


Note: “c.2000” refers to the censuses of Azerbaijan 1999, of Armenia 2001, and of Georgia 2002. “c. 2010” refers to the censuses of Azerbaijan 2009, Armenia 2011, and the estimate for Georgia 2009-2010 (see below). The 2014 figures are from the 2014 Statistical Yearbook for each country, compiled from census and vital registration data.

Sources:

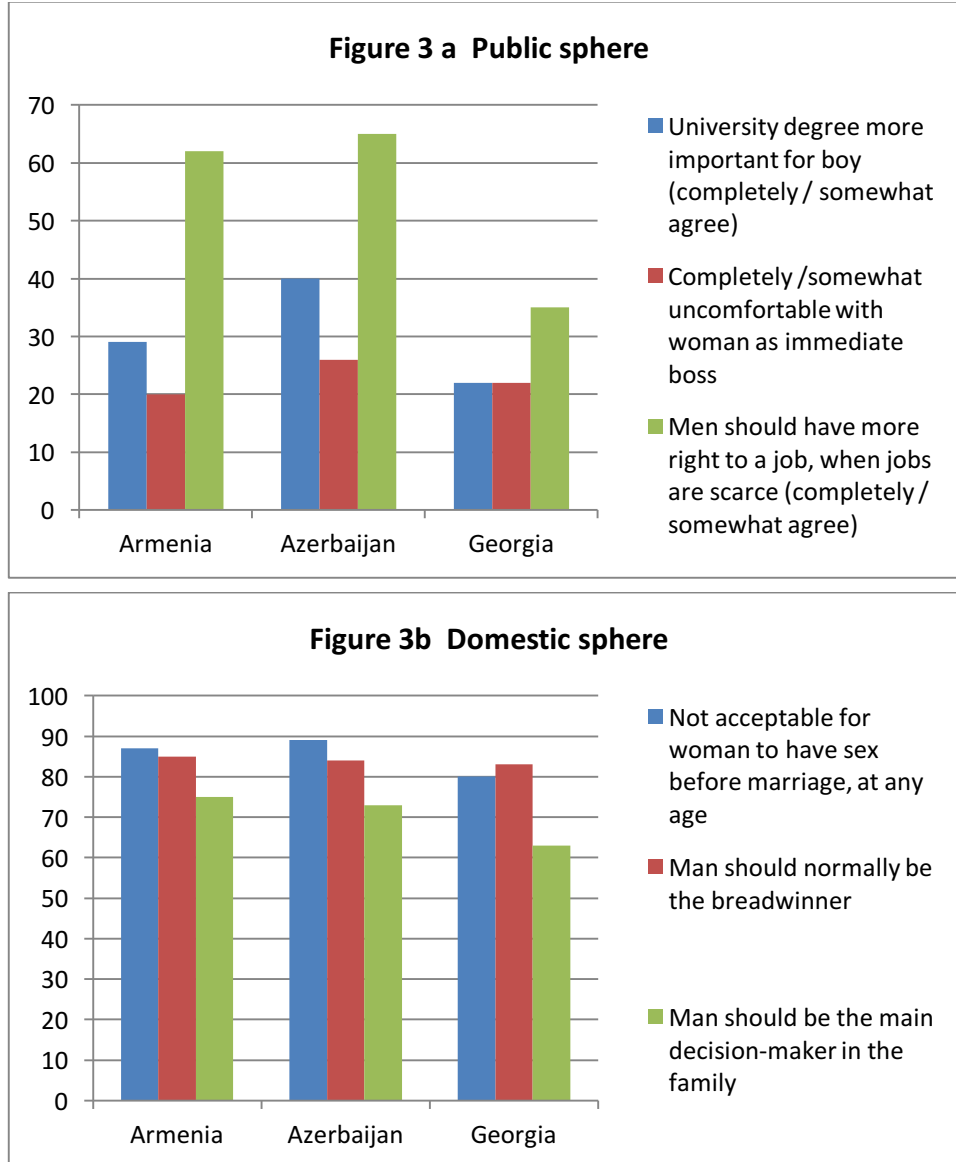
1. Armenia census data: 1959-89 from data.un.org (accessed March 3, 2014); 2001 from Census of Armenia 2001 (<http://docs.armstat.am/census/pdfs/21.pdf>); 2011 from Census of Armenia 2011. (<http://www.armstat.am/file/doc/99478228.pdf>)
2. Azerbaijan census data: all years from data.un.org.
3. Georgia census data for 1959-2002 from Georgia Demographic Yearbook 2002. Since the last census of Georgia was in 2002, estimates can become less robust over the years. The datapoint for “c 2010” is therefore the average for 2009-2010, and that for 2014 the average of the 2013-14 estimates in Georgia’s 2014 Statistical Yearbook.

**Figure 2: Sex Ratio at Birth by Birth Order in 2010, 3 South Caucasus countries combined**



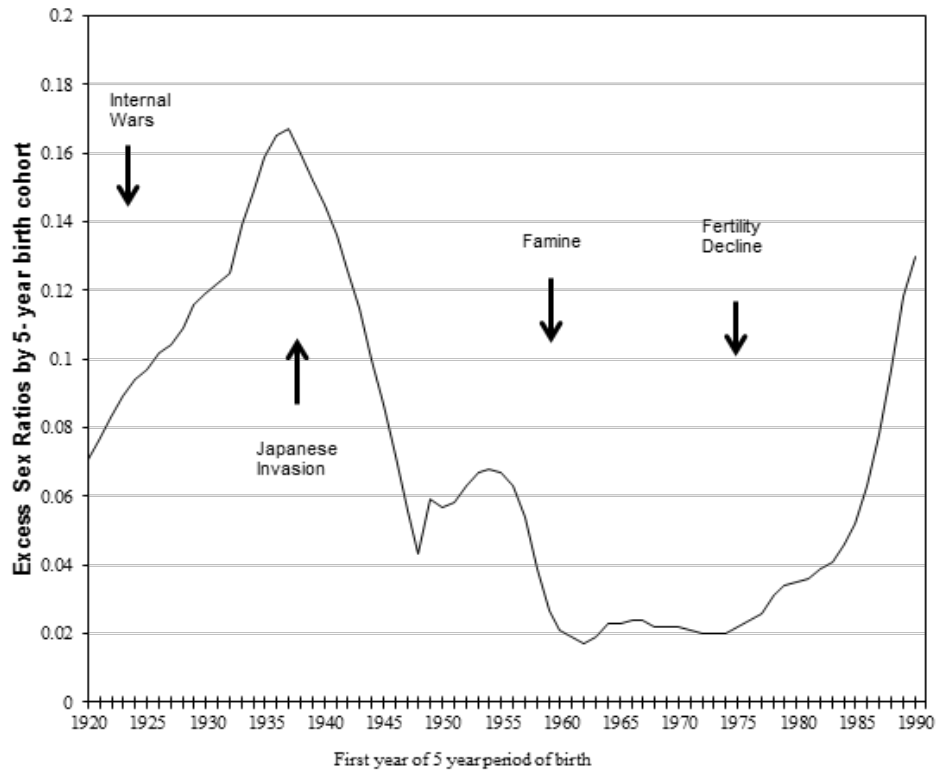
*Source:* UN Population Division, birth registration data from country statistical offices

**Figure 3: Attitudes towards women are more conservative in the domestic sphere than in the public sphere**  
 (% of respondents expressing gender-inequitable attitudes)



*Source:* Caucasus Barometer Survey (2010)

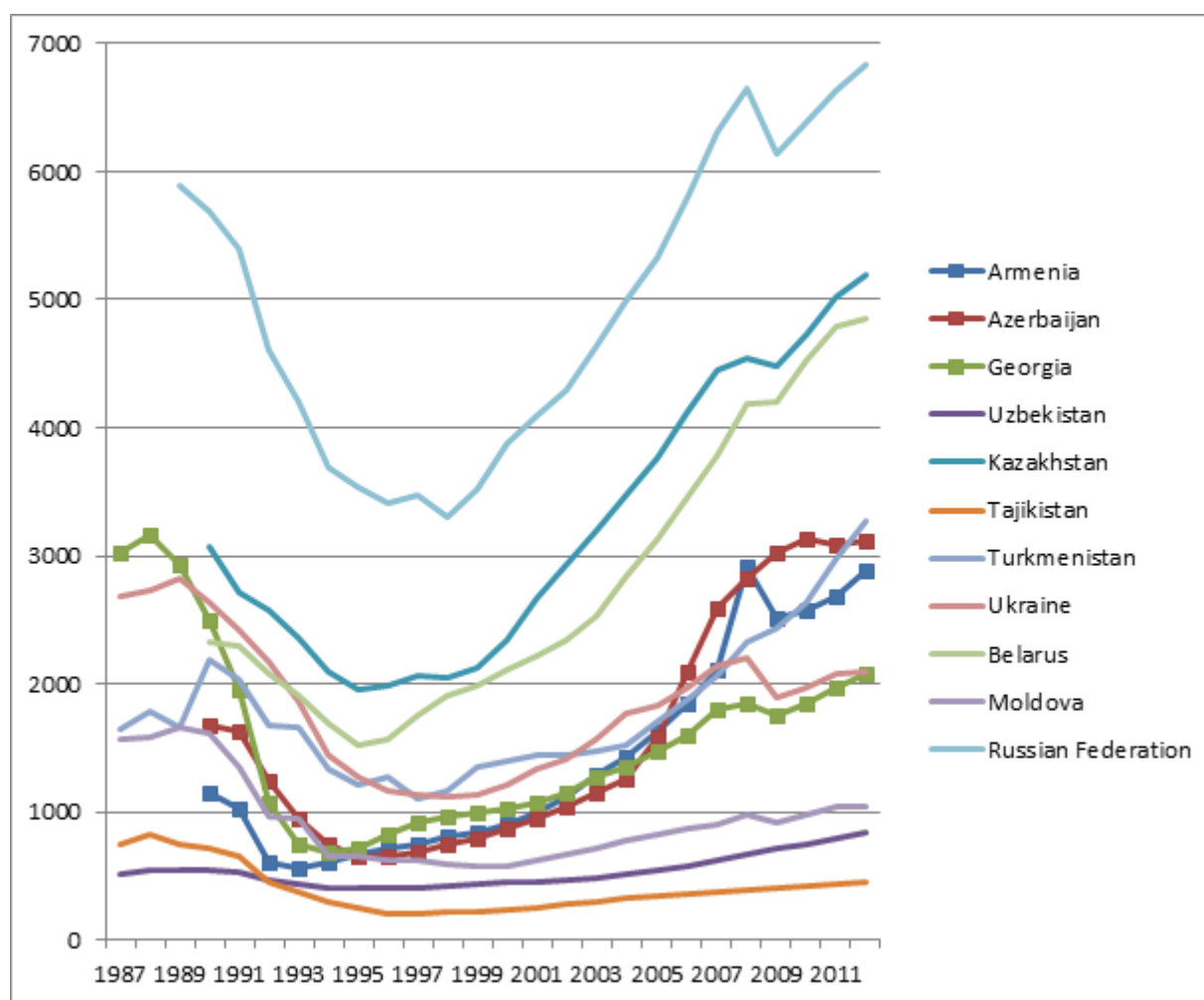
**Figure 4: Excess Female Child Mortality, China 1920-1995**  
*Sex-Selection rises when parents are under pressure*



Source: Das Gupta and Li (1999)

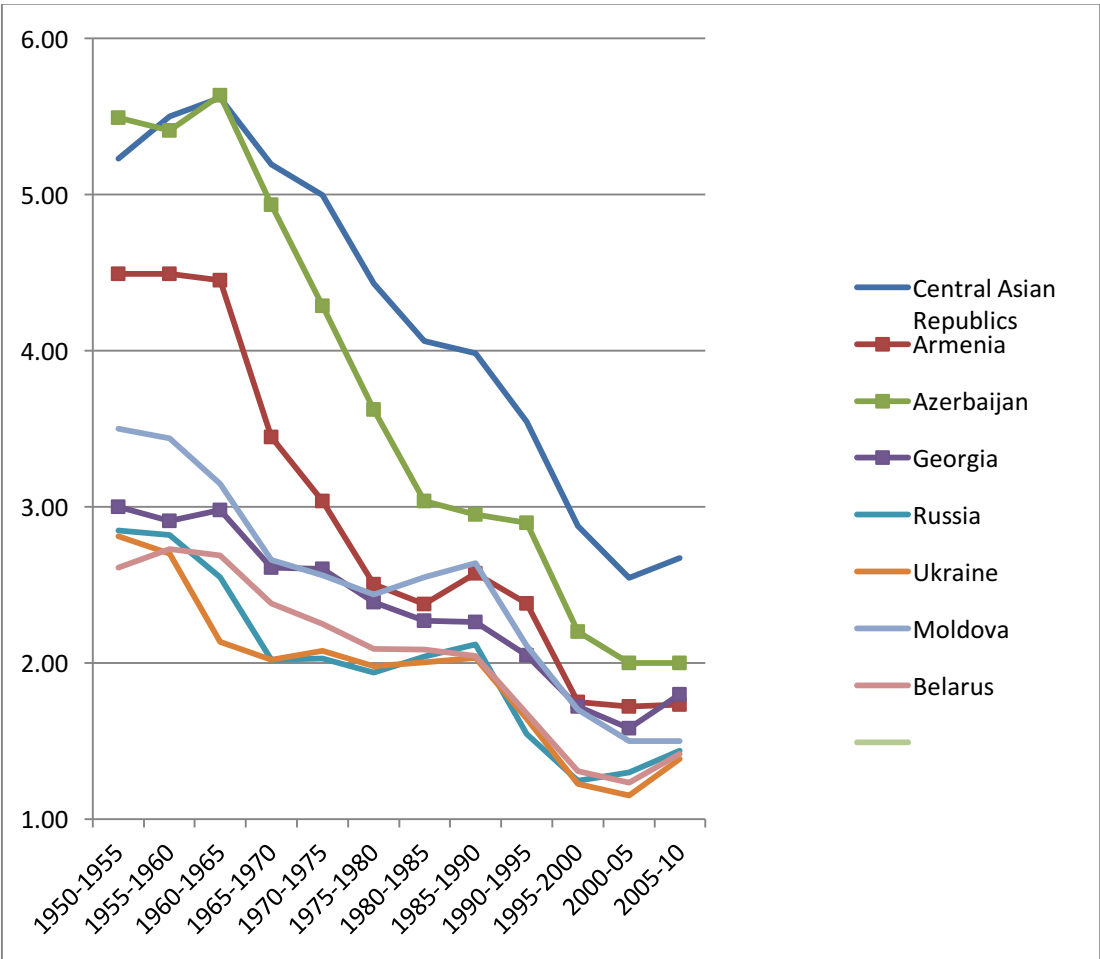
Note: The excess ratios peak amongst cohorts born just before a war or famine, because those who were young girls at the time of the crisis experienced the maximum excess mortality.

**Figure 5: GDP per capita in CIS countries 1987-2012 (constant 2005 USD)**



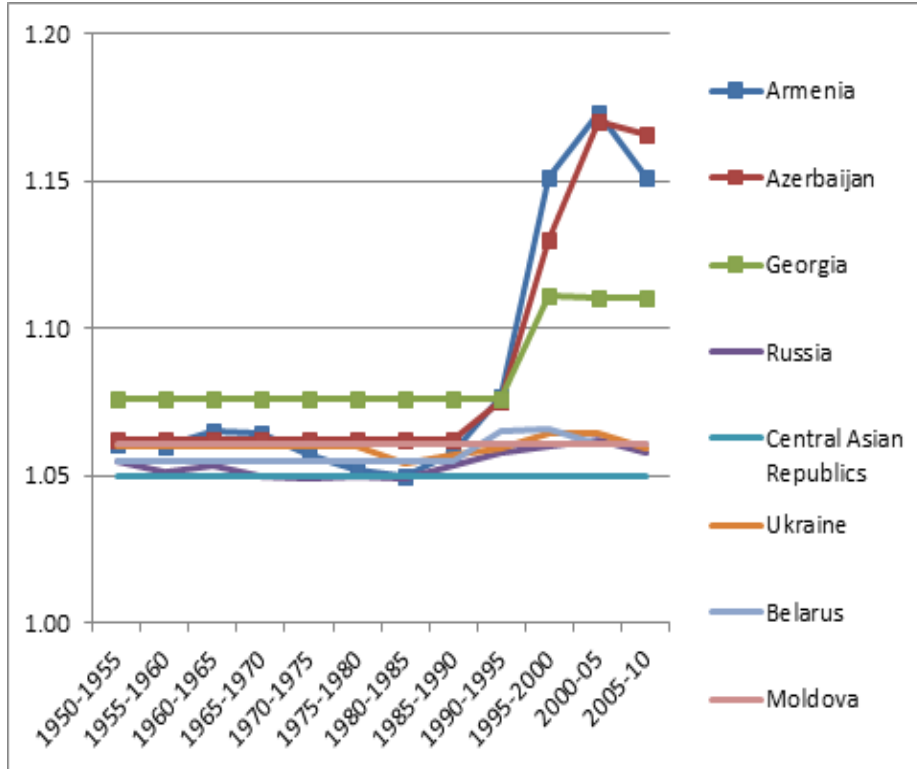
Source: World Bank, World Development Indicators,  
<http://data.worldbank.org/indicator/NY.GDP.PCAP.KD>, accessed 9 February 2014

**Figure 6: Total Fertility Rate, CIS countries 1950-2010**



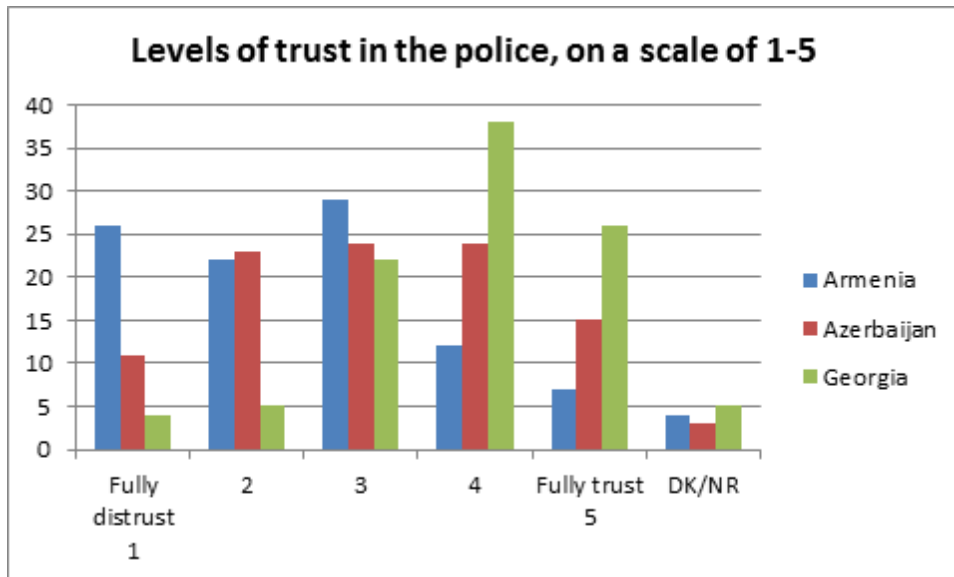
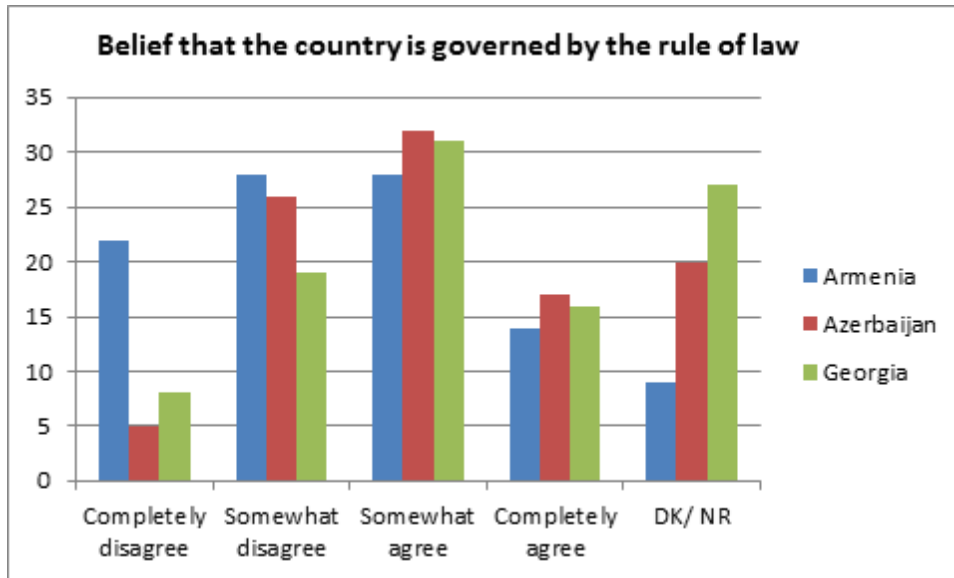
*Source:* UN (2013)

**Figure 7: Estimated Sex Ratios at Birth, CIS countries 1950-2010**



*Source:* UN (2013)

**Figure 8. Levels of trust in the government**  
 (% of respondents, from the Caucasus Barometer Survey 2010)





**Table 1: Postneonatal mortality rate (deaths at ages 1-11 months per 1,000 livebirths) by gender**

	Children born	Male	Female	Female/Male
Armenia	1991-2000*	16.7	19.3	1.16
	1996-2005	8	10	1.25
	2001-2010	8	11	1.38
Azerbaijan	1991-2000*	38	47.9	1.26
	2001-2006	15	16	1.07
Georgia	1990-99*	16.8	14.5	0.86
	1995-2004	9.4	10.5	1.12
	2000-2009	8.1	4.3	0.53

**Sources:** Armenia: Demographic and Health Surveys 2000, 2005, and 2010: Table 9.4

Georgia: Reproductive Health Survey 1999/2000: Table 6.8;

Reproductive Health Surveys 2005 and 2010: Table 6.9.2

Azerbaijan: Reproductive and Health Survey 2001: Table 6.8.3;

Demographic and Health Survey 2006: Table 9.3

\* It is not clear why the first estimates for each country are so much higher than subsequent estimates. However, this is true for both males and females, so it has less effect on the sex ratio of mortality.

**Table 2 Urban population as a percentage of the total population, 1950-2010**

	<b>1950</b>	<b>1960</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>2010</b>
Armenia	40	51	60	66	67	65	64
Azerbaijan	46	53	50	53	54	51	53
Georgia	37	43	48	53	55	53	53
More developed regions*	55	61	67	70	72	74	77
Southern Europe	46	51	58	63	65	66	69
Eastern Europe	40	49	57	64	68	68	69
China	12	16	17	19	26	36	49

*Source:* United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, CD-ROM Edition.

\*Includes Europe, Northern America, Australia/New Zealand and Japan.

**Table 3. Indicators of education, laborforce participation, and female representation in national parliament**

**Table 3 (a) Gross tertiary enrollment ratio (%)\***

	1990		2011	
	Female	Male	Female	Male
Armenia			55	43
Azerbaijan	19	28	20	19
Georgia	35	38	33	27
Euro area	32	34	65	55

\*expressed as a percentage of the total female population of the five-year age group following on from secondary school leaving.

**Table 3 (b) Laborforce participation rate (% of population aged 15+)**

	1990		2011	
	Female	Male	Female	Male
Armenia	61	77	49	70
Azerbaijan	54	71	62	69
Georgia	55	75	56	74
Euro area	41	68	50	65

**Table 3 (c) Percent of employed age 15+, working in non-agricultural sectors, 2011**

	% of employed age 15+, employed in			
	Industry		Service	
	Female	Male	Female	Male
Armenia	8	25	43	35
Azerbaijan	6	22	50	47
Georgia	4	17	40	33
Euro area	12	35	85	60

**Table 3 (d) Seats held by women in national parliament (%):**

	1990	2011
Armenia	36	11
Azerbaijan		16
Georgia		12
Euro area	12	28

**Source:** World Bank 2013a. The Little Data Book on Gender (compiled from the World Development Indicators), Washington DC: The World Bank.

**Table 4 Poverty trends 2001-2012, South Caucasus countries**

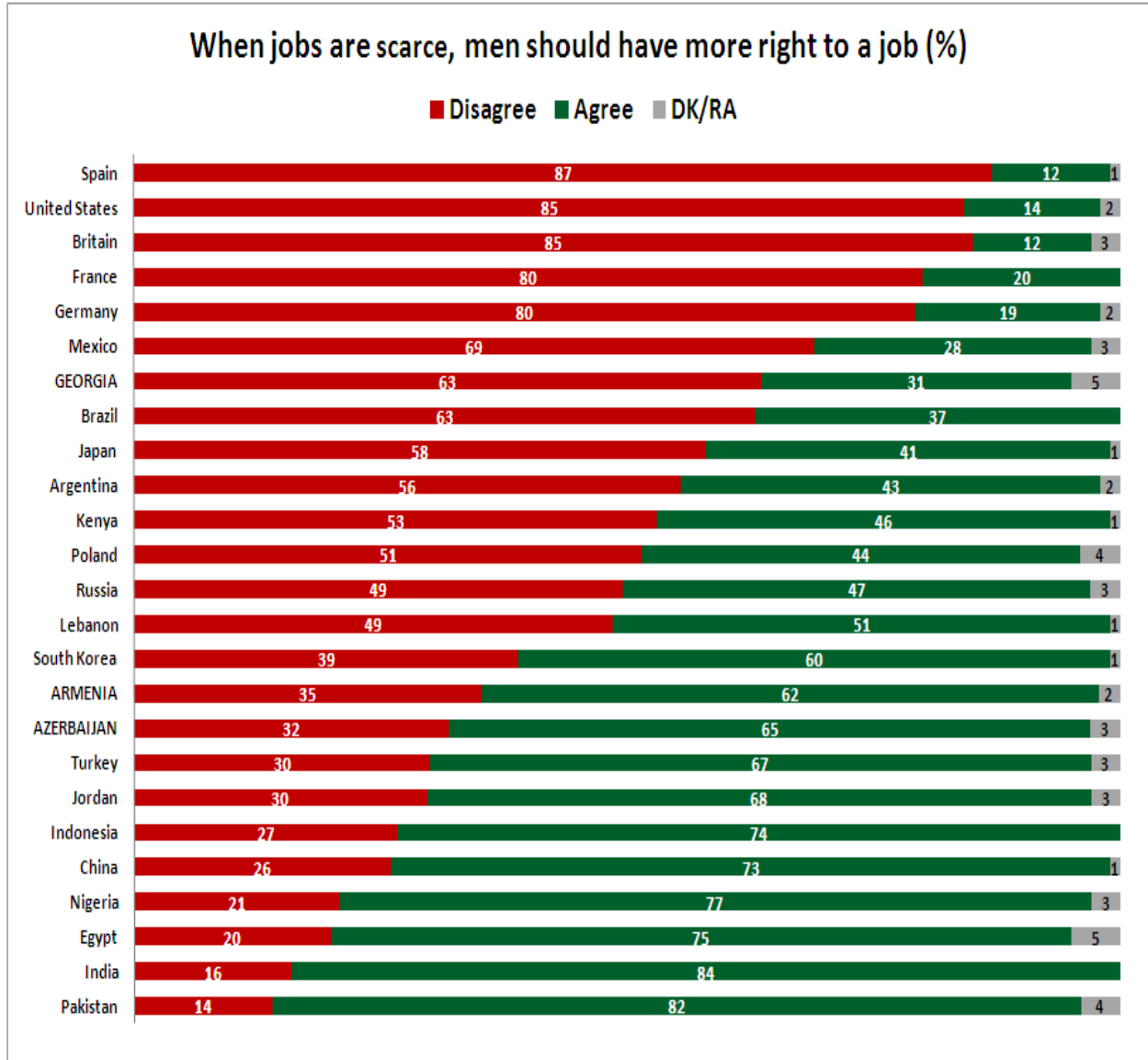
(Poverty headcount ratio at national poverty lines)

	2001	2008	2012
Armenia	48.3	27.6	32.4
Azerbaijan	49.6	13.2	6.0
Georgia	n.a.	17.7	14.8

**Source:** World Bank .2015. *World Development Indicators*  
<http://data.worldbank.org/indicator/SI.POV.NAHC/countries>

## Appendix A: Cross-Country Comparison of Gender-Equitable Attitudes

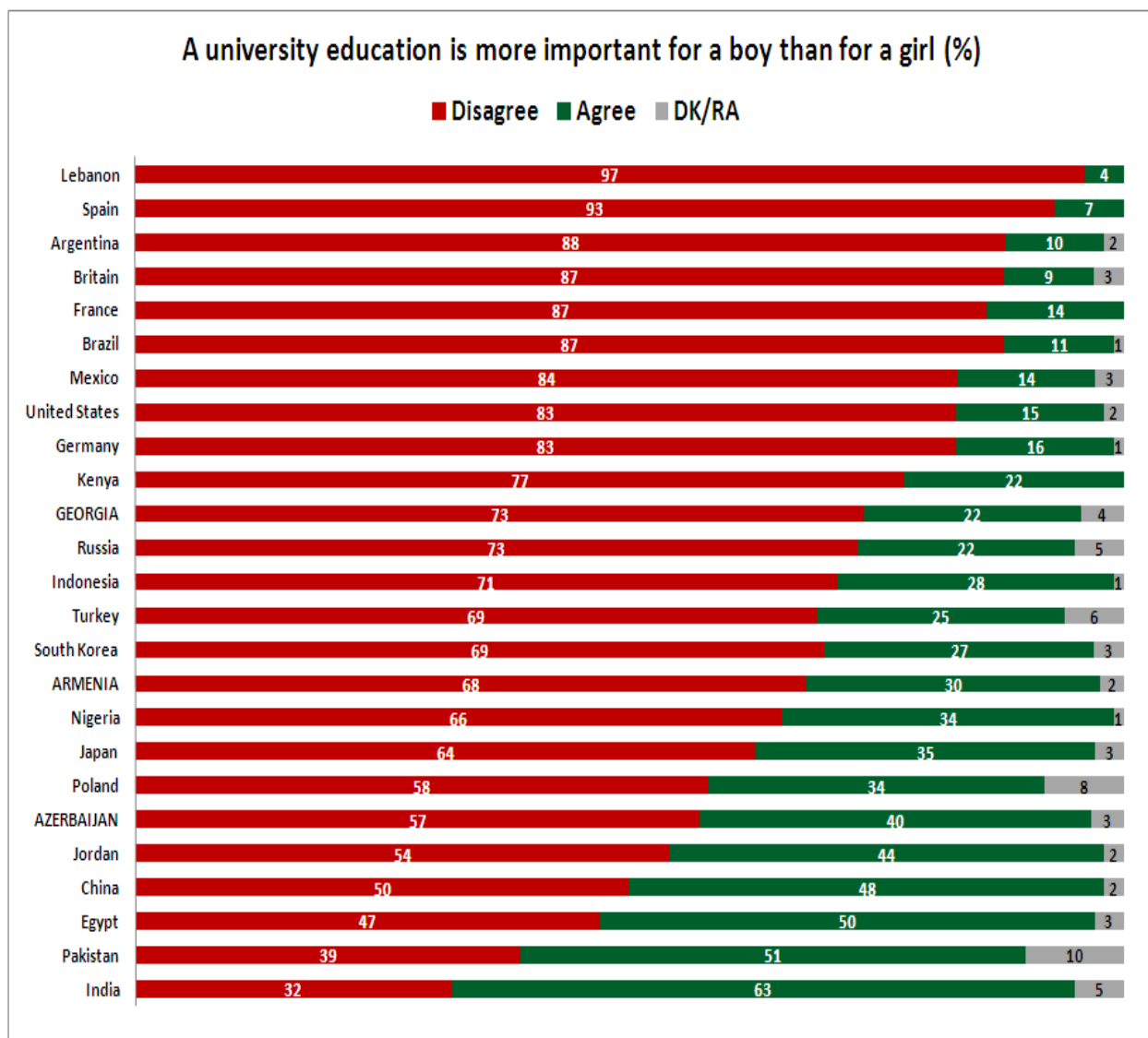
Figure A.1: Cross-country comparison of responses on whether men should have more right to a job, when jobs are scarce



*Source:* Caucasus Research Resource Centers (2011)

Note: The same question was asked in the Caucasus Barometer 2010 and the Pew Research Center's Global Attitudes Project 2010

**Figure A.2: Cross-country comparison of responses on whether a university education is more important for a boy than a girl**



**Source:** Caucasus Research Resource Centers (2011)

Note: The same question was asked in the Caucasus Barometer 2010 and the Pew Research Center's Global Attitudes Project 2010

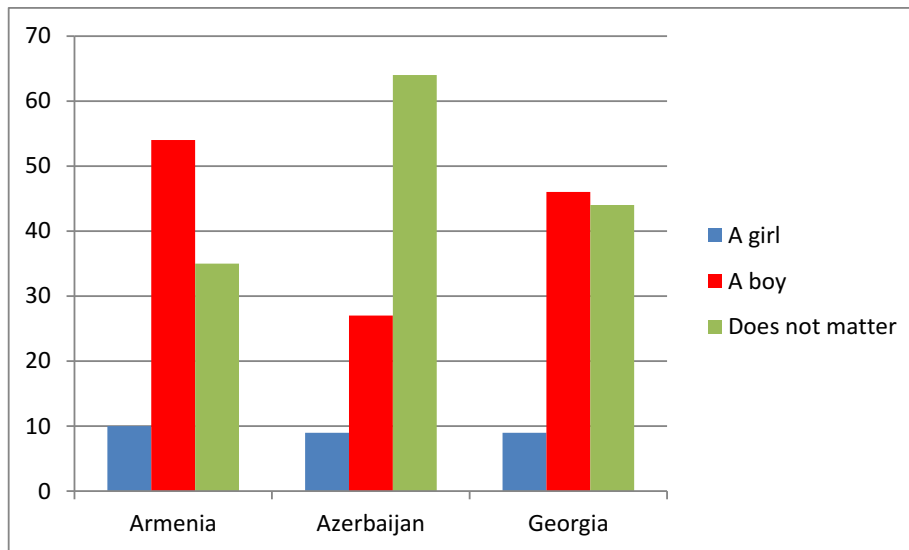
## Appendix B: Reported Son Preference

Data on reported son preference are available from the Caucasus Barometer 2010 Survey, which asks "If a family has one child, what would be the preferred gender of the child?". Reported son preference is the highest in Armenia, and lowest in Azerbaijan (Figure B.1.a), which is not consistent with actual outcomes (Figure 1). This discrepancy could be due to the wording of the question, posing a hypothetical scenario which may not be meaningful to respondents who know that people can and do have more than one child. This may especially affect responses in Azerbaijan, since it had considerably higher fertility than Georgia and Armenia in the recent past (Figure 6). A clearer question would be "How important is it to have a son?" (e.g. Very important / Somewhat important/ Not important).

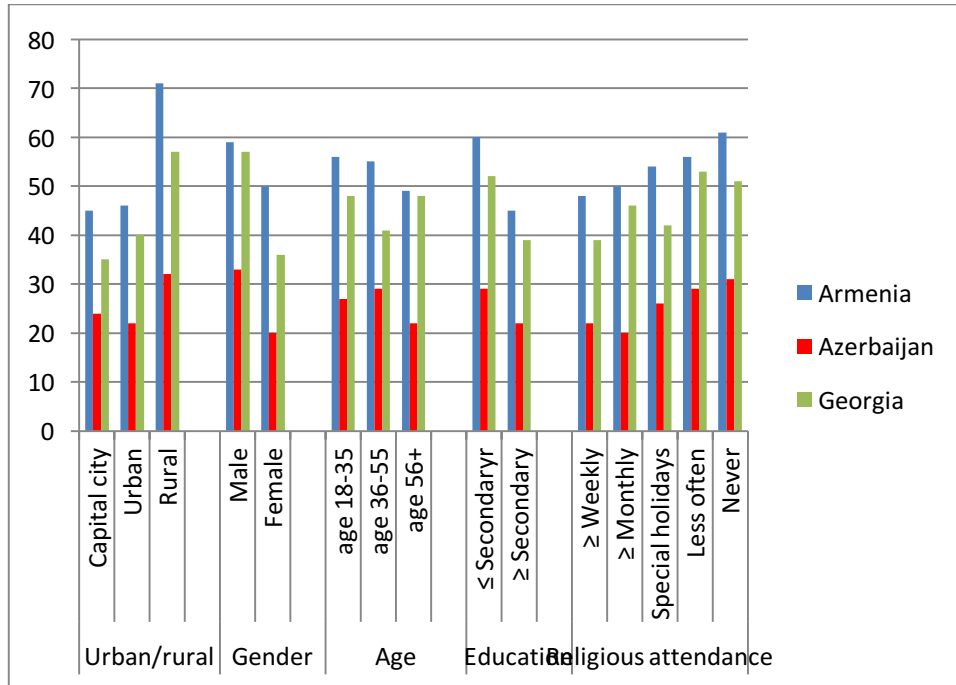
In all three countries, reported son preference is higher in rural areas, among the less educated, and among men (Figure B.1.b). Interestingly, it rises with frequency of attending religious services. Attendance of religious services is much higher amongst respondents in Georgia and Armenia than in Azerbaijan (Figure B.2). Reported son preference is lower among older respondents than among younger ones in Armenia and Azerbaijan, which corresponds with the rise in sex-selection after 1991. This contrasts with reports from East and South Asia that the older generation puts pressure on their children to have sons.

**Figure B.1: Reported preferred gender of the child, if a family has one child**

**(a) Overall response**

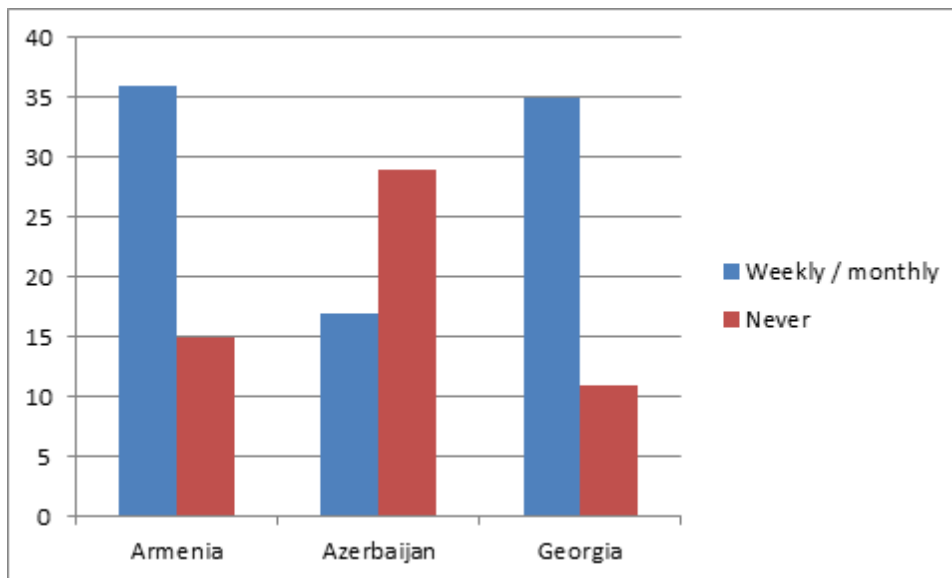


**(b) Socio-economic differentials**



Source: Caucasus Barometer 2010 survey

**Figure B.2: Attendance of Religious Services**  
(other than weddings or funerals)



Source: Caucasus Barometer (2010)



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## ENDNOTES

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<sup>2</sup> Unfortunately, the more recent surveys in the region (such as the Integrated Household Survey in Georgia and the Integrated Living Conditions Survey in Armenia) are focused on economic issues and do not collect the birth history data needed to analyze patterns of sex-selection.

<sup>3</sup> They also capture both prenatal and postnatal sex-selection.

<sup>4</sup> See for example Park and Cho (1995) on Korea, and Zeng Yi et al (1993) on China.

<sup>5</sup> One reason for lower birth registration in the Soviet era was that their definition of a live birth was more restrictive than that of the WHO. The WHO definition has been used in all the Reproductive and Health Surveys and Demographic and Health Surveys conducted in the South Caucasus countries.

Duthe et al (2010) point out that after independence the registration system deteriorated, mainly because administrative control of the population weakened.

<sup>6</sup> The DHS and RHS surveys estimate that between 2000-05 and 2005-10, birth registration rose from 96.4% to 99.6% in Armenia, and from 93% to 97% in Georgia. In Azerbaijan, an estimated 93.6% of births had been registered by the DHS 2006 survey, but this was the last such survey.

<sup>7</sup> This is also related to birth order, with the excess mortality typically concentrated among second and higher birth order daughters. See Das Gupta (1987) on India, Choe (1987) on the Republic of Korea, and Muhuri and Preston (1991) on Bangladesh, and many subsequent studies in East and South Asia.

<sup>8</sup> There are several studies on this, for example Lapidus (1978), Heyat (2002), and Matossian (1962).

<sup>9</sup> The increase in Azerbaijan may be primarily in the agrarian sector. Estimates vary: the UN Statistical Division estimates that labor-force participation rates fell between 1990 and 2010 amongst both women and men in all three South Caucasus countries ([unstats.un.org](http://unstats.un.org), accessed 1 March 2014).

<sup>10</sup> See for example World Bank (2000), Dudwick et al (eds) 2002, and the early DHS and RHS reports.

<sup>11</sup> The data from the vital registration systems of the South Caucasus countries show a similar pattern, but are subject to the caveats above on changes in the coverage of birth registration.

<sup>12</sup> The same may be the case in the North Caucasus, which is part of Russia.

<sup>13</sup> The USSR was dissolved in December 1991, so any demographic responses would be expected to be seen in the data from 1992 onwards. However, the dissolution could be foreseen in from events during the period just preceding it. In Georgia, the estimated GDP per capita began declining already by 1990, perhaps reflecting some disruption accompanying the anticipated dissolution.

<sup>14</sup> Financial Times Special Report on Azerbaijan, March 12, 2015.

<sup>15</sup> Nandi and Deolalikar (2013) argued that the ban may have helped avert rises in sex-selection, but they are unable to establish that the bans in neighboring states were implemented equally well.

<sup>16</sup> A plethora of studies using cross-sectional data from many settings indicate that exposure to the media significantly influences norms and behaviors, controlling for other factors such as women's education. This applies to a range of outcomes. For example, in Brazil, Thomas, Strauss, and Henriques, (1991) found that almost all the impact of maternal education on child height can be explained by indicators of access to media-reading papers, watching television, and listening to the radio. However, these studies do not use randomized data on media exposure.