

# **Toothless reforms? The remarkable stability of female labor force participation in a top-reforming country**

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## Abstract

Low Female Labor Force Participation (FLFP) constitutes a foregone opportunity at both the macro and at the micro levels, potentially increasing the vulnerability of households and lowering the long-run development perspectives of a country. Most international organizations and national policy makers see low FLFP as a serious issue that needs to be addressed by adopting appropriate policies. We investigate the possible reasons of the remarkable stability of FLFP in a top-reforming upper-middle income country. Our goal is to disentangle the different forces at work and to draw useful lessons for the design of participation-enhancing policies. Using data from a nationally representative Household Survey covering the period 2003-2015, we employ Blinder-Oaxaca (Blinder, 1973 and Oaxaca, 1973) type decomposition to decompose changes over time in FLFP levels into parts that are due to changes in observable factors versus changes in the strength of impact of these factors. This allows us to identify possible shifters of the FLFP rate and proposing areas of special interest for policy making. We show that the stability of FLFP in Georgia during the period 2003-2013 is due to a number of relevant – but offsetting – socio-economic changes taking place in the country, and that the increase in the last period covered by our dataset – 2013-2015 – can be attributed to the emergence of new labor opportunities for women. We conclude that, while useful, supply-side economic reforms (and policies) are not sufficient to increase FLFP and need to be complemented by demand-side policies aiming at creating more and better work opportunities for women.

Keywords: Employment, Female Labor Force Participation, Labor Market, Public Policy, Reforms, Former Soviet Union, Georgia.

JEL Classification: J16, J18, J21, J24, P11, 21, P23

## Introduction<sup>2</sup>

The labor force participation of women tends to be lower and more volatile than that of men across the globe. Often the alteration of the quantity and composition of women's labor supply constitutes one of the primary strategies through which households cope with the fundamental economic changes induced by global integration and shifting economic policies (Heintz, 2006).

Most international organizations and national policy makers see low Female Labor Force Participation (FLFP) as a serious issue that needs to be addressed by adopting appropriate policies.

One of the main problems associated with low FLFP is that it constitutes a foregone opportunity to increase GDP per capita and public finances. A recent document by the International Monetary Fund (IMF) summarizing the findings of the literature on the subject concludes that GDP per capita could be between 5% to 34% higher, depending on the country and on the study (IMF, 2013). This aspect is extremely relevant for emerging and developing nations, as most "missing working women" seem to be there. Even developed countries, however, look at the issue with interest, as increasing FLFP is a way to expand (and to make better use of) the available talent pool, and it could be a good way to mitigate the shrinking labor force in aging economies.

There are also other reasons to care about the level of FLFP. Families in which women do not participate in the labor market might be at higher risk of poverty. In particular, by increasing the vulnerability of the household and by causing a shift in the balance of power within it, low FLFP might disproportionately increase the risk of poverty for women and children. As such, it might have negative effects on child development and wellbeing. On the contrary, increasing FLFP could support further investments in education and health of girls and of children in general, help fight poverty and raise the overall wellbeing together with – as mentioned above – overall (long-term) development. Finally, the better employability of women and a consequent empowerment of females might increase the value of girls in a given society and help in the fight against sex-

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selective abortion – a problem that has caused significant gender imbalances in a number of countries.

For all of these reasons, it is extremely important to understand what the drivers of FLFP truly are. The existing literature tells us that the decision of women to participate in the labor force is affected by a number of factors (economic, social and cultural), some of which change quite slowly as time passes, while others can theoretically be affected quite rapidly by economic and social policy changes. But do (even substantial) socio-economic changes necessarily imply a change in female labor force participation? And what are the true reasons of these changes (or of the lack of change)? Policy makers wishing to design effective policies to encourage FLFP could benefit substantially from clear answers to these questions.

A former Soviet Union country which endured armed conflicts and sweeping economic reforms, the Republic of Georgia is now classified by the World Bank as upper-middle income. Georgia is an interesting example of how FLFP can remain remarkably stable even when an impressive series of socio-economic changes hits a country. It is not clear ex-ante whether this result is due to some specificity of Georgia or to the interaction of several factors offsetting each other. What makes the analysis of the Georgian case particularly interesting, however, is that over the last decade Georgia has been included among the “top reforming countries” and “examples to be followed” in order to transform non-competitive economies into business-friendly environments<sup>3</sup>. This makes the analysis of the Georgian case potentially relevant not only for other developing and transition countries, but also for those developed countries which are pursuing socio-economic reforms in an attempt to increase their competitiveness in an increasingly globalized world.

Observing Georgia can teach us a lot about how people adapt in such a fast-changing economic and social environment and about how quickly (and to what extent) reforms can alter pre-

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<sup>3</sup> Georgia, showed an impressive progress between 2003 and 2013, when it reached the 8<sup>th</sup> place in the Doing Business Ranking. Georgian position is currently 16<sup>th</sup> (World Bank, 2016).

existing behavioral trends; in this particular case, how reforms did (and to what extent) impact female labor force participation.

In this paper, we analyze the evolution of female labor force participation in Georgia, investigating the possible reasons of its apparent and puzzling stability during 2003-2013, and contrasting it with the abrupt change in the period of 2013-2015, in an effort to disentangle the different forces at work and their interactions.

We start our paper by discussing the main determinants of female labor force participation identified by literature on the topic and introducing the reader to the country of Georgia, its specificities, its history, and the events potentially impacting female labor force participation in the period 2003-2015. Afterwards, we introduce the dataset and the methodology used to study the determinants of female labor force participation in Georgia over time and the way in which their contribution to the aggregate FLFP rate changed over the period under consideration. Finally, we discuss the results of our analysis, emphasizing the lessons learned, in particular those that are relevant for the design of effective policies to increase female labor force participation.

## Background

### *Determinants of female labor force Participation*

The literature analyzing the determinants of labor force participation of women is vast and touches a number of different subjects: economics, demography and sociology, to cite a few. Reading it becomes evident that while female labor force participation around the world is unambiguously lower than that of males, the combination of factors leading to this common result can (and in several cases do) differ substantially. The scope of this literature review is to give a reasoned overview of the main factors affecting female labor market participation and of the existing worldwide trends.

In a recent publication, the International Labor Organization (ILO, 2012) defines labor market participation as a slow moving “demographic and behavioral” indicator, as opposed to the faster reacting “economic indicators” such as unemployment and employment. The slow speed of adjustment of labor market participation is due to the fact that, regardless of the current employment state (employed or unemployed, for example) which depends on the current state of the economy, the decision to remain in the labor force (or to leave it) has much deeper roots.

What are these roots? According to the same ILO publication, among the long-term determinants of female labor force participation are demographic trends (decline in fertility rates, aging population, etc.) and social norms and values. Very similarly, The World Bank, in its 2012 World Development Report (World Bank, 2011) emphasizes how changes in fertility rates, in the age profile of the population and in formal and informal institutions (defined as cultural or social norms) can affect labor force participation.

A number of researchers have identified a negative correlation between traditional views about gender roles within a country (as well as at an individual level), and female employment rates (Antecol, 2000; Fernandez & Fogli, 2006; Fortin, 2005; World Bank, 2011). The impact of such traditional views appears to be – in general – stronger during adolescence and after marriage (World Bank, 2011). In “traditionally minded” countries, the opportunity cost of being in the labor force

faced by women is substantial and even the women who are working are facing a significant tradeoff between the choice of having children and that of remaining in the labor force. Does this mean that an increase in labor force participation is possible only at the cost of ever decreasing fertility rates? Not necessarily. A recent study (de Laat & Sevilla-Sanz, 2011) has shown that even if having children is always negatively correlated with labor force participation, in countries where a relatively more modern vision of the gender roles within the household prevail, and where men participate more in home production, women show greater participation in the labor force even at relatively high fertility levels. Therefore, higher fertility and participation are not incompatible, as long as formal and informal institutions facilitate such outcome, by reducing the tradeoff faced by women between having children and pursuing a career.

Both informal institutions and individual preferences, however, take time to adjust, and this can explain the sluggishness with which female labor force participation seems sometimes to react to changes in the socio-economic environment. In this case, formal policies can contribute to speed up the adjustment of female labor force participation to the new reality. For example, the importance of providing affordable, accessible and qualitatively good childcare has been found to be positively correlated with higher female labor force participation all over the world, in developed as well as in developing countries (ILO, 2012).<sup>4</sup>

Changes in economic conditions also play a crucial role, by radically changing the incentives faced by women. The opening of new employment opportunities for women generated by the globalization process, for example, have been among the causes driving the overall increase in female labor force participation over the last 25 years (World Bank, 2011). If economic development can encourage female labor force participation, also negative economic conditions can produce similar results (through the so-called “added-worker effect”). In such cases, especially when other household members lose their jobs and when adequate alternative options for childcare

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<sup>4</sup> Actually, increased female labor force participation turned out to be but one of the positive effects of childcare, others being: increased labor force attachment, increased productivity and decreased absenteeism.



are available, women are more likely to enter the labor force (Khitarishvili, 2014). Finally, the female labor supply is quite responsive to increases in wages. Therefore, any change leading to wage increases can encourage greater female labor force participation.

This means that, as suggested by Alesina, Ichino, & Karabarbounis (2011), policymakers could encourage female participation with the labor force by taxing male and female wages differently. Policies of this type could have both short and long-term impacts. While the impact in the short term is not certain (the increase in wages will stimulate participation today, but potentially encourage human capital accumulation – and a delay in participation - among young women), the likely long-term impact is an increase in labor force participation level once new (and more educated) generations will enter the labor market. More generally, whenever younger generations invest more in education, we are likely to observe an initial reduction in female labor force participation followed by a recovery until a higher equilibrium point is achieved. This is what happened in the Baltic States during their transition process (Smith, 2011).

Overall, the current demographic, economic and social trends observed around the world look promising. The increase in the commonly accepted marrying age for women in many countries has so far resulted in lower fertility and higher education for women, on one hand reducing the opportunity cost of going to work and on the other hand increasing that of staying at home, thereby increasing the probability that women enter the labor force. Still, this global trend is the result of very diverse realities around the world. In several countries FLPF is still relatively low and shows little sign of improvement. It is our believe that understanding the determinants of the Georgian FLFP dynamics is of paramount importance, not only for the country under analysis but also for all the countries that are - or will be - designing policies aimed at increasing the competitiveness of the economy also through increased female labor force participation.

## Introducing the Georgian Puzzle

For most of the twentieth century the Republic Georgia was part of the Soviet Union, and as such it shared the legal, political and economic settings that were regulating many aspects of life in that period, including participation of women in the labor market.

Female labor force participation rates were relatively high at the brink of the fall of the USSR. As shown in Table 1, by 1990 the average female participation rate in Former Soviet Union (FSU) countries was 57.5% (unweighted average), which was rather high compared to other countries in that period<sup>5</sup>. At that time, Georgia had an FLFP of 55.1%, below the regional average and at the 4th bottom line in the rankings.

The collapse of the Soviet Union affected different FSU countries in different ways. In most countries, especially those characterized by higher female labor force participation rates, FLFP decreased during the 1990's. This, however, was not the case for the bottom four countries in terms of FLFP (Georgia included) and for Kazakhstan.

*Table 1: Female labor force participation rate (% of female population ages 15+) and Doing Business ranking in the former Soviet Union countries.*

Country	FLFP 1990	FLFP 2003	FLFP 2014	Δ FLFP 2003-14	DB Rank 2006	DB Rank 2014	Δ DB 2006-14
Estonia	63.0	52.1	56.3	4.2	16	17	-1
Latvia	62.6	51.1	55.2	4.1	26	23	3
Kazakhstan	62.4	64.9	67.9	3.0	86	77	9
Moldova	61.1	48.2	38.1	-10.1	83	63	20
Belarus	60.4	51.6	50.3	-1.3	106	57	49
Armenia	60.0	54.8	54.5	-0.3	46	45	1
Russia	59.6	55.1	57.1	2.0	79	62	17
Lithuania	59.4	55.2	56.0	0.8	15	24	-9
Kyrgyz Rep.	58.4	54.4	56.3	1.9	84	102	-18
Tajikistan	58.1	57.8	59.1	1.3	-	166	-
Ukraine	56.1	51.9	53.5	1.6	124	96	28
<b>Georgia</b>	<b>55.1</b>	<b>56.8</b>	<b>56.8</b>	<b>0.0</b>	<b>100</b>	<b>15</b>	<b>85</b>
Azerbaijan	54.0	58.8	63.1	4.3	98	80	18
Turkmenistan	46.4	47.4	47.1	-0.3	-	-	-
Uzbekistan	46.2	47.5	48.2	0.7	138	141	-3
<b>FSU average</b>	<b>57.5</b>	<b>53.8</b>	<b>54.6</b>	<b>0.8</b>	<b>77</b>	<b>69</b>	<b>15</b>

Source: The World Bank “World Development Indicators”, “Doing Business Report” (World Bank, 2006; World Bank, 2015). Last updated: 10/15/2016.

<sup>5</sup> For example, the average FLFP rate for OECD countries in 1990 was only 48%, lower than most Soviet Republics, with the exception of Turkmenistan and Uzbekistan.

The reasons for the increase in FLFP that Georgia experienced early in transition lay in the events following the fall of Soviet Union. Georgia experienced the biggest drop of economic activity early in transition compared to other Post Soviet countries. Its GDP contracted by 72% if the 1988 and 1994 figures are compared. The highest drop was observed in industrial sectors, with a decrease of almost 85% and growing unemployment (Chitanava, 1997). Georgian working women, favored by horizontal gender segregation - as the sectors wherein they were traditionally concentrated (such as healthcare and education) were less hardly hit – managed in most cases to retain their jobs. Instead, male employment rates and earned incomes plummeted. As a response, many women previously out of the labor force joined the ranks of the economically active in the attempt to earn additional income and help their families stay above the poverty line. Most of these women had to adapt to the new economic reality and took jobs that did not match their education fields, skills, or ambitions (Sumbadze, 2011 cited in World Bank, 2011). This “added worker effect” explains the increase in FLFP early in transition, with the FLFP rate reaching its maximum value (59.1%) in 1994. By 2003, this effect, while still visible in Table 1, had already been partially “re-absorbed” thanks to the partial recovery of the economy, which led to the expansion of male job opportunities and withdrawal of many women from the labor market.

The year 2003, characterized by what is remembered as the “Rose Revolution”, marked the beginning of another period of great changes for Georgia. The new government started a series of global reforms that encompassed all spheres of socio-economic and political life in Georgia. In particular, the following reforms took place in a relatively short period of time:

- In 2004, the newly-elected government initiated a deep reformation of the tax system. As part of this reform, the number of taxes and their rates were reduced to the lowest levels in the transition region, with follow-up adjustments in tax rates taking place in 2008 and 2009;
- In 2005 the preschool system was reorganized and completely decentralized, becoming exclusive responsibility of municipalities, while before was under the responsibility of the Ministry of Education;

- In 2006, the Labor Code reform took place, which abolished the 1993 Labor Code, which was only slightly different from its Soviet predecessor;
- In 2010, the Labor Code was further revised.
- In 2013, fees were abolished in preschools, making preschool education free.

In the same period, relations with Russia quickly deteriorated, leading to several large negative shocks to the economy, including (but not limited to) the closure of Russian borders for Georgian migrants, levying a series of economic sanctions against Georgia, and a military conflict between the two countries. Incidentally, the timing of the military conflict coincided with the start of the global crisis of 2008, which was particularly harsh for the Georgian economy.

In addition (and in connection) to the political and economic fluctuations in Georgia during its transition, other parameters potentially related to female labor force participation changed. For example, as we know from the recent Population Situation Analysis of Georgia (UNFPA, 2015), the fertility rate in Georgia declined from 2.15 in 1990 to 1.44 in 2001, but then it increased again in 2014, reaching a level of 2.01. Given the importance of fertility on FLFP decisions, one would expect these fluctuations in fertility rate to be translated into some fluctuations in FLFP.

Finally, other trends that could potentially have impacted FLFP in the same period are:

- The greater exposure to Western norms and culture through media, migration, and other means, which might have led to changes in social values and norms, thereby affecting the behavior of women in society and the economy (Torosyan, Gerber, & Goñalons-Pons, 2016).
- The increased role played by the Georgian Orthodox Church, which actively promotes traditional values, which might have partially offset the greater exposure to Western norms and culture, adding another layer of complication in the decision of Georgian women to join the labor force (Jashi, 2005; Gal and Kligman 2000).

Basically, over the last decade Georgia has been on a roller coaster of political, economic and social changes. In particular, as it appears from Table 1, the reforming efforts of the Georgian

government were unparalleled among FSU countries, and ultimately led Georgia to overtake even the “early reformist” (and EU members) Baltic States. Indeed, based on its progress in the Doing Business (DB) ranking, Georgia appears to deserve the title of “top reforming country” attributed to it by the World Bank. Even more important is that most of these reforms could be described as “supply side” reforms, aiming at freeing the Georgian labor market from excessive regulation in the hope of improving its functioning.

Despite this, and differently from other FSU countries, Georgian FLFP in 2014 was still the same as in 2003.

The question that we are going to address in the remaining of our paper is: what is that made labor force participation in Georgia resilient to so many large-scale changes? Was this apparent stability reflecting absence of change or, rather, the result of the complex interaction between different factors?

## Data

Our analysis is based on data from annual household surveys collected and made publicly available by the Georgian Statistical Office ([www.GeoStat.ge](http://www.GeoStat.ge)<sup>6</sup>). The surveys were initiated in 2003, and the latest round of data is available for 2015; we make use of data for all of the interim years. The survey is organized as a rotating panel, with each household being interviewed in 4 consecutive quarters and then being replaced by a new observation. Given this strategy, no family is interviewed in the same quarter of two consecutive years, since by that time it has exited the sample. For our analysis, we opt to use data from only one quarter (quarter 2<sup>7</sup>), which produces a cross section dataset for each year.

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<sup>6</sup>For access to data visit <http://www.geostat.ge/index.php?action=meurneoba&mpid=1&lang=eng>

<sup>7</sup>Our goal is to capture year-to-year changes, and that can be done focusing on any of the quarters. The choice of quarter 2 is explained by the fact that it captures the “middle” level of LFP - between the lowest in quarter 1 and the highest in quarter 3.

Sampling methodology used by GeoStat is relatively simple and is aimed at maintaining a random sample that is representative of population by regions (by settlement type – rural and urban). There are 10 regions in total (see the Table A1 in the Data Appendix) with the capital city of Tbilisi being one of the regions (predominantly urban), and the remaining 9 regions covering various geographical areas of the country.

The total size of the sample in most quarters is kept to about 10,000 observations (i.e. individuals), with the exception of 2008, 2009 and 2010 when, due to an increase in funding, GeoStat doubled the size of the collected sample. After 2010, however, the size of the sample returns to its original level.

The survey consists of several parts, organized by themes/modules. Data collected from these modules is stored in separate files. For the purpose of this study we merge together variables from these various modules. In the process of merging, due to lack of data on certain individuals and even entire families in some modules, we generate missing values, on which we report in the analysis section below.

## Methodology

The goal of our work is two-fold. Firstly, we study the dynamics of female labor force participation in Georgia over time (for the years 2003-2015) and try to identify the main variables/factors that influence FLFP. This is done by estimating probit regressions for odd years<sup>8</sup> to explain probability of being in the labor force for individual women of working age (age 15 and above) as a function of various personal, household, and broader contextual variables.

Secondly, we break down bi-annual changes in probability of being in the labor force into two components: one that is due to changes in variables/factors behind FLFP, and the other that is due to changes in the size of the impact those variables/factors have on FLFP (i.e. due to changes in

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<sup>8</sup> Given we are interested in general trends rather than short-term changes in the FLFP, we do not report results for each of the 13 years, but focus on bi-annual changes.

parameters associated with those variables). For this purpose, we employ Blinder-Oaxaca (Blinder, 1973 and Oaxaca, 1973) type decomposition, which allows explicitly writing the change in estimated probability over time as a sum of the two components discussed above.

More specifically, after fitting bi-annual probit model for FLFP participation we calculate:

**Option 1**

$$\begin{aligned} & \hat{P}(\text{in LFP}|\bar{X}_t, \hat{\beta}_t) - \hat{P}(\text{in LFP}|\bar{X}_{t-1}, \hat{\beta}_{t-1}) = \\ & \underbrace{\hat{P}(\text{in LFP}|\bar{X}_t, \hat{\beta}_t) - \hat{P}(\text{in LFP}|\bar{X}_{t-1}, \hat{\beta}_t)}_{\text{Change due to } \Delta \bar{X}} + \underbrace{\hat{P}(\text{in LFP}|\bar{X}_{t-1}, \hat{\beta}_t) - \hat{P}(\text{in LFP}|\bar{X}_{t-1}, \hat{\beta}_{t-1})}_{\text{Change due to } \Delta \hat{\beta}} \end{aligned} \quad (1)$$

**Option 2**

$$\begin{aligned} & \hat{P}(\text{in LFP}|\bar{X}_t, \hat{\beta}_t) - \hat{P}(\text{in LFP}|\bar{X}_{t-1}, \hat{\beta}_{t-1}) = \\ & \underbrace{\hat{P}(\text{in LFP}|\bar{X}_t, \hat{\beta}_{t-1}) - \hat{P}(\text{in LFP}|\bar{X}_{t-1}, \hat{\beta}_{t-1})}_{\text{Change due to } \Delta \bar{X}} + \underbrace{\hat{P}(\text{in LFP}|\bar{X}_t, \hat{\beta}_t) - \hat{P}(\text{in LFP}|\bar{X}_t, \hat{\beta}_{t-1})}_{\text{Change due to } \Delta \hat{\beta}} \end{aligned} \quad (2)$$

wherein fitted probabilities are estimated for each observation in a given year (using the corresponding set of parameter estimates and average values of explanatory variables), and then averaged for that year. Note that in Option 1, change due to X-variables is computed using current parameter estimates, while change due to parameters is computed using lagged X-variables. It is the opposite in Option 2; change due to X-variables is computed using lagged parameter estimates, while change due to parameters is computed using current X-variables.

In addition to point estimates for the two components, we also bootstrap standard errors using 100 repetitions and report them as part of our decomposition output.

## Analysis and Discussion

The dependent variable in our probit regressions is female labor force participation (=1 if the woman is in the labor force, =0 otherwise). We look at working age (15 years and older) females as our observations. Summary statistics for the dependent variable for the final/usable samples for odd years is presented in Table 2.

Table 2: Summary statistics for FLFP (as % of working age female population)

	2003		2005		2007		2009		2011		2013		2015	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N
<b>All</b>	<b>61</b>	<b>4234</b>	<b>60</b>	<b>4175</b>	<b>56</b>	<b>3989</b>	<b>58</b>	<b>7960</b>	<b>59</b>	<b>4075</b>	<b>60</b>	<b>3767</b>	<b>63</b>	<b>3984</b>
<b>By age group:</b>														
Age 15-24	32	675	29	693	26	672	27	1322	28	650	25	573	26	495
Age 25-44	72	1425	71	1338	68	1212	69	2296	69	1225	68	1098	70	1158
Age 45-65	76	1275	77	1246	75	1174	75	2590	78	1307	80	1288	82	1402
Age 65+	45	933	47	975	40	975	41	1816	41	924	44	851	45	986
<b>By marital status</b>														
Single	51	841	43	855	44	898	46	1573	48	773	46	630	50	614
Married	67	2452	68	2380	64	2180	65	4619	65	2350	66	2240	69	2352
Divorced	71	104	70	81	69	117	65	220	72	125	75	116	74	137
Widowed	53	837	55	859	48	794	47	1548	49	827	52	781	52	881
<b>By nationality:</b>														
Georgian	62	3453	60	3415	55	3310	57	6741	59	3394	60	3179	63	3371
Armenian	55	249	57	296	63	256	60	436	55	252	61	237	57	294
Azeri	61	357	68	312	68	269	64	555	64	305	63	211	67	242
Other	57	175	43	152	51	154	46	228	48	124	52	140	47	77
<b>By education:</b>														
No Schooling	.	0	.	0	23	22	28	78	52	50	42	33	33	21
Primary	51	800	48	745	42	684	39	1305	37	651	37	537	33	485
Secondary	58	1662	56	1630	53	1601	56	3189	58	1568	59	1471	63	1612
Special Secondary	70	555	72	632	68	639	67	1400	67	786	69	760	71	788
Vocational	62	293	71	288	63	175	69	207	70	87	66	103	79	77
Higher	72	867	70	818	67	825	67	1767	68	933	69	863	69	1001
<b>By settlement type:</b>														
Capital	69	2560	69	2561	62	2473	64	4852	65	2501	67	2338	69	2437
Urban (non-capital)	51	889	48	863	46	798	52	1733	54	819	51	794	55	851
Rural	48	785	45	751	47	718	41	1375	45	755	46	635	49	696
<b>By region:</b>														
Kakheti	63	537	73	493	63	485	65	915	66	485	65	449	62	433
Tbilisi	48	785	45	751	47	718	41	1445	45	789	45	678	48	726
Shida Kartli	68	291	54	334	54	298	54	587	65	288	68	291	68	293
Kvemo Kartli	60	507	62	519	62	473	62	905	55	457	57	402	65	444
Javakheti	75	263	72	277	69	274	70	500	63	262	60	239	65	266
Ajara	63	358	48	344	32	378	56	816	62	371	67	340	70	350
Guria	81	237	72	221	79	234	73	459	70	242	71	214	77	234
Svaneti	58	372	62	327	62	341	64	758	64	404	66	368	61	399
Imereti	65	650	65	708	58	622	58	1212	62	590	60	622	64	656
Mtskheta	50	234	58	201	51	166	53	363	51	187	62	164	67	183

Note: the numbers are based on the final samples used in Oaxaca-Blinder decompositions

The choice of the explanatory variables in our probit regressions is guided by the vast literature on female labor force participation and by the availability of data. Broadly, we divide the explanatory variables into the following three types: personal characteristics (such as age, nationality, education level, marital status, duration of residency in the current location), household descriptors (total additional labor income of the household, total non-labor income of the household, number of additional economically active household members, number of adult males and females of different age, number of own children of different age), and contextual variables



(local unemployment rate and local female labor force participation rate). Table A2 in the Data Appendix provides definitions of those variables and notes on their construction.

In our first steps of putting together the dataset, we are merging and cleaning data from various survey files. We lose observations at this step due to missing information for some or all members of a given household in one or more of survey modules/files. Furthermore, during construction of aggregate (household and locality) variables used in the final analysis we face additional data losses, as explained next.

To construct household variables that were collected at individual level, we aggregate values over individual household members. The extent of missing data for some variables used for this aggregation reaches 10% of the sample. Unfortunately, these missing values are spread over many households with just one or few observations missing for a given household, instead of being clustered over a certain number of households. This leads to a large number of incomplete households and as a result to a big number of incomplete observations - which are working age females from those households. To remedy the situation, we use zero values for missing individual data whenever such substitution can be justified, which enables us to bring back some of the lost observations. An example of such variable is the labor income of other family members (excluding that of the woman in question).

Another variable that we construct and which leads to lost observations is the number of children in the family. In most families, we can easily identify the mother of the children reported on the household roster. However, given the prevalence in Georgia of multi-nucleus households wherein several generations and/or families of siblings cohabit together, in some cases it is impossible to identify how children are distributed among females who could potentially be their mothers; we end up losing those observations.

The construction of contextual variables is done using data from the sample aggregated to the level of region and the type of settlement, giving us 20 localities (the capital - which is predominantly urban with a small fraction of population reported as rural - amounts to two

localities, and each of the remaining 9 regions are divided into rural and urban localities). To control for the overall economic situation in a given locality, we compute the total (male and female) unemployment rate for that locality. Also, to control for the level of female participation in each locality, we compute the local female labor force participation rate. To some extent this variable captures the expected “normal”, or accepted, level of female engagement in labor market activities prevailing in a given location. Given the use of these locality variables in our probit regressions, we do not explicitly control for the type of settlement (rural/urban) or the region.

Due to described losses of data the final samples available for estimation have 4-14% less observations per year compared to the numbers reported in Table A1 (with the share of missing observations decreasing for more recent years). To check for possible selectivity in unused observations we compare distribution of several important variables (that are available for the entire sample) for the full sample and for the subsample of complete observations<sup>9</sup>. We notice a modest (and for many years insignificant) drop in the average household size and a small (1 year) increase in the average age when comparing the samples. This is probably due to dropping complex/big households with many young children, which could have affected both the average family size and the average age. We do not observe any significant changes in the level of FLFP, level of education, marital status and nationality composition after dropping incomplete observations.

Table 3 provides summary statistics for the explanatory variables used in the analysis, and we choose to report data for odd years only to save space (and given there are no unusual deviations in means for the even years).

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<sup>9</sup> Results are not reported here, but are available from the authors upon request.

Table 3: Summary statistics for explanatory variables, odd years

Variable	2003		2005		2007		2009		2011		2013		2015	
	Av.	St.D.	Av.	St.D.	Av.	St.D.	Av.	St.D.	Av.	St.D.	Av.	St.D.	Av.	St.D.
<b>Personal characteristics</b>														
Age	46.3	19.0	46.5	19.4	47.0	19.9	47.4	19.7	47.4	19.7	47.9	19.5	49.5	19.4
Underage [15-20]	0.09	0.29	0.10	0.30	0.11	0.31	0.09	0.29	0.10	0.30	0.08	0.28	0.07	0.25
Young [21-24]	0.07	0.26	0.07	0.25	0.06	0.24	0.08	0.27	0.06	0.24	0.07	0.25	0.06	0.23
Pension age	0.17	0.37	0.18	0.38	0.20	0.40	0.20	0.40	0.20	0.40	0.19	0.39	0.21	0.40
Single	0.20	0.40	0.20	0.40	0.23	0.42	0.20	0.40	0.19	0.39	0.17	0.37	0.15	0.36
Married	0.58	0.49	0.57	0.50	0.55	0.50	0.58	0.49	0.58	0.49	0.59	0.49	0.59	0.49
Divorced	0.02	0.15	0.02	0.14	0.03	0.17	0.03	0.16	0.03	0.17	0.03	0.17	0.03	0.18
Widowed	0.20	0.40	0.21	0.40	0.20	0.40	0.19	0.40	0.20	0.40	0.21	0.41	0.22	0.42
Georgian	0.82	0.39	0.82	0.39	0.83	0.38	0.85	0.36	0.83	0.37	0.84	0.36	0.85	0.36
Armenian	0.06	0.24	0.07	0.26	0.06	0.25	0.05	0.23	0.06	0.24	0.06	0.24	0.07	0.26
Azeri	0.08	0.28	0.07	0.26	0.07	0.25	0.07	0.25	0.07	0.26	0.06	0.23	0.06	0.24
Other	0.04	0.20	0.04	0.19	0.04	0.19	0.03	0.17	0.03	0.17	0.04	0.19	0.02	0.14
Primary	0.19	0.39	0.18	0.38	0.17	0.38	0.16	0.37	0.16	0.37	0.14	0.35	0.12	0.33
Secondary	0.39	0.49	0.39	0.49	0.40	0.49	0.40	0.49	0.38	0.49	0.39	0.49	0.40	0.49
Special Sec.	0.13	0.34	0.15	0.36	0.16	0.37	0.18	0.38	0.19	0.39	0.20	0.40	0.20	0.40
Vocational	0.07	0.25	0.07	0.25	0.04	0.20	0.03	0.16	0.02	0.14	0.03	0.16	0.02	0.14
Higher	0.20	0.40	0.20	0.40	0.21	0.41	0.22	0.42	0.23	0.42	0.23	0.42	0.25	0.43
Just moved	0.03	0.16	0.03	0.17	0.03	0.18	0.04	0.21	0.05	0.22	0.04	0.20	0.04	0.20
Moved 1-3 y. ago	0.04	0.19	0.03	0.17	0.03	0.17	0.04	0.21	0.04	0.20	0.05	0.22	0.04	0.20
Moved 3-5 y. ago	0.02	0.14	0.02	0.15	0.02	0.14	0.03	0.16	0.03	0.17	0.03	0.17	0.02	0.13
Moved 5+ y. ago	0.72	0.45	0.72	0.45	0.72	0.45	0.71	0.45	0.72	0.45	0.73	0.44	0.77	0.42
Always there	0.20	0.40	0.20	0.40	0.19	0.39	0.17	0.38	0.16	0.36	0.15	0.36	0.13	0.34
<b>Household characteristics</b>														
Tot. add. lab. inc.	80.9	143.6	107.7	180.0	133.1	285.5	169.0	326.9	212.6	434.3	255.9	433.8	356.0	558.8
Tot. non-lab. Inc	82.2	183.0	95.2	149.0	119.5	217.7	166.8	271.4	232.8	313.0	351.9	510.7	341.4	465.1
Economically act.	1.68	1.18	1.68	1.17	1.58	1.14	1.53	1.10	1.59	1.17	1.59	1.14	1.64	1.15
Men [15-24]	0.33	0.58	0.37	0.60	0.34	0.61	0.32	0.57	0.30	0.56	0.28	0.53	0.24	0.50
Women [15-24]	0.33	0.60	0.34	0.62	0.35	0.62	0.32	0.58	0.29	0.55	0.27	0.52	0.21	0.48
Men [25-45]	0.59	0.61	0.58	0.61	0.54	0.61	0.57	0.63	0.58	0.63	0.57	0.62	0.52	0.60
Women [25-45]	0.36	0.57	0.37	0.56	0.36	0.54	0.36	0.56	0.37	0.56	0.32	0.52	0.30	0.50
Men [45-65]	0.44	0.50	0.45	0.50	0.45	0.51	0.49	0.51	0.46	0.51	0.49	0.51	0.50	0.52
Women [45-65]	0.25	0.45	0.25	0.44	0.27	0.47	0.28	0.46	0.28	0.47	0.28	0.47	0.26	0.46
Men (65+)	0.23	0.42	0.25	0.43	0.25	0.43	0.21	0.41	0.22	0.41	0.23	0.42	0.21	0.41
Women (65+)	0.17	0.38	0.19	0.40	0.21	0.42	0.18	0.39	0.19	0.39	0.18	0.39	0.18	0.39
Children [0-2]	0.06	0.27	0.05	0.24	0.05	0.24	0.07	0.28	0.09	0.35	0.10	0.35	0.09	0.33
Children [3-5]	0.07	0.30	0.08	0.32	0.06	0.28	0.07	0.30	0.08	0.31	0.09	0.33	0.09	0.34
Children [6-10]	0.16	0.47	0.15	0.45	0.13	0.41	0.12	0.40	0.13	0.42	0.13	0.40	0.13	0.41
Children [11-14]	0.16	0.45	0.14	0.41	0.13	0.40	0.12	0.38	0.11	0.38	0.10	0.35	0.10	0.35
<b>Contextual variables</b>														
Local Unemp.	0.07	0.06	0.08	0.06	0.09	0.05	0.10	0.06	0.09	0.05	0.10	0.06	0.07	0.05
Local FLFP	0.56	0.11	0.56	0.12	0.53	0.13	0.51	0.09	0.53	0.08	0.54	0.09	0.61	0.09
N	4234		4175		3989		7960		4075		3767		3984	

The results from probit regressions for odd years are offered in Table 4. McFadden's pseudo  $R^2$  from the model varies between 0.21 and 0.24 for years in the sample. Most variables have very intuitive signs and help to explain the variation in labor force participation. We opt not to include

regional fixed effects or locality indicators, given those are almost completely captured by locality variables (locality unemployment and female labor force participation rates).

Table 4: Probit regression results for odd years

Variables	2003	2005	2007	2009	2011	2013	2015
<b>Personal characteristics</b>							
Age	-0.010***	-0.015***	-0.015***	-0.014***	-0.013***	-0.011***	-0.010***
Underage [15-20]	-1.593***	-1.704***	-1.626***	-1.898***	-1.978***	-2.078***	-1.978***
Young [21-24]	-0.903***	-0.851***	-0.893***	-0.747***	-0.505***	-0.650***	-0.900***
Pension age	-0.704***	-0.616***	-0.706***	-0.575***	-0.632***	-0.764***	-0.763***
Married	0.012	0.193**	-0.027	-0.029	-0.242**	-0.092	-0.203*
Divorced	0.098	0.257	0.277*	0.072	0.103	0.23	0.074
Widowed	-0.031	0.244**	-0.014	-0.137*	-0.318***	-0.135	-0.274**
Armenian	0.038	0.171*	0.182*	0.112*	0.314***	0.222**	0.101
Azeri	-0.183*	-0.178*	0.1	0.037	-0.046	0.209**	-0.045
Other	0.009	-0.224*	0.063	-0.074	-0.087	-0.106	-0.169
Primary	-0.051	0.033	-0.024	-0.094*	-0.200***	-0.159**	-0.438***
Special Secondary	0.259***	0.415***	0.325***	0.246***	0.167***	0.211***	0.200***
Vocational	0.111	0.311***	0.102	0.211**	0.007	0.067	0.446***
Higher	0.573***	0.572***	0.538***	0.486***	0.429***	0.495***	0.346***
Just moved	-0.684***	-0.332**	-0.360**	-0.161*	-0.350***	-0.532***	-0.108
Moved 1-3 years ago	-0.299**	-0.271*	-0.085	-0.119	-0.076	-0.309**	-0.185
Moved 3-5 years ago	-0.382**	-0.109	-0.213	-0.188*	-0.153	-0.289*	0.137
Moved 5+ years ago	-0.06	0.07	0.259***	0.144**	0.179**	-0.033	0.074
<b>Household characteristics</b>							
Total add. labor income	-0.081***	-0.087***	-0.039***	-0.017***	-0.010*	-0.014**	-0.006
Total non-labor income	-0.037***	-0.006	-0.043***	-0.022***	-0.011	-0.009**	-0.013***
Economically active	0.193***	0.151***	0.102***	0.02	-0.017	-0.044	0.076**
Men [15-24]	-0.009	0.004	-0.070*	0.003	0.078*	0.038	-0.074
Women [15-24]	-0.003	-0.005	0.036	0.003	0.062	0.091*	0.008
Men [25-45]	-0.184***	-0.204***	-0.178***	-0.095***	0.015	-0.054	-0.218***
Women [25-45]	-0.164***	-0.054	-0.055	-0.084**	-0.073	0.011	-0.004
Men [45-65]	-0.131**	-0.018	0.08	-0.063	0.09	0.032	-0.05
Women [45-65]	-0.267***	-0.365***	-0.333***	-0.343***	-0.385***	-0.376***	-0.430***
Men (65+)	-0.102	-0.006	-0.026	-0.06	0.022	0.014	-0.031
Women (65+)	-0.09	-0.025	-0.168***	-0.046	-0.081	0.013	-0.022
Children [0-2]	-0.646***	-0.609***	-0.384***	-0.507***	-0.573***	-0.424***	-0.600***
Children [3-5]	-0.229***	-0.404***	-0.377***	-0.372***	-0.387***	-0.276***	-0.151**
Children [6-10]	-0.186***	-0.124**	-0.098	-0.228***	-0.100*	-0.260***	-0.244***
Children [11-14]	0.092*	0.039	-0.009	-0.041	-0.075	-0.051	0.024
<b>Contextual variables</b>							
Local Unemployment	-1.076	-0.776	-1.904***	-0.693*	-0.967*	-0.579	-1.724**
Local FLFP	3.183***	3.289***	3.142***	4.119***	4.102***	4.448***	3.718***
<b>Constant</b>	-0.504*	-0.660**	-0.355	-0.607***	-0.626**	-0.890***	-0.522
N	4234	4175	3989	7960	4075	3767	3984
Pseudo R <sup>2</sup>	0.213	0.237	0.233	0.215	0.232	0.241	0.241

In general, age (being of pension age or below 25 years old) greatly affects the probability of being economically active. The strongest impact is by far from being in (15-20) years old age group – labor force participation of very young Georgian women is extremely low. The next age group is slightly better in that sense, but even in this group the probability of being economically

active is often lower than that for pension age women (judging by the size of the parameter estimates for all years).

Marital status has a modest (a small and often insignificant) and mixed (varying in sign over years) impact on the decision of women to join the labor force. The fact that the marital status of a woman does not have a clear and strong impact on her probability of being in the labor force in a traditional country such as Georgia might sound surprising. However, in a way we are already controlling for many factors that are associated with marriage (such as age, number of children, family composition), so the additional contribution of the marital status, given all these factors, is almost zero.

The pattern of FLFP rates of ethnic minorities is also mixed. We do observe improvement over time of Armenian women's involvement in the labor market, but the trends for other nationalities is less clear-cut.

Education is associated with a higher probability of being in the labor market with the impact of higher education being especially strong (but decreasing over time). The impact of vocational training seems to be very volatile over time, but the high and significant estimates for this variable in some years indicate potential importance of this type of education for the labor market.

Not being a long-term resident in a given location is associated with lower labor market participation rate, especially for recent movers. This indicates that the migration of women in Georgia is, perhaps, driven by reasons other than economic (including employment). We observe a weakened effect from moving as time passes – less recent movers are in a less disadvantaged condition compared to local residents, while the difference disappears (or becomes positive in some cases) for those who have stayed in a given location more than 5 years.

The labor income of other household members has a significant and big negative impact on the decision of women to join the labor force, and so does non-labor income of the household (to a smaller extent).

Large households with many other working age adults are not conducive of female labor force participation. Especially strong are the negative effects of having men aged 25-45 years old and women in the 45-65 age group in the household. This highlights a profile of a young married woman who lives with her husband's family (with his mother present) – the combined impact of this arrangement is very sizable, greatly adding to (in some cases almost doubling) the effect of being young (21-25 years old).

Having children significantly and sizably lowers the probability of being economically active. The impact is the strongest for children in the 0-2 age category. If we combine this with the fact that many Georgian women marry and have their first child(ren) early in life (in their early 20s), the result is a very high non-participation rate, almost equivalent to that of the 15-20 year old group. If we add the impact of having a young child to that of leaving with the husband's family, the probability of a woman in her early 20s being in the labor force becomes even lower than that of an unmarried 15-20 year old woman.

The impact of local unemployment is mostly negative, but the significance and the size of this impact varies greatly over time. As for the effect of local female participation rate, it is significantly positive, very sizable, and is growing in importance over time.

Next, we decompose probability changes observed between odd years into changes due to shifts in the factors and changes due to difference in parameter estimates between those years. Table 5 reports the results of this decomposition. Standard errors accompanying our estimates are bootstrapped (based on 100 repetitions<sup>10</sup>).

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<sup>10</sup> There is no substantial change in significance of results when using 250 repetitions, the only change is that total change for 2013-15 becomes 5% significant instead of 10%.

Table 5: Oaxaca-Blinder decompositions of changes in propensity of being in LFP (in percent).

Change		2003-2005	2005-2007	2007-2009	2009-2011	2011-2013	2013-2015
Option 1 ( $\omega=1$ )	Due to $\mathbf{X}$	-2.03 ***	-5.12 ***	-2.66 ***	1.44 **	2.45 ***	9.47 ***
	Due to $\beta$	1.27	1.39	4.03 ***	-0.34	-1.03	-6.99 ***
Option 2 ( $\omega=0$ )	Due to $\mathbf{X}$	-2.31 ***	-5.34 ***	-3.25 ***	1.52 ***	2.12 ***	8.71 ***
	Due to $\beta$	1.55 *	1.62	4.61 ***	-0.42	-0.71	-6.22 ***
<b>Total change</b>		<b>-0.76</b>	<b>-3.73 ***</b>	<b>1.37</b>	<b>1.10</b>	<b>1.41</b>	<b>2.48 *</b>

Note: \*- significant at 10% level, \*\*- significant at 5% level, \*\*\*-significant at 1% level. Significance levels are based on bootstrapping procedure with 100 repetitions.

The results of this decomposition are rather interesting. When we compare consecutive odd years, in most cases we observe no significant change in the probability of being in the labor force; the 2 exceptions are: a highly significant drop of about 3.7% in this probability between 2005 and 2007, and a marginally significant increase by 2.5% in between 2013 and 2015. Overall, these changes more or less offset each other over time: the predicted FLFP in 2015 is 1.8% above that in 2003, but this estimate is significant only at the 10% level<sup>11</sup>.

Another curious observation is that the probability of being in the labor force is impacted more strongly by changes in the values of underlying variables, while the impact of changing parameters is smaller in magnitude and is often insignificant (in fact the joint contribution of parameters to FLFP change is significant only in 2007-2009 and 2013-2015).

However, the most interesting finding is the fact that this lack of overall change in FLFP is the result of two big changes that always work in the opposite directions. In the period 2003-2009 we observe a negative impact on FLFP due to shifts in underlying factors, and a positive one coming from the changing strength of impact of these factors on FLFP. After 2009, the direction of impact on FLFP from variables and from parameters reverses. We start observing significant improvement in the impact of explanatory variables, but the change in parameter estimates weakens this positive impact.

A natural next step is to try understanding how individual variables and parameters contribute to the overall changes in FLFP. To gain better insight into the reactivity of FLFP to

<sup>11</sup> This result is calculated using Oaxaca-Blind decomposition for years 2015 and 2003, and is not reported in Table 5.

changes in various variables we next perform a series of computations of probability changes, where we let only one variable and its parameter change at a time:

$$\Delta \hat{P}_j = \underbrace{\hat{P}(\text{in LFP} | \bar{x}_{t,j}, \bar{X}_{t-1,\bar{j}}, \bar{\beta}_{t-1}) - \hat{P}(\text{in LFP} | \bar{X}_{t-1}, \bar{\beta}_{t-1})}_{\text{Due to } \Delta x_j} + \underbrace{+ \hat{P}(\text{in LFP} | \bar{x}_{t,j}, \hat{\beta}_{t,j}, \bar{X}_{t-1,\bar{j}}, \bar{\beta}_{t-1,\bar{j}}) - \hat{P}(\text{in LFP} | \bar{x}_{t,j}, \bar{X}_{t-1,\bar{j}}, \bar{\beta}_{t-1})}_{\text{Due to } \Delta \beta_j} \quad (3)$$

Here  $j$  is indexing a given variables (while  $\bar{j}$  captures all the other variables in the model) and  $t=2005, 2007, 2009, 2011, 2013$  and  $2015$ . Note that this probability change resembles Option 2 structure<sup>12</sup>. Given other variables and parameters have to be kept constant, we keep them at their ( $t-1$ ) values. Table A3 in the Appendix presents individual changes computed based on equation (3).

It is important to emphasize that since the model used to predict probability of being in the labor force is not linear, the total change in probability that we observe between two time periods cannot be viewed as the sum of changes due to individual variables calculate by (3). In this way, individual changes do not add up to give the total observed change in probability over time.

Despite this, we observe that the sum of changes due to shifts in individual variables closely tracks the overall change computed in Oaxaca-Blinder decomposition (observed when variables change simultaneously, see table A3). Hence, the first part of the equation (3) gives us a very interesting insight about the contribution of each individual variable in shifting the overall FLFP. These changes are reported in Table 6, in which we have grouped similar variables in sets, for ease of interpretation and discussion.

When we calculate the second part of the equation (3), we observe quite large changes in the propensity of being in the labor force (see Table 7). This variation is mostly due to high volatility in parameter estimates between time periods - considerably bigger than changes in average values of  $x$ -variables over time. However, despite being large, many differences in parameter values are statistically insignificant (Table A3 in the Appendix summarizes the results from testing changes in

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<sup>12</sup> Parallel calculations are performed following Option 1 structure, but the results are qualitatively similar and are not reported here. These results are available from the authors upon request.



parameter estimates). This is the main reason why the overall changes due to parameters that is estimated by Oaxaca-Blinder decomposition tend to be insignificant (4 out of 6 cases, see Table 5).

From Table 7 it is obvious that computations of individual parameter changes are strongly affected by the volatility of underlying parameters, and, unlike in the case with x-variables, we have to be more cautious when interpreting the absolute size of each individual change. We also observe a big difference between the sum of all individual impacts from the total change in probability due to change in all parameter estimated by Oaxaca-Blinder decomposition. This is why below we focus on the relative importance of individual parameters in shifting the FLFP, as well as changes in importance/impact direction over time.

Table 6: Changes in propensity of being in LFP from individual variables (in percent).

Variables		2003-05	2005-07	2007-09	2009-11	2011-13	2013-15
Personal Characteristics	Age	-0.06	-0.34	-0.19	0.02	-0.29	-0.64
	Underage [15-20]	-0.54	-0.45	0.98	-0.70	1.14	1.24
	Young [21-24]	0.08	0.14	-0.45	0.47	-0.15	0.30
	Pension age	-0.33	-0.54	-0.01	0.05	0.29	-0.48
	<b>Aging</b>	<b>-0.85</b>	<b>-1.18</b>	<b>0.33</b>	<b>-0.17</b>	<b>1.00</b>	<b>0.43</b>
	Married	0.00	-0.17	-0.04	0.00	-0.17	0.02
	Divorced	-0.02	0.10	-0.02	0.01	0.00	0.03
	Widowed	-0.01	-0.06	0.00	-0.05	-0.05	-0.07
	<b>Marital status</b>	<b>-0.03</b>	<b>-0.14</b>	<b>-0.05</b>	<b>-0.03</b>	<b>-0.22</b>	<b>-0.03</b>
	Armenian	-0.01	-0.05	0.02	0.02	-0.23	0.04
	Azeri	-0.08	0.04	-0.04	0.01	0.00	0.09
	Other	0.00	-0.02	-0.03	-0.01	-0.02	0.07
	<b>Nationality</b>	<b>-0.10</b>	<b>-0.03</b>	<b>-0.05</b>	<b>0.03</b>	<b>-0.25</b>	<b>0.20</b>
	Primary	0.02	-0.01	0.01	0.02	0.13	0.13
	Special Secondary	0.20	0.14	0.20	0.16	0.06	-0.03
	Vocational	0.00	-0.30	-0.07	-0.04	0.00	-0.02
	Higher	-0.19	0.24	0.32	0.13	0.00	0.42
	<b>Education</b>	<b>0.03</b>	<b>0.07</b>	<b>0.46</b>	<b>0.27</b>	<b>0.20</b>	<b>0.49</b>
	Just moved	-0.04	-0.08	-0.14	-0.05	0.18	0.00
	Moved 1-3 years ago	0.06	0.00	-0.05	0.01	-0.03	0.10
Moved 3-5 years ago	-0.03	0.01	-0.06	-0.02	0.01	0.12	
Moved 5+ years ago	0.00	0.00	-0.10	0.03	0.08	-0.05	
<b>Migration</b>	<b>-0.02</b>	<b>-0.06</b>	<b>-0.35</b>	<b>-0.04</b>	<b>0.24</b>	<b>0.18</b>	
Household Characteristics	Total HH labor inc.	-0.82	-0.85	-0.55	-0.28	-0.16	-0.54
	Tot. HH non-wage inc	-0.18	-0.06	-0.81	-0.57	-0.50	0.04
	<b>Additional income</b>	<b>-1.00</b>	<b>-0.91</b>	<b>-1.36</b>	<b>-0.85</b>	<b>-0.66</b>	<b>-0.50</b>
	Economically active	0.01	-0.58	-0.21	0.05	0.00	-0.08
	Men [15-24]	-0.01	0.00	0.07	0.00	-0.07	-0.05
	Women [15-24]	0.00	0.00	-0.05	0.00	-0.07	-0.20
	Men [25-45)	0.08	0.29	-0.16	-0.04	-0.01	0.09
	Women [25-45)	-0.03	0.01	0.01	-0.04	0.14	-0.01
	Men [45-65)	-0.04	0.00	0.13	0.07	0.08	0.01
	Women [45-65)	0.03	-0.31	-0.05	-0.09	0.01	0.31
	Men (65+)	-0.08	0.00	0.03	0.00	0.01	-0.01
	Women (65+)	-0.07	-0.02	0.20	-0.01	0.01	0.00
	<b>Family composition (adults)</b>	<b>-0.11</b>	<b>-0.61</b>	<b>-0.01</b>	<b>-0.07</b>	<b>0.10</b>	<b>0.06</b>
	Children [0-2]	0.07	0.11	-0.31	-0.51	-0.15	0.15
	Children [3-5]	-0.06	0.28	-0.14	-0.10	-0.20	0.00
	Children [6-10]	0.03	0.12	0.01	-0.07	0.02	-0.07
Children [11-14]	-0.06	-0.01	0.01	0.01	0.02	0.00	
<b>Family composition (children)</b>	<b>-0.03</b>	<b>0.49</b>	<b>-0.43</b>	<b>-0.66</b>	<b>-0.31</b>	<b>0.08</b>	
CV	Local Unemployment	-0.36	-0.25	-0.50	0.19	-0.20	0.49
	Local FLFP	-0.28	-4.48	-2.35	3.09	2.79	10.21
	<b>Contextual variables</b>	<b>-0.64</b>	<b>-4.74</b>	<b>-2.86</b>	<b>3.28</b>	<b>2.59</b>	<b>10.70</b>
<b>Total sum of individual changes</b>		<b>-2.74</b>	<b>-7.11</b>	<b>-4.33</b>	<b>1.76</b>	<b>2.69</b>	<b>11.61</b>
<b>Total change due to X, Oaxaca-Blinder</b>		<b>-2.31</b>	<b>-5.34</b>	<b>-3.25</b>	<b>1.52</b>	<b>2.12</b>	<b>8.71</b>

Table 7: Changes in propensity of being in LFP from individual parameters (in percent).

Variables		2003-05	2005-07	2007-09	2009-11	2011-13	2013-15
Personal Characteristics	Age	-9.59	0.71	0.32	2.26	4.88	0.31
	Underage [15-20]	-0.42	0.31	-0.96	-0.31	-0.32	0.26
	Young [21-24]	0.13	-0.10	0.44	0.57	-0.38	-0.53
	Pension age	0.60	-0.70	1.04	-0.45	-0.97	0.01
	<b>Aging</b>	<b>-9.28</b>	<b>0.22</b>	<b>0.85</b>	<b>2.07</b>	<b>3.20</b>	<b>0.05</b>
	Married	3.84	-4.67	-0.05	-4.83	3.42	-2.53
	Divorced	0.12	0.02	-0.22	0.04	0.15	-0.21
	Widowed	2.12	-1.97	-0.94	-1.44	1.46	-1.18
	<b>Marital status</b>	<b>6.08</b>	<b>-6.61</b>	<b>-1.21</b>	<b>-6.23</b>	<b>5.03</b>	<b>-3.92</b>
	Armenian	0.38	0.03	-0.19	0.59	-0.20	-0.28
	Azeri	0.01	0.68	-0.14	-0.20	0.62	-0.72
	Other	-0.32	0.42	-0.15	-0.01	-0.03	-0.05
	<b>Nationality</b>	<b>0.07</b>	<b>1.13</b>	<b>-0.48</b>	<b>0.38</b>	<b>0.39</b>	<b>-1.05</b>
	Primary	0.56	-0.37	-0.45	-0.66	0.23	-1.31
	Special Secondary	0.89	-0.55	-0.55	-0.59	0.34	-0.08
	Vocational	0.52	-0.35	0.11	-0.17	0.06	0.28
	Higher	-0.01	-0.27	-0.45	-0.51	0.59	-1.44
	<b>Education</b>	<b>1.96</b>	<b>-1.54</b>	<b>-1.34</b>	<b>-1.93</b>	<b>1.22</b>	<b>-2.55</b>
	Just moved	0.38	-0.04	0.35	-0.39	-0.28	0.64
	Moved 1-3 years ago	0.03	0.21	-0.06	0.07	-0.47	0.20
Moved 3-5 years ago	0.23	-0.08	0.03	0.04	-0.15	0.29	
Moved 5+ years ago	3.50	5.07	-3.25	0.99	-6.07	3.11	
<b>Migration</b>	<b>4.14</b>	<b>5.17</b>	<b>-2.94</b>	<b>0.72</b>	<b>-6.97</b>	<b>4.25</b>	
Household Characteristics	Total HH labor inc.	-0.26	2.45	1.46	0.57	-0.43	1.10
	Tot. HH non-wage inc	1.09	-1.69	1.39	1.02	0.23	-0.46
	<b>Additional income</b>	<b>0.83</b>	<b>0.76</b>	<b>2.85</b>	<b>1.59</b>	<b>-0.21</b>	<b>0.65</b>
	Economically active	-2.74	-3.00	-4.96	-2.29	-1.67	7.26
	Men [15-24]	0.18	-0.97	0.91	0.87	-0.43	-1.04
	Women [15-24]	-0.02	0.54	-0.41	0.68	0.30	-0.66
	Men [25-45]	-0.45	0.53	1.84	2.44	-1.52	-3.32
	Women [25-45]	1.52	-0.01	-0.40	0.15	1.03	-0.18
	Men [45-65]	1.91	1.66	-2.77	2.74	-1.09	-1.56
	Women [45-65]	-0.93	0.33	-0.11	-0.46	0.09	-0.54
	Men (65+)	0.91	-0.19	-0.29	0.69	-0.07	-0.37
	Women (65+)	0.47	-1.14	0.85	-0.25	0.67	-0.24
	<b>Family composition (adults)</b>	<b>0.85</b>	<b>-2.24</b>	<b>-5.34</b>	<b>4.56</b>	<b>-2.69</b>	<b>-0.65</b>
	Children [0-2]	0.07	0.41	-0.33	-0.25	0.58	-0.63
	Children [3-5]	-0.55	0.06	0.01	-0.04	0.40	0.45
	Children [6-10]	0.36	0.13	-0.64	0.66	-0.79	0.08
	Children [11-14]	-0.28	-0.24	-0.15	-0.14	0.09	0.29
<b>Family composition (children)</b>	<b>-0.40</b>	<b>0.37</b>	<b>-1.10</b>	<b>0.22</b>	<b>0.29</b>	<b>0.19</b>	
CV	Local Unemployment	0.93	-3.94	4.56	-0.97	1.43	-3.25
	Local FLFP	2.23	-3.04	18.27	-0.35	6.88	-16.50
	<b>Contextual variables</b>	<b>3.16</b>	<b>-6.98</b>	<b>22.83</b>	<b>-1.31</b>	<b>8.31</b>	<b>-19.75</b>
<b>Total sum of individual changes</b>		<b>7.40</b>	<b>-9.72</b>	<b>14.11</b>	<b>0.06</b>	<b>8.57</b>	<b>-22.78</b>
<b>Total change due to <math>\beta</math>, Oaxaca-Blinder</b>		<b>1.55</b>	<b>1.62</b>	<b>4.61</b>	<b>-0.42</b>	<b>-0.71</b>	<b>-6.22</b>

### **Aging**

The first pattern to notice from Table 6 is the aging of women in the sample – both the average age and the size of the pension age group increase over time, decreasing the probability of being in the labor force, and this impact is especially pronounced in the last years under consideration. Given that the aging of the population is predicted to continue in Georgia, depression in FLFP due to aging is most likely to be a long-run pattern in the country. Luckily, it seems that the parameter estimate for age is becoming weaker over time after 2005, softening the negative impact of aging.

The second pattern to notice is the improvement in FLFP after 2011 due to a decrease in the size of the group of underage women – a group that is characterized by an extremely low participation rate. This thinning of the group of young women is due to low fertility rates in the late 1990s - a short-term change as fertility seems to be on the rise over the last decade. Therefore, this gain is temporary in nature and it can be expected to wear out as the population of young women increases over time. Parallel to this observation, one should note the relative worsening of the parameter associated with this variable over time at least until 2013 (Table 7). Even though changes between 2-year periods are insignificant according to Table A3, the overall change over time is statistically significant and negative: over time the labor market involvement of this group seems to be deteriorating.

Overall, in comparison with other variables in the model, this group of variables has a relatively large impact on FLFP, which gives scope for policy-making aimed at improving FLFP, especially with regards to the integration of young women in the labor force.

### **Marital status**

The shares of women with different marital status have been very stable over time, which in combination with low parameter values for these variables results in the low estimates reported in Table 6. As for parameter changes for this group of variables, we observe many changes, some in opposite directions (which results in them cancelling each other out), but the overall trend is

negative – there are signs of reduction in participation rates of married//divorced/widowed women compared to single women, especially after 2005.

### **Nationality**

We also observe relative stability in the ethnic composition of female population of Georgia. Combined with the very modest impact of ethnicity on FLFP, this explains why there is almost no role of this group of variables in FLFP changes over time. In addition, parameter changes for this group are relatively small, and there is no clear direction of change to document.

### **Education**

The education profile of Georgian women has improved over the time period we are examining. In particular, the share of the population with primary education has been decreasing, and more noticeably so after 2011, while the share of women with secondary and higher education has been increasing. One negative change in this set of variables comes from the reduction of the share of women with vocational training – a group that has been shrinking very quickly over time.

An improved educational profile can help fuel FLFP, but looking at coefficient estimates over time we notice some unfavorable changes. Over time, better education loses part of its potential to translate into the better labor force participation of Georgian women. This indicates that there is room for policymaking aimed at supporting labor force participation of educated women.

### **Migration**

In the years following 2009, we observe an increase in the number of people who have only recently moved to their current residence. This change might be capturing the number of internally displaced individuals due to the Russian war of 2008. The effect on FLFP is a relatively small drop from 2007 to 2009, but this change is reversed in the following years as the share of migrants starts declining again. In terms of parameter changes and their added impact on FLFP, we observe a drop in participation in the period 2007-2013, which further exacerbates participation for migrants. This change, too, seems to be temporary, as parameter values show signs of recovery in the last time interval.

### **Additional Income**

The income profiles of families have changed substantially during the period we analyze: the average additional labor income in sample households has tripled, while non-labor income has more than quadrupled. Of course, part of this change has been eaten away by inflation, given that the consumer price index nearly doubled, rising from 85.1% in 2003 to 152.7% in 2013 (with 2005 being the base year)<sup>13</sup>. However, the rest of the change translates into increased real income for families in our sample. This trend, being very positive by itself, has a negative impact on FLFP, as additional household income is in an inverse relationship to the probability of being economically active. Indeed, our estimates show that these two variables had a noticeable negative impact on FLFP. In the last years of the sample, this impact subsides, partially due to slowing down in the rate of change in the variables, and partially due to their decreasing importance, as captured by their weaker parameter estimates, at least in the case of labor income earned by other household members. This reduced sensitivity of FLFP to additional income is an important observation, given the fact (and the hope) that the income level of Georgian households will continue rising in the future.

### **Family composition (adults)**

The structure of households has also been changing over time: we notice a reduction in the number of young people in households after 2007 – driven by low fertility early in transition, and an increase in the number of family members in the age group 45-65 years old – a result of an aging population. However, these changes have very limited impacts on FLFP, and they often work in opposite directions, so the overall effect from changed household composition is small and not very telling. What is interesting is some changes in parameters from these variables and how they impact FLFP. In particular, we observe the added impact of males in the household to play a strong positive role in 2009-2011, the years following the economic and military crisis of 2008, which

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<sup>13</sup> Based on GeoStat statistics, see [http://geostat.ge/index.php?action=page&p\\_id=128&lang=eng](http://geostat.ge/index.php?action=page&p_id=128&lang=eng).

could be capturing added worker effect in the difficult period. In the years after the crisis (2011-2015), we see a growing negative impact of the presence of men in the family on FLFP.

### **Family composition (children)**

After 2007, we observe a larger average number of children in the 0-2 and 3-5 age groups (following an increase in fertility in our sample in the early 2000s), which translates into lower FLFP, given the negative impact of having young children on participation rates. The older age groups are still on the decline, but given relatively weaker parameter estimates for these groups, this dynamic does not impact FLFP much.

As we study parameter estimates for this group of variables, we document no sustained improvement in coefficient estimates for the 0-2 group. As for the group of 3-5 old children, we observe the amelioration of impact on FLFP after 2013. The timing of this change coincides with announcement of the childcare reform, targeting, among other things, higher availability of affordable pre-school education/care. If sustained, this change could translate into (modestly) higher participation rate of women with pre-school age children.

Overall, we find a surprisingly low response of FLFP to changes in this group of variables. This result taken in isolation might be puzzling, however it is important to note that children, especially young, usually come as part of a package: the woman is married, relatively young, and might be living in the husband's household. Holding all the other variables and their parameters constant changes in the number of young children, or its parameter estimates do not translate into much different labor market participation.

### **Contextual variables**

The contribution of locality variables to FLFP changes is by far the largest. Actually, the significant drop in FLFP in 2005-2007 and the increase of 2013-2015 reported in Table 5 both are largely driven by the locality variables, and in particular, by local FLFP.

The local unemployment rate has a cyclical pattern, and it closely follows fluctuations in the economic activity of the country. Given its negative impact of local unemployment on FLFP as

captured by the negative (but often insignificant) sign on the parameter associated with this variable, in crisis years, as unemployment rises, we observed a reduced FLFP, and vice versa – economic expansion and lower unemployment lead to improved FLFP. As for the parameter changes for this variable, there is no clear trend to learn from: it seems that there is a lot of volatility in parameter estimates, with most changes being statistically insignificant. The estimated impacts on FLFP produce a sequence of increases followed by decreases in the subsequent time interval. All together these changes almost average to zero over time.

As for the level of local female labor force participation, we see a consistent and strong increase in the level of local FLFP following the recession of 2008. This increase alone captures the lion's share of rise in FLFP in 2013-2015 due to variable changes, by far more pronounced than that of any other variable. The parameter for this variable, being very strong and positive for all years, fuels the impact on FLFP even further by increasing in 2009 and staying high all the way to 2015, when we see some reduction. Despite this reduction, we believe the overall impact of local FLFP is positive, and is driving the rise in female participation in 2013-2015 (see table 5).

How can one interpret local FLFP in the context of our model? Together with the unemployment rate, it captures the characteristics of the local labor markets. This includes both supply and demand side conditions. Our analysis shows the paramount importance of that factor on determination of individual FLFP in Georgia.

To gain further insight into the issue, we conduct a short investigation of the FLFP dynamics by regions (see Table A4 for regional statistics based on our dataset). In many cases, improvements in FLFP after the recession of 2008 are just the recovery of lost jobs (especially pronounced in Adjara and Shida Kartli). In some other cases (most notably in Mtskheta-Mtianeti, Kvemo Kartli, and Guria) with relative stability of participation rates until 2011, we see a significant increase afterwards, associated with the emergence of new jobs.



Guria is an excellent example. Guria's labor market was characterized by a relatively high participation rate in the period 2003-2013 (65.3% compared to 56.2% country/time average) and showed a further 9.3% increase in participation in 2013-2015.

This region is predominantly agricultural, with 75% of the active female labor force engaged in agriculture (86% of the population in the region is classified as rural – this is the most rural region in all of Georgia). However, the expansion of jobs in this region over the last years comes from non-agricultural sectors: from GeoStat data, we see an increase in women engaged in both the healthcare and education sectors.

From information that we were able to collect about recent developments in Guria<sup>14</sup> that could have an impact on female labor force participation, we see the following picture:

- During 2012-2015, Guria rehabilitated 80 schools and 58 kindergartens in total; 1 new school and 3 new kindergartens were built in the village of Tsipnari.
- In 2014, 3 new out-patient clinics (ambulatory services) have been opened in Guria in the villages of Dvabzu, Erketi, Aketi<sup>15</sup>;
- 2 new schools were built in 2015 in the villages of Zoti and Shua Amagleba, and 1 new kindergarten was opened in 2015 in Erketi.

The connection between new jobs in female-intensive sectors created by these programs in Guria and the fast expansion in female employment in this region illustrates how important the demand side of the labor market is for fueling FLFP, an aspect that sometimes is overlooked in favor of supply-side policies to remove labor market rigidities and obstacles to participation. The important reminder here is that while reforms targeting the expansion of the supply of female labor force are important (indeed, necessary), they are not sufficient to move women out of economic inactivity.

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<sup>14</sup> Sources: Administration of State Representative – Governor of Guria website and annual report by the Ministry of Healthcare <http://guria.gov.ge/geo/news/show/122/106>; Ministry of Labor Health and Social Affairs of Georgia. 2 Year Report, Guria Region [http://www.moh.gov.ge/files//2014/Failebi/Angarishebi/2\\_year-guria.pdf](http://www.moh.gov.ge/files//2014/Failebi/Angarishebi/2_year-guria.pdf)

## Conclusions and Policy Recommendations

We will conclude our paper by summarizing the most important findings stemming from our work and proposing policy recommendations based on those findings.

Based on our analysis, we observe very low labor force participation by young (15-20 and 20-25 year old) women. It is worrisome that with time their participation is slowing down even further, considering that only a part of the population of young women is engaged in education and/or training activities, and that, as fertility picks up from its record low levels in the last two decades, the relative size of this group in the population is likely to grow. Both trends call for active policies aimed at engaging young women in the labor force (or in education, which will later help them to join the labor force). Policy advice based on our findings is to pay special attention to inclusion in the labor market of underage and young women; encourage their participation through internship programs, develop summer schools, youth activities and programs exposing these young women to different realities and role models, as well as to the functioning of the labor market. It would be also important to work with the parents of these women to increase their support of labor activities of their children.

Our evidence indicates that the education profile of women in Georgia improves over time (from an already relatively high level), but our results indicate that the effect of better education on labor market participation may be weakening. Perhaps the quality and type of education received by young women is not highly valued in the current labor market. Another explanation, however, could simply be the limited availability of job opportunities in the market for educated women. A parallel reduction in the share of women with vocational training – the type of education that shows potential for better labor market inclusion – is exacerbating the situation. A policy that could help in this context could be focusing on fostering entrepreneurship among young women. This, as suggested by existent literature (Pignatti, 2016) would present multiple advantages. It would help young women in creating their own jobs, lead to the creation of additional labor market opportunities, and generate inspiring examples for future generations.

It is encouraging to see that the negative impacts from migration (mostly due to the relocation of populations from conflict zones) are not very lasting and are mostly absorbed over time. It can still be helpful to develop programs promoting information sharing about opportunities available at the new place and integration into community networks. It is also reassuring that ethnicity does not seem to play a big and/or changing role on FLFP in Georgia. However, one should not take this situation for granted - it is important to keep promoting an environment free of ethnic discrimination.

Yet our most important observation is that overall, the supply side factors and their impacts on FLFP are very modest compared to the impact from the demand side factors. Indeed, the shifts in FLFP that we witness due to changes in local labor market (demand) conditions are of a much larger magnitude, and are largely driving the FLFP dynamics in our sample.

To conclude, while supply side policies are crucial to create the preconditions for an increased FLFP, they are hardly sufficient. However, complementing them by actively promoting the development of the demand side of the labor market, can lead to remarkable – and fast – increases in FLFP, as we document in the case of Georgia. This reactivity in participation rates in the last years of our sample is particularly encouraging as it indicates that the “rigidity” in FLFP observed even during long periods is not necessarily due to some innate inertia behind women’s choice to join the labor force and that, given the opportunity, women can quickly join the ranks of the economically active.

## References

- Alesina, A., Ichino, A., & Karabarbounis, L. (2011). Gender-Based Taxation and the Division of Family Chores. *American Economic Journal: Economic Policy*, 3 (May 2011), 1–40.
- Antecol, H. (2000). An Examination of Cross-Country Differences in the Gender Gap in Labor Force Participation Rates. *Labour Economics*, 7(4), 409-26.
- Blinder, A. S. (1973). Wage discrimination: Reduced form and structural estimates. *Journal of Human Resources*, 8, 436–455.
- Chitanava, N. (1997). *Social-Economic Problems of Transition*. Tbilisi: Economic and Social Problems Research Institute - Ministry of Economy.
- de Laat, J., & Sevilla-Sanz, A. (2011). The Fertility and Women's Labor Force Participation Puzzle in OECD countries: the Role of Men's Home Production. *Feminist Economics*, 17(2), 87-119.
- Fernandez, R., & Fogli, A. (2006). The Role of Culture and Family Experience. *Journal of the European Economic Association*, 4(2-3), 552-61.
- Fortin, N. M. (2005). Gender Role Attitudes and the Labour Market Outcomes of Women across OECD Countries. *Oxford Review of Economic Policy*, 21(3), 416-38.
- Gal, S., & Kligman, G. (2000). *The Politics of Gender After Socialism. A Comparative-Historical Essay*. Princeton: Princeton University Press.
- Heintz, J. (2006). *Globalization, Economic Policy and Employment: Poverty and Gender*. Geneva: International Labour Organization.
- ILO. (2012). *Global Employment Trends for Women*. Geneva: International Labour Organization.
- IMF. (2013). *Women, Work and the Economy: Macroeconomic Gains from Gender Equity*. Washington, D.C.: International Monetary Fund.
- Jashi, C. (2005). *Gender Economic Issues: The Case of Georgia*. Tbilisi: UNDP.
- Khitarishvili, T. (2014). The Economic Crisis of 2008 and the Added Worker Effect in Transition Countries. In R. Antonopoulos, *Gender Perspectives and Gender Impacts of the Global Economic Crisis* (pp. 184-204). New York: Routledge.
- Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. *International Economic Review*, 14, 693-709.

- Pignatti, N. (2016). Encouraging women's labor force participation in transition countries. *IZA World Of Labor*(264), 1-10. doi:10.15185/izawol.264
- Smith, K. (2011). Labor force participation in the Soviet and post-Soviet Baltic States. *Econ Change Restruct*, 44, 335–355.
- Sumbadze, N. (2011). *Gender Equality: Georgia*. Tbilisi: Background paper for the WDR 2012.
- Torosyan, K., Gerber, T., & Goñalons-Pons, P. (2016). Migration, Household Tasks, and Gender: Evidence from the Republic of Georgia. *International Migration Review*, 50(2), 445-474.
- UNFPA. (2015). *Population Situation Analysis (PSA) Georgia 2014*. Tbilisi: UNFPA .
- World Bank. (2006). *Doing Business in 2006: Creating Jobs*. Washington D.C.: A copublication of the World Bank and the International Finance Corporation.
- World Bank. (2011). *World Development Report 2012: Gender Equality and Development*. Washington D.C.: The International Bank for Reconstruction and Development / The World Bank.
- World Bank. (2015). *Doing Business 2015: Going Beyond Efficiency*. Washington D.C.: A copublication of the World Bank and the International Finance Corporation.
- World Bank. (2016, November 26th). *Doing Business: Measuring Business Regulation*. Retrieved from Doing Business: <http://www.doingbusiness.org/rankings>

## Data Appendix

Table A1: Data availability for the dependent variable, by regions of Georgia (for Quarter 2 of each year)

Region	GeoStat Surveys						
	2003	2005	2007	2009	2011	2013	2015
Kakheti	620	571	549	1,072	539	492	460
Tbilisi (capital)	885	853	798	1,605	869	739	740
Shida Kartli	339	367	344	677	316	328	309
Kvemo Kartli	577	584	541	1,002	503	433	453
Samtskhe-Javakheti	301	304	305	576	297	267	281
Adjara Autonomous Republic	395	390	418	909	425	380	380
Guria	289	266	283	518	269	248	244
Samegrelo-Zemo Svaneti	444	375	403	888	460	402	416
Imereti, Racha-Lechkhumi and Kvemo Svaneti	760	817	715	1,394	665	687	692
Mtskheta-Mtianeti	270	243	196	405	212	179	185
<b>Total working age females</b>	<b>4880</b>	<b>4770</b>	<b>4552</b>	<b>9,046</b>	<b>4555</b>	<b>4155</b>	<b>4160</b>
<b>Total individuals</b>	<b>11216</b>	<b>10896</b>	<b>10020</b>	<b>20188</b>	<b>10186</b>	<b>9451</b>	<b>9445</b>

Table A2: Variable definitions

Personal Characteristics	
<b>Age</b>	This is the raw age data reported in the survey.
<b>Underage</b>	A dummy variable =1 for age 15 - 20 years old
<b>Young</b>	A dummy variable =1 for age 21 - 24 years old
<b>Pension age</b>	A dummy variable =1 for women crossing the officially determined pension age.
<b>Marital status</b>	This is a categorical variable: single, officially married, unofficially married, divorced, and widowed. We build a series of dummy variables to represent those categories. Due to a small frequency of unofficially married, we merge this category with officially married and generate one dummy "Married". In our probit regressions category "single" is used as a base category.
<b>Nationality</b>	Nationality has the following categories: Georgian, Azeri, Abkhazian, Greek, Ossetian, Russian, Armenian, Ukrainian, and Other. To control for nationality we generate a set of dummy variables to represent Georgians and the bigger minorities (Armenians and Azeri), while all the other nationalities are merged under Other category. Georgians are used as a reference group in our regressions.
<b>Education level</b>	Education level has several categories, including: no schooling, primary/elementary (including incomplete secondary) education, secondary education (general education, completed), special secondary (e.g. technical college) education, vocational-technical education, and higher (tertiary) education. As with other categorical variables, we build dummy variables for each category. The level of general secondary education is used as a base level.
<b>In residency</b>	Duration of residing at the present address has several categories: less than one year, from one to three years, from three to five years, more than five years (but less than always), and always (since birth). We build dummy variables to represent each of these categories. The case of being in residence since birth is used as the base.
HH Characteristics	
<b>Total additional labor income</b>	This variable is aggregated from individual labor incomes of all other household members of working age (excluding the female in question). Types of income included: wages and bonuses from the main and the secondary jobs (or honorarium in case of professional activity), earned income/profit from self-employment, and income from casual/temporary/irregular jobs. Incomes are three-month average in current GEL (national currency).

<b>Total non-labor income</b>	This variable aggregates non-labor incomes of all individual family members (including the female in question) and income received by household (not person-specific). These include: different types of pensions (for old age, for disability, etc.), scholarships, assistance money (i.e. for temporary disability, unemployment, internally displaced), income from insurance, social aid to poor families, income received in form of gifts and aid (monetary and in kind), rental income, inherited money, alimony payments, money from sales of property, interest payments from capital investments. All values are reported in current GEL.
<b>Men [15-24]</b>	These variables are built based on the number of household members of given gender and age, excluding the female in question.
<b>Women [15-24]</b>	
<b>Men [25-45]</b>	
<b>Women [25-45]</b>	
<b>Men [45-65]</b>	
<b>Women [45-65]</b>	
<b>Men (65+)</b>	
<b>Women (65+)</b>	
<b>Children [0-2]</b>	To build these variables we determine who is the mother of the children reported on the household roster. In families with only one woman of appropriate age it was trivial. In the case of multiple females in age range that could be mothers of the reported children we checked the relationship to the responded status for children and candidate mothers and in many cases could uniquely assign children to their mothers. In a group of cases we observed multi-nucleus families (for example, families of 2 or more brothers with their wives and children) and it was impossible to assign children to mothers. These cases are dropped from the analysis.
<b>Children [3-5]</b>	
<b>Children [6-10]</b>	
<b>Children [11-14]</b>	
<b>Economically active</b>	This variable captures the number of economically active adults in the household, excluding the female in question. Economically active are all those who could not be classified as economically Inactive according to ILO definition (economically inactive is a person at the age of 15 or above, who was not employed (for at least one hour) 7 days prior to interview process and did not look for a job within previous 4 weeks. Also, a person who was looking for a job within previous 4 weeks, but was not prepared to start the work within the next 2 weeks time).
<b>Contextual variables</b>	
<b>Local Unemployment</b>	We compute unemployment rate for each of the 20 localities (urban/rural times 10 regions) by looking at the average number of unemployed (of both genders) within given locality. Individual unemployment status is defined following ILO methodology (unemployed is a person at the age of 15 or above, who was not employed (even for one hour) 7 days prior to the interview process, was looking for a job for the last 4 weeks time and was ready to start working within the next 2 weeks time).
<b>Local FLFP</b>	For this variable we average the number of economically active females within each locality.

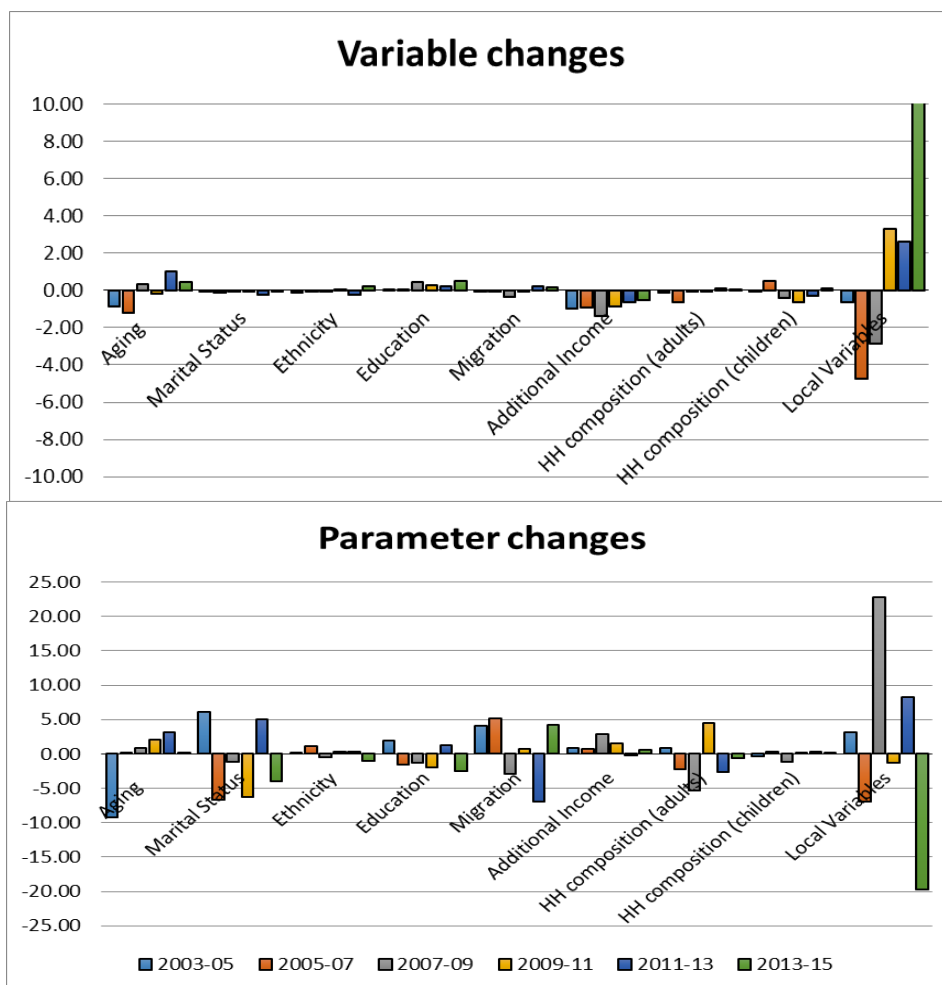
Table A3: Differences in parameter estimates in probit regressions across the years

<b>Personal characteristics</b>	<b>2003-05</b>	<b>2005-07</b>	<b>2007-09</b>	<b>2009-11</b>	<b>2011-13</b>	<b>2013-15</b>
Age						
Underage [15-20]						
Young [21-24]				* ↑		
Pension age						
Married				* ↓		
Divorced						
Widowed	* ↑	* ↓				
Armenian				* ↑		
Azeri		** ↑			** ↑	** ↓
Other		* ↑				
Primary						** ↓
Special Secondary						
Vocational						
Higher						
Just moved						** ↑
Moved 1-3 years ago						
Moved 3-5 years ago						
Moved 5+ years ago		* ↑			* ↓	
<b>Household characteristics</b>						
Total HH labor income		*** ↑	* ↑			
Total HH non-wage income		* ↓				
Economically active			** ↓			** ↑
Men [15-24]						
Women [15-24]						
Men [25-45]				** ↑		** ↓
Women [25-45]						
Men [45-65]			** ↓	** ↑		
Women [45-65]						
Men (65+)						
Women (65+)		* ↓	* ↑			
Children [0-2]						
Children [3-5]						
Children [6-10]			* ↓	* ↑	* ↓	
Children [11-14]						
<b>Contextual variables</b>						
Local Unemployment						
Local FLFP			** ↑			

Note: \* - different at 10% level, \*\* - different at 5% level, \*\*\* - different at 1% level. Sign ↑ indicates increase in the value of the parameter estimate (positive values become more positive, negatives – less negative) and as a result increase in predicted probability, ceteris paribus. Sign ↓ indicates decrease in the value of the parameter and a corresponding decrease in predicted probability.

Graph A1: Relative changes in FLFP from variable and parameter changes, aggregated by variable types





Note: Changes are from the initial level of FLFP, unit of measurement is percentage points.

Table A4: FLFP by regions, in percent (based on GeoStat annual household surveys)

Year	2003	2005	2007	2009	2011	2013	2015
Kakheti	58.4	66.5	59.0	55.1	59.7	59.6	59.3
Tbilisi (capital)	44.5	42.6	44.9	37.1	41.0	41.1	48.1
Shida Kartli	61.7	51.2	49.7	46.8	58.9	60.1	64.4
Kvemo Kartli	56.5	59.1	58.6	55.8	49.7	53.1	64.2
Samtskhe-Javakheti	68.8	70.4	63.6	61.1	55.6	53.9	63.7
Adjara Autonomous Republic	62.3	46.7	31.1	50.7	54.1	60.0	65.3
Guria	69.6	64.7	68.6	64.5	62.8	61.7	74.6
Samegrelo-Zemo Svaneti	53.4	57.6	56.8	54.8	55.9	60.2	60.1
Imereti, Racha-Lechkhumi and Kvemo Svaneti	58.8	60.5	53.8	50.5	55.2	54.4	61.8
Mtskheta-Mtianeti	45.6	51.9	46.9	47.7	45.3	56.4	67.0