

Hlásny, Vladimír

Working Paper

Household Earnings in Putin's Russia: Distributional Changes across Socioeconomic Groups, 2000–2016

LIS Working Paper Series, No. 847

Provided in Cooperation with:

Luxembourg Income Study (LIS)

Suggested Citation: Hlásny, Vladimír (2022) : Household Earnings in Putin's Russia: Distributional Changes across Socioeconomic Groups, 2000–2016, LIS Working Paper Series, No. 847, Luxembourg Income Study (LIS), Luxembourg

This Version is available at:

<https://hdl.handle.net/10419/283854>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

LIS

Working Paper Series

No. 847

Household Earnings in Putin's Russia: Distributional Changes across Socioeconomic Groups, 2000–2016

Vladimir Hlasny

September 2022



CROSS-NATIONAL
DATA CENTER
in Luxembourg

Luxembourg Income Study (LIS), asbl

Forthcoming in: *Revue d'économie du développement*, 2023.

**Household Earnings in Putin's Russia:
Distributional Changes across Socioeconomic Groups, 2000–2016**

Vladimir Hlasny

(Ewha Womans University, Seoul; vhlasny@gmail.com)

Abstract

Following Russia's February invasion of Ukraine and the imposition of sanctions by countries worldwide, Russian population faces a crisis with deep but differentiated consequences across socioeconomic groups. We examine the evolution of earnings and societal earnings gaps throughout Vladimir Putin's presidency, including the 2014 oil bust and trade war spurred by Russia's annexation of Crimea. Unconditional quantile regressions are applied to 2000–2016 surveys to estimate the distributional changes across urban/rural, farming/non-farming and gender divides at all earnings quantiles, and growth incidence curves for the respective groups are derived using consistent survey waves around the crisis years of 2014–2015.

Urban-rural gaps are found to be pervasive, particularly at lower earnings quantiles, while gender gaps declined over time. Rural and female-headed households receive lower returns on their endowments because they lack employment opportunities. The 2014 shocks affected all groups, particularly the rural poor, export-oriented farmers, and urban rich, not only immediately but over several years.

Keywords: Earnings gaps; Russia; economic sanctions; unconditional quantile regressions; growth incidence curves; Luxembourg Income Study.

JEL Classification: F16; J31; D31, D63, N34, C21.

I. Introduction

In February 2022, Vladimir Putin's army invaded Ukraine to a worldwide condemnation, and the world has hit Russia back with crippling sanctions. This is reminiscent of the time Russia annexed Crimea in February 2014 – granted, a much less violent affair – which led to deep and prolonged despair among Russia's population. Meanwhile, Vladimir Putin may be here to stay. In July 2020, he constitutionally extended his rule for the decade to come, and in December 2020 he granted himself lifetime immunity from domestic prosecution. In light of these developments, and to get an inkling of the economic fallout of Russia's new-found isolation for its population, it is critical to appraise the incidence of welfare and social-justice advances made under the first two volatile decades of Putin's rule.

Putin ascended to power on the heels of a 1999–2000 uptick in growth in the Russian economy from a decade-long slump. For the following 13 years, Putin reigned over a booming economy only briefly slowed by the worldwide recession and the oil shock of 2008–2010. It was then, incidentally, that Putin temporarily stepped down to the position of a Premier, only to be back by 2012. The economy only came to a halt in 2014 when the combination of plummeting oil and iron ore prices, currency depreciation, US and EU sanctions following the annexation of Crimea, and Russia's retaliatory bans on food imports took their toll on most economic sectors and groups of workers.¹ It is this period that can shed light on the likely transmission of forthcoming economic shocks across Russia's socioeconomic groups.

Against the background of growth and bust developments during Vladimir Putin's up to date years in power, our study aims to take stock of the changes in the distribution of earnings in the labor market and in the outcomes of different socio-economic groups, measured using alternative income concepts. Using household income surveys for years 2000–2016, we evaluate workers' total disposable earnings.

This study contributes substantively to literature on economic development and inequality in Russia by measuring the earnings gaps across demographic groups seen as privileged or disadvantaged, and across earnings quantiles, decomposing them by source, and evaluating trends

¹ At the same time, Russia under Putin is also said to have increasingly experienced a return to cultural conservatism and a resurgence of patriarchy, or outright misogyny in informal parts of the society, influenced by Putin's nationalist and identity politics, his alliance with the Russian Orthodox church, as well as his control of media. In the course of Russia's invasion of Ukraine, like during the annexation of Crimea in 2014, nationalist and patriarchic rhetoric has been used to appease voters amidst economic crises.

across seventeen years 2000–2016. The study covers periods of positive growth as well as the crisis years of (2008–2010 and) 2014–2015, and contrasts the pre- versus post-crisis trends for individual demographic and earnings-quantile groups using growth incidence curves. We comment on households’ reliance on labor earnings and on informal home production for their subsistence. The analysis of income gaps takes into account the role of workers’ endowments of market-valued characteristics, and market returns on these endowments.

Methodologically, this study joins the emerging body of research adopting the recently promulgated unconditional quantile regressions (UQR) to analyze income gaps across household types, and across different quantiles of the income distribution. Households’ reliance (or not) on farming, and residence in urban versus rural areas are evaluated as demarcations of demographic groups facing different market conditions amid economic and trade shocks. Gender of households’ heads is used as another demarcation of privileged/disadvantaged status amid the different gender composition of economic sectors and the differential conditions facing male and female workers broadly. Pooled cross-sectional data are used to estimate growth incidence curves (GIC) for privileged and vulnerable demographic groups, for the years before, during, and after the onset of Russia’s trade conflict in 2014. This quasi difference-in-difference approach allows us to infer the experiences of the most vulnerable socioeconomic groups following the trade conflict.

The study is most closely related to two World Bank policy reports: Calvo et al.’s (2015) decomposition of wages during 2002–2012, relying on UQRs, and Dang et al.’s (2019) report on earnings and employment-status mobility during 1994–2015, relying on regressions and GICs. These studies stop short of carefully analyzing earnings gaps between demographic groups, and explaining them using endowment and returns effects. The two studies rely on RLMS data alone, which limits their sample sizes and capacity for inference. They also fail to mention the aftereffects of the year-2014 events. To the author’s knowledge, this is the first study using the large-sample PIS data (in conjunction with the prior waves of the RLMS) to study earnings gaps across demographic and earnings-quantile groups, and the first study investigating changes in the distribution of earnings following Russia’s 2014 trade conflict and economic crisis. It aims to serve as a primer for understanding the prospective effects of Russia’s current plunge into economic isolation following its invasion of Ukraine.

The rest of the study is organized as follows. Section II presents the stylized background of the evolution of incomes and inequality in Russia since the 1990s. Sections III and IV introduce our

estimation strategies and the data used. Finally, section V reports our empirical results, and section VI concludes with a discussion of main lessons learnt.

II. Economic development and inequality in Russia: A brief review

The Russian economy got off to a bad start following the 1991–1993 breakup of the Soviet Union, seeing a continuous decline in the gross domestic product per capita, and exploding inequality of incomes throughout the 1990s (Novokmet et al. 2018). This deterioration of growth and distribution of incomes was on account of chaotic structural changes in the economy including a collapse of state-owned enterprises, rapid ‘shock therapy’ privatization of industry and real estate whereby ownership became consolidated among a few connected groups, bottoming out of natural resource revenues, and unraveling of the social protection system and welfare state (Boycko et al. 1995; Kosareva et al. 2000). Private markets struggled to put in use the vast stock of physical and human capital released following the regime change, amid a regulatory vacuum (Brainerd 1998). In lower parts of the earnings distribution, wage protections dissipated. Union representation waned as membership fell and unions were pushed to reorient toward operating in a ‘social partnership’ with the state (Clarke 2005:12). Real minimum wages collapsed from 25 percent of mean wages in 1992 to as low as 4 percent in 2000 (Lukiyanova and Vishnevskaya 2016).²

Economic problems came to a head during the 1998–1999 financial and sovereign debt crisis, as the price of oil fell to \$10/barrel, the ruble lost one half of its value, inflation soared, and government defaulted on its domestic and foreign debt repayments. Economic activity and welfare state became paralyzed. Boris Yeltsin, under pressure for his handling of the economy and domestic conflict, and fearing prosecution for corruption, resigned.

Only in 2000, international and domestic economic developments and political events brought recovery and normalization to Russia’s economic sectors. The oil price rebounded to \$30/barrel. Vladimir Putin, as Prime Minister turned Acting President turned President within the span of ten months, took firm control over institutions under the campaign slogan ‘the stronger the state, the freer the people.’ A tax and welfare reform lowering taxes, a series of industry and property-ownership reforms, and pacts agreed between the Kremlin and Russia’s industrial leaders led to

² Evidence from outside of household surveys suggests that 1990s growth has been highest at the top of the income distribution, because of capital rents and capital gains. Even though year-2000 tax reform resulted in improved compliance, significant wealth continues to be hidden from public scrutiny or stashed abroad (Novokmet et al. 2018). As a result, true inequality in Russia may be on par with the notoriously high inequality in the US.

more compliance by businesses and more effective governance in labor markets (Gurieiev and Rachinsky 2005, 2006; Ivanova et al. 2005; Gorodnichenko et al. 2009) – at the expense of some fairness of the playing field and competition in the marketplace and loss of personal freedoms. Fiscal transfers had weak redistributive and poverty alleviation effects (Cerami 2006).

By the mid-2000s, the economy and workers' living conditions entered a phase of continued growth. Household incomes rose and inequality declined as growth and structural changes in the economy favored the middle class (Gorodnichenko et al. 2010). By 2009 real minimum wages rose 13-fold, returning to 25 percent of mean wages and to the level of minimal regional subsistence (Lukiyanova and Vishnevskaya 2016:17). Trade unions once again rose in importance in terms of advancing workers' working conditions and protections. Putin's administration also expanded social programs and increased public-sector wages and pensions. At the same time, public-sector employment was scaled up by 50 percent, including by some 22 percent in the federal government alone (Rosstat data).

The downside of these interventionist reforms was their costliness. During 2008–2010, the worldwide recession and the concurrent fall in oil prices dented fiscal solvency of the state and the private sector, and led to contraction in the capital and labor markets. The crisis did not affect the bottom three income-decile groups particularly strongly, and so the development was relatively pro-poor, but upper deciles experienced declining earnings for their services and rents for their capital and business ventures. In the labor market, wage compression at the top was observed, and the number of high-income jobs declined, as corporations were affected by plummeting public oil revenues (Gimpelson and Lukiyanova 2009; Gimpelson 2016). Private firms without state backing struggled to get back up on their feet for two or more years. Labor productivity dipped on account of the falling value of output, and private-sector firms were forced to reduce employment and wages. Workers turned to informal markets to fill the hole in their budgets.

By 2011 the economy fully recovered, and the Gini coefficient of incomes showed only a small and temporary jolt. In 2012, Russia was rewarded by being formally reclassified by the World Bank from an upper-middle income country to a high-income country. However, in 2014 the economy came to a halt following Russia's annexation of Crimea. A combination of US and EU sanctions introduced in the spring, Russia's retaliatory bans on food imports enacted in the summer, and plummeting of oil and iron ore prices in the fall took their toll. Like in 1998, the ruble

lost one half of its value. By 2015 Russia was demoted back to the upper-middle income country status.

Income inequality fell as high-income individuals were squeezed by targeted sanctions and asset freezes, and tumbling capital and business incomes. Meanwhile, the working poor were protected by social protection policies including minimum wages and formal employment contracts, and in some sectors the working poor benefited by turning to informal work such as secondary jobs in farming and home production where their productivity increased amid import substitution (Barseghyan 2019).

Income gaps

As the above discussion suggests, the economic development of the past two decades has not been distribution-neutral, but has affected vertical and horizontal equity in society. Income inequality as measured by the Gini soared following the dissolution of the Soviet Union and throughout most of the 1990s, and only slightly abated in the late 1990s. Inequality then fell continuously in the post-2000 years, except for the recession year of 2008, and only stagnated near the end of our period of analysis, in 2015–2016. This equalization process was observed in the middle of the income distribution as well as in the comparison of the highest to the lowest incomes, as income compression occurred in both tails of the income distribution. Both the Gini and the income ratios systematically declined (Calvo et al. 2015). According to the RLMS, the Gini of post-fiscal disposable income was 0.420 in 2000, dropped to 0.386 by 2004, then dropped again to 0.344 by 2007, and kept gradually falling to 0.331 by 2016, which is approximately one standard deviation above the mean across countries worldwide.

Economic development also affected the socio-economic and demographic composition of the Russian society, with implications for the relative wages that members of each group could earn. Hence, the development and equalization processes had different effects on different social groups and the income gaps across them. The representation of rural vs. urban, female vs. male headed, non-employed vs. employed, and employed by an SME vs. large employer evolved across the society's earnings quintiles. Prior to the 2000s, rural-urban income gaps were large and growing, particularly among unskilled workforce, on account of a fall in real-terms rural earnings and their 'demonetization.' This got reversed in the post-2000 years thanks to a policy push for improving rural living conditions and assisting farms, and gradually expanding economic opportunities in

rural areas (Wegren 2014; Hlasny 2019, 2020a). The between rural/urban group component of the Gini declined throughout the 2000s, and then stagnated during the 2010s.

In the 1990s a significant economic divide emerged across administrative regions, attracting a large number of studies (Heshmati 2004). The drivers of interregional income gaps were found to include not only demographic factors and differentials in the geographical distance to markets and in export patterns (Fedorov 2002 and literature cited within), but also differential rates of wage adjustment to shocks, and differential social and redistributive policies (Remington 2011; Durand-Lasserve and Blöchliger 2018). Differential price levels had only a small effect on the real income gaps (Kolenikov and Shorrocks 2003). The level of inter-regional inequality remained high in recent years (Mahler 2011; also refer to studies evaluated by Gluschenko 2010, 2011b), only slightly dented by the equalizing forces of local economic growth (Guriev and Vakulenko 2012). Hlasny (2020a) found that workers in disadvantaged regions faced lower earnings on account of their inferior access to decent employment opportunities, but they were also less educated and received lower returns on their observable marketable endowments including job experience. These studies suggest that opportunities for labor mobility are improving only slowly, and that inadequate regional housing options, limited transportation infrastructure, and region-varying employment protection and social policy may play a stubborn role in it (Gluschenko 2010; Leonard et al. 2016; Durand-Lasserve and Blöchliger 2018).

Gaps between formal and informal incomes explain a large share of interregional and urban-rural inequality. Earnings between the formal and informal sectors clearly differ, with informal sector having a significantly higher inequality (Lukiyanova 2015). Nevertheless, the influence of informal earnings on inequality is falling over time. In fact, the fall in interregional inequality leading up to 2014 can be attributed to informal incomes, due to their greater prevalence in disadvantaged and rural places, and their negative association with other income sources (Malkina 2017).

This study takes this evidence further by systematically assessing income gaps for years 2000-2016 including those following the crisis years of 2014–2015, between groups seen as more versus less vulnerable to economic and trade shocks. This is done across all income deciles. The following section describes our methods in detail, and provides motivation for assessing specific pairs of demographic groups.

III. Methods

Earnings gaps have traditionally been gauged by decomposing between-group income differentials around the mean of an income distribution. Less is known about the distribution of incomes at lower and upper ends of countries' income distributions. At the same time, understanding the income differentials among the bottom and top income households is important because of their implications for economic polarization, poverty incidence, and incidence of economic growth. Economic shocks do not befall equally all members of society. Understanding the incidence of shocks across income quantile groups is crucial for evaluating the existence of poverty traps, identifying vulnerable groups, and designing appropriate policy remedies. Here we describe the methods used in this study to assess the cross-sectional earnings gaps between pairs of demographic groups, and the incidence of growth shocks between two points in time.

Quantile analysis

The most common method that has been used to identify the drivers of between-group inequality is the regression-based Blinder-Oaxaca decomposition, which distinguishes the role of differentials in endowments, differentials in the returns to those endowments, and other unmeasured factors between pairs of demographic groups (Blinder 1973; Oaxaca 1973). The endowment effect is the “explained” part of the differential associated with the typical differences in the market-valued characteristics between the two groups of households, such as work experience, education, employment type, and residence near employers and markets. The returns effect is the “unexplained” part of the differential due to the differences in returns to individual characteristics between the two demographic groups – attributable to some latent form of market segmentation, including inefficiencies or discrimination in the market for human capital. The returns effect is computed as the mean effect of the difference in returns to households' observable characteristics between the two demographic groups, computed at the values of characteristics possessed by the advantaged group. Finally, the earnings gap is subject to a residual term that cannot be associated with any particular observable difference between the social groups.

The standard Blinder-Oaxaca decomposition estimates the mean effect of a given variable on the earnings gap. Of course, households' characteristics typically have systematically different economic value across types of jobs and along the earnings distribution. Conditional quantile regressions can be used to estimate the differences in percentiles of income distributions

conditional on the levels of the treatment variables. However, this method also relies on several assumptions. First, when the treatment variables undergo a change in their level, the workers are assumed to retain their original ranking among workers with the same new values, as they had among workers with the original values – they remain at the same quantile of the conditional earnings distribution. Second, the ranking of other individuals is also assumed unchanged. Hence, changes in the distribution of treatment variables in the population – say, urbanization rate, or prevalence of farming in the population, or gender ratio – are assumed to have no general equilibrium effects on the conditional income distributions. The two assumptions are viewed as limiting.

One solution to the pitfalls of conditional quantile regressions is a nonparametric weighted-kernel approach estimating weights that equate the moments of the distributions for the two comparison groups (DiNardo et al. 1996). Simpler semi-parametric approaches have been proposed to estimate and integrate the entire conditional distribution of earnings to impute their counterfactual unconditional distribution (Machado and Mata 2005). A yet simpler parametric solution involves the estimation of a recentered influence function (RIF), on which the UQRs can be performed (Firpo *et al.* 2009).

The RIF technique is a regression-based procedure facilitating decomposition of different distributional statistics across the unconditional distribution of an outcome variable. This method requires estimating the conditional distribution of income on covariates only at one point of the overall distribution, but yields results very close to those of fully nonparametric estimators (Fournier and Koske 2012). It is a neutral method in the sense that it does not impose ex-ante whether the discrimination is in favor of either group. The RIF is used in this paper to decompose the distribution of income by households' rural/urban residence, households engaged in farming activities or not, and households with female/male heads. The RIF method consists of two stages: estimating the UQR on the earnings of the two groups of interest, and then constructing a counterfactual distribution that would prevail if the disadvantaged group (e.g., rural households, with their own characteristics and unobservables) received the returns prevalent among the privileged group (the hedonic wage structure among urban workers).

The UQR decomposition technique is data intensive in terms of sample size needed at all earnings quantiles, representativeness for the underlying population, and availability of control variables to estimate the appropriate earnings effects. This paper applies the UQR decomposition

technique to the LIS data to estimate the earnings effects of household characteristics at individual quantiles of unconditional national distributions of income, and how these income effects differ between the evaluated control and treatment groups.

The comparison between the counterfactual and the empirical distribution allows us to estimate the part of the income gap attributable to differences in household characteristics (*endowment effect*), the part attributable to differences in returns to these characteristics (*returns effect*), and a part due to other unmeasured factors between the pairs of demographic groups (*constant*). The endowment and returns effects are estimated for each of households' specific market-valued characteristics (e.g., work experience or employment sector).

The first stage can be expressed as using the following recentered influence function whose mean, by design, corresponds to the θ^{th} quantile of earnings y , and is modeled as a linear function of relevant covariates as follows.

$$E[RIF(y, Q_\theta)|X] = X\beta + \varepsilon \quad (1)$$

where $(y, Q_\theta|X) = q_\theta + IF(y, q_\theta)$. $RIF(y, Q_\theta)$ is the recentered influence function of the θ^{th} quantile of y estimated by computing the sample quantile Q_θ and deriving the density of y at that point by the kernel method. q_θ is the population θ^{th} quantile of the unconditional distribution of the dependent variable y , and $IF(y, q_\theta)$ is the influence function. X is a matrix of regressors of five types: household-head characteristics including their work experience (proxied by age, age squared), gender and marital status; binary indicators for the head's education level; binary indicators for the head's employment status and sector; household characteristics including household size, and ratio of those below 14 or above 65 years of age in the household; geographic location and residence indicators. The coefficients β in equation 1 can be estimated using the ordinary least squares (OLS) regression.

After estimating the RIF equation, the predicted values for the θ^{th} unconditional quantile will be used to decompose the expenditure gaps between the two demographic groups of interest. The predicted values of earnings-quantile gaps for pairs of demographic groups are decomposed into the endowment and returns effects as follows:

$$\hat{Q}_\theta^i - \hat{Q}_\theta^j = \{\hat{Q}_\theta^i - \hat{Q}_\theta^*\} + \{\hat{Q}_\theta^* - \hat{Q}_\theta^j\} = (\bar{X}^i - \bar{X}^j)\hat{\beta}_\theta^i + \bar{X}^j(\hat{\beta}_\theta^i - \hat{\beta}_\theta^j) \quad (2)$$

for i/j pairs: farming/non-farming, rural/urban, female/male head.

Here \hat{Q}_θ is the θ^{th} unconditional quantile of log real annual earnings per adult equivalent, \bar{X} is

the vector of the means of covariates, and $\hat{\beta}_\theta^k$ is the estimate of the unconditional quantile partial effects of group k . $\hat{Q}_\theta^* = X^j \hat{\beta}_\theta^i$ is the θ^{th} quantile of the unconditional counterfactual distribution that would have prevailed for group j if they received group i 's returns to their characteristics.

The first term in equation 2, $(\bar{X}^i - \bar{X}^j) \hat{\beta}_\theta^i$, gives the endowment effect. It is the contribution of the differences in distributions of household characteristics to inequality at the θ^{th} unconditional quantile. The second term, $\bar{X}^j (\hat{\beta}_\theta^i - \hat{\beta}_\theta^j)$, gives the returns effect, as the part of the gap due to differences in the returns to household characteristics at the θ^{th} unconditional quantile.

The UQR performed using the RIF technique has previously been applied by Calvo et al. (2015) to study wage gaps in Russia up to the year 2012. Calvo decomposed wage gaps in 2002–2012 RLMS data across education levels, gender, residence, age, firm types and occupations.

Growth incidence curves before, during and after trade shocks

The availability of multiple survey waves, and the pooled cross-sectional data setup, allow us to perform a before–after analysis. To assess income growth incidence and the degree of ‘pro marginalized-groups’ and ‘pro poorness’ of development over time, we produce GICs for the pairs of privileged and disadvantaged demographic groups and for the pairs of survey years before, during and after the 2014 events (Ravallion and Chen 2003). Notably we distinguish the years before the 2014 onset of trade tensions; the uncertainty years when trade restrictions and retaliations were being spearheaded and the markets advanced their immediate and short-term responses to them, and the potential stabilization years when the markets have had sufficient time to make their long-run factor and output adjustments. In particular, years 2011–2013 serve as the pre-shock years, 2013–2015 are the regime-change years, and 2015–2016 is the post-change stabilization year.³ For all these years we have a single source of data, the large-sample Survey of the Population Income and Participation in Social Programs, ensuring that the results are not compromised by cross-wave differences in the survey instrument.

Estimating the GICs for the years before, during and after the crisis years of 2014–2015, and for the vulnerable vs. privileged demographic groups, allows us to isolate the income changes of vulnerable groups, namely rural, farming and female-headed households. This may be interpreted

³ An alternative delineation using 2013–2014 as the regime-change year, and 2014–2016 as the post-change stabilization years is considered for a robustness test. Its results are similar to those in the main specification, and are available on request.

as a quasi difference-in-difference (DID) analysis of the effects of the economic and trade shock on vulnerable demographic and income groups. GICs in pre- and post- regime-change years for the disadvantaged versus privileged groups serve to validate the quasi-DID design – that the pairs of groups had similar growth patterns before and after the regime change.

Comparison demographic groups, and welfare aggregates

Households' residence in urban versus rural areas, and reliance or not on farming are evaluated as demarcations of demographic groups facing different economic conditions amid shocks in raw-material prices, and export and import restrictions, particularly in the informal and agricultural sectors. Because gender of household heads is associated with farming and rural statuses, and broadly with economic sectors that are less or more vulnerable to economic and trade shocks, we use gender for another delineation of privileged/disadvantaged groups.^{4,5}

All economic outcomes are deflated using GDP deflator from the World Bank Development Indicators database (World Bank 2015), and converted to adult equivalent scale using square root of household size, following LIS practices. Finally, incomes are analyzed in logarithmic terms, facilitating clear interpretation of income gaps as percentage gaps in the incomes of the disadvantaged groups (i.e., rural, farming, with female head) relative to the incomes of the privileged groups (urban, non-farming, male).

IV. Data

This study relies on a novel set of nine nationally-representative, high-quality Russian household surveys for 2000–2016 that were harmonized and made available by Luxembourg Income Study (LIS).⁶ The raw microdata for the first four surveys, for 2000–2010, were provided

⁴ Because regional inequality arises for various state-dependent reasons and is not necessarily linked to nationwide trade shocks, and because we do not have clear groups of advantaged versus disadvantaged regions, we have opted not to use administrative regions to demarcate treated versus control groups. Regions are, however, included among regression covariates.

⁵ The results for gender gaps also serve to comment on the conjecture that gender equality has given ground to cultural conservatism proliferating in Russia since Putin's accession to power. Additional analyses were performed on Asian vs. European administrative regions; agriculture vs. industry employment; SME employers vs. large employers; and single vs. married household heads. These variables are thought to be less relevant to the current undertaking, or are only available for a subset of years. The results are available on request.

⁶ As of February 2019, LIS offered public access to nearly 350 income distributions for 49 countries, and additional surveys are being added several times a year. The datasets are harmonized and can be studied jointly both across years and across countries.

by the Russia Longitudinal Monitoring Survey (RLMS) run by the Higher School of Economics and managed by the Data Sharing for Demographic Research – Carolina Population Center at the University of North Carolina, Chapel Hill. Microdata for the latter five surveys, 2011–2016, come from the Survey of the Population Income and Participation in Social Programs (PIS) provided by the Russian Federal State Statistics Service, Rosstat.⁷

The RLMS and PIS surveys are largely compatible with one another as they are both nationally representative, and cover a number of identical or similar variables, including earnings, demographics, and population expansion weights. Nevertheless, because they differ in survey design, and their stratification and post-stratification are based on different census vintages, caution must be taken when comparing the 2000–2010 and 2011–2016 trends shown by the two respective surveys. The PIS survey also covers much larger sample sizes. Having four waves for the RLMS, and five waves for the PIS survey, respectively, is helpful as it facilitates checking the consistency of results across individual survey waves as well as across longer time spans.⁸

The surveys jointly encompass 335,000 household records (785,000 individuals). Both the RLMS and PIS have household and personal record modules that can be used in tandem. Information on demographic characteristics and employment status of household heads is merged with information for households including their composition, residence, administrative region and income. It is a common practice to link household income to the characteristics of household heads rather than those of all workers, for lack of superior alternatives amid the great heterogeneity of household types, and conceptual issues with the reliance on personal incomes.

Comparing the distribution of real incomes across the RLMS and PIS, we find a jump in the level and inequality of incomes between 2010 and 2011, showing that incomes in the PIS are somewhat higher and distributed a bit more widely than in the RLMS. This is particularly true for individual components of incomes, namely labor earnings and home production. In particular, home production accounts for approximately 8 percent of disposable income per adult equivalent in the RLMS, but 20 percent in the PIS.

⁷ www.gks.ru/free_doc/new_site/USP/survey0/index.html (accessed 7 May 2019).

⁸ Pre-2014 and post-2014 surveys differ because of the annexation of Crimea. Russian surveys in LIS database includes 8 regions: Moscow and St. Petersburg; Northern and North Western; Central and Central Black-Earth; Volgo-Vyatski and Volga Basin; North Caucasian; Ural; Western Siberia; Eastern Siberia and Far East. This differs slightly from Russia's federal districts, namely: Center (including Moscow/St. Petersburg); South; North West (including North); Far East; Siberia; Ural; Volga; Northern Caucasus.

All of the evaluated inequality indexes – Gini, income percentile ratios, generalized entropy (type 0 and 2) and Atkinson (type 0.5 and 2) – show a large degree of consistency across survey waves, except for the 2010–2011 jump. Interestingly, all these indexes show a near-monotonic decline in inequality throughout the 2000-2016 period (except for the 2010-2011 reversion). The observation of falling inequality across the waves of the RLMS, and the disparity between incomes in the RLMS and the PIS, supports the allegations that the ability of the RLMS to capture top incomes and inequality has deteriorated over time (Gurieva and Rachinsky 2006; Kozyreva et al. 2015), in part due to a declining household response rate (Yemtsov 2008). Hlasny (2016, 2020b) estimated that the bias due to nonresponse in the RLMS (nonresponse exceeding 50%) amounted to one percentage point of the Gini in 2007, but up to 7–17 points in 2010. The RLMS is particularly vulnerable to such biases due to its panel focus and its moderate sample size, inevitably leading to problems with systematic longitudinal and cross-sectional nonresponse. The PIS is thought to be more robust to data problems.

While these observations serve as a warning against inter-temporal comparisons of income levels and inequality measures, they do not invalidate the analysis undertaken in this study, namely the estimation of income gaps across similarly situated households within a single survey wave. Understanding the key forms and drivers of income gaps across the nine survey waves, and across the years 2000–2016, is an important step forward toward understanding the structure and evolution of inequality in Russia.

V. Results

Figures 1–4 present the central results of this study for the gaps in disposable income between households with rural or urban residence, households engaged in farming or not, and households with female or male head (supplemented by detailed tables and additional figures in the appendix). Incomes are in real 2016 rubles, standardized per adult equivalent, and in logarithmic terms. The gaps, interpreted as percentage gaps in the incomes of the disadvantaged groups relative to the incomes of the privileged groups, are shown at each income decile. The gaps are separated into the gaps due to systematic differentials in household endowments that may be valued by markets and may have bearing on households' earning capacity (aka., endowment or explained gap), and

systematic differentials in observed returns to household endowments (aka., returns or unexplained gap).⁹

Figure 4 presents the results of the quasi difference-in-difference analysis of income growth incidence for the alternative divides of disadvantaged-versus-privileged groups (i.e., rural vs. urban, farming vs. non-farming, and female vs. male), for pairs of years before, during, and after the trade-regime and economic-climate change (i.e., 2011–2013, 2013–2014, 2014–2016). Figures 1–3 thus illustrate cross-sectional income gaps between disadvantaged and privileged groups within each year, while Figure 4 focuses on dynamic gaps in income growth across the years.

Income gaps and their sources

Figure 1 reports on the rural–urban gaps across the deciles of households’ disposable income per adult equivalent. Adding together the endowment and returns effects, we see that the rural–urban gaps have hovered around 30–35 percent of urban incomes, and have kept their magnitude or even increased over the years. In 2011, the rural–urban gaps have jumped to 45 percent and have only slightly abated to 35–41 percent since then. This may be on account of the change in our survey instrument in 2011, but to the extent that the 2011–2016 PIS is more reliable than the 2000–2010 RLMS, this may suggest that the income gaps were as large as 40–45 percent even in prior years.¹⁰ There was a temporary jump in the rural–urban gaps in 2014. The median gap jumped from 38 to 41 and back to 37 percent (statistically significant), while the gap at the bottom quintile (20th percentile) jumped from 44 to 46 and then down to 42. At the same time, the income gap at the top quintile (80th percentile) showed no uptick and continued declining from its peak in 2011. These observations are consistent with the conjecture that the trade-regime shock in 2014 affected

⁹ Tables A5–A13 in the appendix report the full regression results. In particular, the gaps at various income deciles are decomposed using decile-specific regressions. Instead of showing nine regressions (for the 1st–9th decile) for each income concept and each pair of treated–control groups, we show only the regressions at the 2nd, 5th (median) and 8th deciles, viewed as representative of income gaps faced by the majority of the population. Tables A5–A13 are thus split into sets of three regressions for the 2nd, 5th and 8th deciles. These tables report the individual endowment and returns effects for each household characteristic, namely: demographics of household heads (work experience, experience squared, marriage status), education, employment status and sector, member-composition and size of households, and administrative region of residence. These characteristics may affect income directly if human-capital markets value them or offer allowances for them, or if they imply the presence of more working members contributing to income per adult equivalent.

¹⁰ Russia’s earnings inequality broadly has been gradually falling (Figure A1). The Lorenz curves for total disposable income show steadily declining inequality over the years (with a small bump during the transition from RLMS to PIS). This decline is best visible in the top tail of the income distribution, and the decline is largest between 2000, 2004 and 2007, during extensive welfare reforms. In the following years, the improvements in inequality were minor.

vulnerable households relying on food trade and consumption the most – rural and poor – the hardest. Whether this can be attributed to the trade-regime and economic shocks, or other events in 2014, is of course unclear.

Across various quantiles and years, the rural–urban gaps are approximately equally due to endowment and returns differentials between rural and urban households. Rural households possess lower education, poor access to geographic markets, and are consequently in inferior sectors and employment statuses, and at the same time receive lower returns on their education and employment even if equally endowed as urban households. Hence, there appear to be enduring barriers to adequate educational and employment opportunities in rural markets, and the rural and urban markets remain structurally segregated, preventing equalization of returns on human capital and of earnings. Over time, the rural-households’ shortfall in endowments and returns to endowments fluctuates, but the lower return on education and employment status is a consistent feature among the poorest rural households. These households face the strongest and time-enduring income gap due to the returns effect. Among covariates we find the existence of persistent regional inequality across Russian administrative regions, and this inequality remains or rises systematically across all income quantiles. This does not lend support to the findings in existing studies that regional incomes have been converging in Russia (Gurieva and Vakulenko 2012).

Next, Figure 2 evaluates the related gaps in disposable income per adult equivalent between households engaged in farming and those who do not farm. This income gap is relatively small. Farming households are shown to earn 8–17 percent less than non-farming households, and this total gap is similar across various income quantiles, as well as across the years, with only a small change around the year 2011, probably due to the change in the survey instrument. There is no evidence of a change in the composite income gap between the farming and non-farming households around the time of the year 2014 events.

Decomposing the overall farming/non-farming gap into the endowment and returns effects, we find that the returns effect was positive in 2000, favoring farming households (especially those in the bottom half of the income distribution, relative to their non-farming counterparts), but approached zero in all subsequent years. This shows that farming and non-farming households have faced similar returns on their observable market-valued characteristics. The endowment effect was zero in 2000, but became negative in the following years, favoring non-farming households, particularly since year 2013. During 2013–2016 (and 2004), the endowment effect

was negative and systematically rising in magnitude in higher income quantiles, plausibly suggesting that the successful export-oriented farms were particularly harmed by the economic and trade shocks.

The final analysis conducted on disposable incomes involves the evaluation and decomposition of gender gaps. Figure 3 evaluates the income gaps between female and male headed households. In the middle of the income distribution, this income gap amounted to 17–25 percent during 2000–2007, fell to 8–11 percent during 2010–2014, and further fell to 5–6 percent in the most recent years. This gap was particularly large at the bottom of the income distribution (e.g., 20th percentile), of 33–41 percent during 2000–2007, but falling to 21 percent in 2010, and to 7–9 percent most recently.¹¹ There was no clear jump in the female/male income gaps in 2011, confirming that the two household-genders were adequately represented both in the 2000–2010 RLMS as well as in the 2011–2016 PIS. There is also no systematic jump in the gender gap in 2014, at any income decile, suggesting that the economic and trade shocks were not biased against female-dominant sectors of the economy.

Decomposing the overall gender gap into its endowment and returns components, we find that the returns effect has been systematic among poor female households, and was historically strong during 2000–2010. This returns effect has accounted for essentially the entire composite income gap among poor households (possibly with the exception of year 2014, when both the endowment and returns effects were small negative among poor households). In recent years, female households receive lower returns on their employment status and geographic access to markets, but these are counteracted by higher returns on demographic characteristics among richer female households.

Contrary to the returns effect, the endowment effect has been close to zero across most years, weakly favoring male-headed households, and only slightly larger in magnitude among richer households. Hence, female households are shown to have similar, and only slightly inferior, market-valued characteristics as male households across different income quantiles. The endowment effect in recent years has been mostly due to differentials in employment status and in the demographic characteristics of household heads, including their work experience and marital

¹¹ One interpretation of the low gender gap (courtesy of an anonymous referee) is that households may be inclined to assign income to women to lower their tax liability, affecting the classification as male- or female-headed. Whether this would affect income reporting on a household survey is unclear, since respondents are reminded that their responses are anonymous and not shared with tax authorities.

status. While female heads appear to be as educated as or more educated than their male counterparts, richer female heads may be held back by restrictions on their access to better jobs, such as the glass ceiling, or by their age. Female households are also found to concentrate more in rural and disadvantaged locations relative to male households, affecting their access to formal markets and their earning capacity.¹²

Growth incidence for various groups, and various years

Figure 4 reports on the GICs for three pairs of years, separately for rural/urban, farming/non-farming, and female/male household groups. Panel (i) shows that during 2011–2013, the rural and urban groups experienced the same profile of high growth in disposable income, nearly same across all income quantiles, except for the extreme ends (bottom 15% and top 15%) where rural households fared worse than their urban counterparts. During 2013–2014, growth fell to near zero for both groups, and only rose for the urban poor (bottom decile), and the rural rich (top 2 deciles). The rural rich appear to have benefited from public support for big farms amid the food-trade crisis, while the poor were partially protected by public assistance programs.

During 2014–2016, income growth among urban households was negative and approximately the same across all quantiles, at around -6 percent/year, while growth was less negative among rural households, at around -4 percent/year, and was zero or even positive among the bottom-most 5 percent of rural households. These findings suggest that the economic shock had the immediate adverse effect on the urban rich, and a particularly large longer-term adverse effect on urban

¹² As alternative measures of economic outcomes and welfare, we also assess workers' labor income and home production for own use, all deflated and normalized per adult equivalent. Disposable income is an appropriate post-fiscal welfare aggregate, but it conflates the effects of formal market earnings, non-market returns on households' various endowments, private transfers, and fiscal interventions. Labor income is a more exact measure of pre-fiscal returns to households' endowments in the formal market for human capital, undistorted by the state's taxes or transfers. This covers income from regular and casual paid employment, as well as self-employment income including business profits and basic types of household production amenable to monetary valuation. This income is more tractable and facilitates systematic decomposition. Households' non-monetary consumption derived from home production for own use is used to test a conjecture regarding households' transitions between formal-market and non-market activities amid a crisis in the formal markets. Home production for own use – including goods production, owner-occupied imputed rent, and the use value of durables – is known to be an important informal supplement of formal household incomes. It is used as the best available proxy for households' security of access to necessities when formal labor markets and food supply chains are affected. It is also households' coping productive mechanism when formal markets become volatile. Gaps in labor income, and to a slightly lesser degree for home production, are found to exhibit similar patterns as those for total disposable income in Figures 1–3 (available on request).

households across the entire income distribution. Rural (and poorer) households were possibly sheltered by their lower exposure to capital market contractions in the years following the crisis.

Panel (ii) shows the income growth trends for farming vs. non-farming households. During 2011–2013, farming households experienced an even profile of positive growth, except at the top end of the income distribution, where farming households saw lower growth, and non-farming households saw higher growth. During 2013–2014, income growth fell to zero among farming households. Non-farming households performed slightly worse, except in the bottom decile where their growth outperformed that among farming households. This again points to the role of public assistance given to the urban poor, and a combination of price-based and public support to farmers.

During 2014–2016, both farming and non-farming households saw negative income growth of similar magnitude across the bulk of the income distribution, but farming households fared particularly poorly, with incomes declining by some 6 percent per year (4% among non-farming households, respectively). This finding does not corroborate our finding for the rural/urban growth in the post-crisis years. We surmise that the rural poor were sheltered from the reverberations of the 2014 trade shock compared to urban households, but here we find that farming households were more exposed than non-farming households. Whether this is on account of rising factor prices or depletion of imported resources on farms is unclear.

Panel (iii) completes this analysis of disposable income growth by comparing growth between female and male headed households. We find that male households saw lower income growth rates than female households in all of the evaluated years. During 2013–2014, income growth was near zero among female households up to the fourth quintile and strong negative in the top quintile. By contrast, male households in the lower 4 quintiles saw small negative growth, and near-zero growth in the top quintile, exceeding growth among rich female households. During 2014–2016, male households again faced more negative income growth than female households, similar in magnitude across all income quantiles.

In sum, Figure 4 confirms the findings from the regression analysis that the shock events of the year 2014 were not a one-off temporary event, but represented a phase in a longer-term correction. The events started a contractionary trend in labor-market and total disposable earnings of all the evaluated demographic groups, but the decline continued over the following two years. Poor rural households relying on food and basic-good imports, and the urban rich relying on capital markets, were affected the most adversely. The one group experiencing notably the largest decline

in earnings is female-headed households with top earnings pre-2014. This group saw a 15–25 percent reduction in labor earnings in the immediate aftermath of the 2014 shock. By contrast, male households appear to have been affected more in the longer term.

VI. Summary and discussion

This study was motivated by the long (and ongoing) span of Vladimir Putin’s presidency, and the recent escalation of his military adventurism in Ukraine followed by the imposition of crippling sanctions by most of Russia’s trading partners. Russia’s population is expected to experience a grave economic crisis that will have deep but differentiated effects across various socioeconomic groups – greater so than following Putin’s annexation of Crimea in February 2014.

We took advantage of our access to microdata for nine Russian nationally-representative harmonized income surveys for the years 2000–2016 to take stock of the development and inequality in various segments of the Russian economy as pertaining to workers’ outcomes throughout the span of Putin’s rule. In particular, we aimed to estimate the evolution of earnings gaps across several divides of privilege and disadvantage in Russian society which are expected to be affected differently by economic shocks – namely the rural/urban, farming/non-farming, and female/male divides, as well as across various income levels.

Our main findings are that urban-rural gaps in Russia are pervasive or even increasing over time, particularly among lower income groups, representing a challenge to social stability and a drag on economic growth (Varshavsky 2019). By comparison, gender gaps were high historically but have steadily declined over the past decade, and gaps farming and non-farming households have been relatively low. The identified between-group income gaps differ substantially across income quantiles, validating the use of quantile regressions and growth incidence curves.

Income gaps are partly due to human-capital endowment differentials, and partly to differential returns to endowments between the privileged and disadvantaged groups. The rural and urban markets remain structurally segregated, preventing equalization of returns on human capital and of earnings. Rural households appear to be held back by lower stocks of education, mobility barriers, and lack of access to better employment opportunities, offering them weak incentives for skill investment. They receive lower returns on the various components of human capital. Over time, the rural-households’ shortfall in endowments and returns to endowments fluctuates, but the

lower return on education and employment status is a consistent feature among the poorest rural households.

Female households, while being typically more educated, also lack access to decent employment opportunities. Female household heads face lower returns on their education, employment status, and household composition. Finally, farming households typically possess an inferior set of human capital relative to non-farming households.

Our results point to the importance of access to decent employment opportunities in various parts of the Russian economy. In rural areas, markets may not exist to utilize workers' skills efficiently, and workers face discrimination compared to similarly endowed urban workers. Women face 'glass ceiling' restrictions on their career growth. To promote equalization of living conditions across regions and demographic groups, regulators at the regional and federal levels should strive to make markets better integrated, and facilitate better matching between jobs and workers. In terms of research agenda, our findings suggest that other manifestations of job inequality – across employment sectors, or across employers of different organizational structures and sizes – may be present and should be assessed.

Comparing the various survey waves we found that the transition from the RLMS surveys for 2000–2010 to the PIS surveys for 2011–2016 was not smooth. The levels of economic outcomes and the decomposition of inequality in them changed noticeably in 2011, particularly for outcomes that are difficult to measure and recall such as home production for own use. For this reason, caution must be taken when using the RLMS and the PIS jointly.

Regarding the economic shocks of the year 2014, our growth incidence analysis revealed that they were not a one-off event, but were the first step in a deepening economic crisis. Economic outcomes of all of the evaluated demographic groups declined during the year 2014, and then declined further over the following two years. The most adversely affected groups included the rural poor, the more successful (presumably export-oriented) farmers, and the urban rich. Between male and female households, female households were hurt more in the immediate aftermath, but male households appear to have been affected more in the longer term.

These results paint a bleak picture for Russian workers' outcomes under the current international – and Russia's retaliatory – sanctions. The rural (and urban) poor may be thrust deeper into poverty in the absence of compensatory support from the authorities. The export-oriented farmers and producers, as well as all those reliant on functioning capital markets –

proportionally more so among those at higher income levels – are likely to experience an earnings setback. These effects will likely persevere for the three or more years to come.

References

- Barseghyan, Gayane (2019) Sanctions and counter-sanctions: What did they do?, BOFIT Discussion Paper 24/2019, Bank of Finland, Helsinki: Institute for Economies in Transition, <http://nbn-resolving.de/urn:NBN:fi:bof-201912101702>.
- Blinder, Alan (1973) Wage discrimination: reduced form and structural estimates, *Journal of Human Resources* 8(4):436–455.
- Brainerd, Elizabeth (1998) Winners and losers in Russia’s economic transition, *American Economic Review* 88:1094–1116.
- Bukowski, Paweł, and Filip Novokmet (2019) Between Communism and Capitalism: Long-Term Inequality in Poland, 1892–2015, LSE working paper 17, December.
- Calvo, Paula A., Luis F. Lopez-Calva, and Josefina Posadas (2015) A decade of declining earnings inequality in the Russian Federation, Policy Research Working Paper 7392, Washington, DC: World Bank.
- Cerami, Alfio (2006) Poverty and social structure in Russia: an analysis of the first decade of transition, LIS working paper 445.
- Clarke, Simon (2005) Post-socialist trade unions: China and Russia, *Industrial Relations Journal* 36(1):2–18.
- Dang, Hai-Anh H., Michael M. Lokshin, Kseniya Abanokova and Maurizio Bussolo (2019) Welfare and inequality dynamics in the Russian Federation during 1994–2015, *European Journal of Development Research* 2019.
- DiNardo, J., N.M. Fortin, and Thomas Lemieux (1996), Labor market institutions and the distribution of wages, 1973–1992: A semi-parametric approach. *Econometrica* 64(5):1001–1044.
- Drobyshevsky, Sergey, Sergey Narkevich, Elena Pikulina, and Dmitri Polevoy (2009) Analysis of a potential “bubble” on Russia’s real estate market, IET Working Paper 128, Moscow: Institute for the Economy in Transition.

- Durand-Lasserve, Olivier, and Hansjörg Blöchliger (2018) Drivers of regional growth in Russia: a baseline model with application, OECD Economics Department Working paper 1523.
- Fedorov, Leonid (2002) Regional inequality and regional polarization in Russia, 1990–99, *World Development* 30(3):443–456.
- Firpo, S., N.M. Fortin, and T. Lemieux (2009) Unconditional quantile regressions, *Econometrica* 77(3):953–973.
- Fournier, J.-M., and I. Koske (2012) The determinants of earnings inequality: evidence from quantile regressions, *OECD Journal: Economic Studies* 2012/1.
- Gimpelson, Vladimir Y. (2016) Structural change and inter-industry wage differentiation [in Russian], *Journal of the New Economic Association* 3(31):186–197.
- Gimpelson, Vladimir Y., and Anna Lukiyanova (2009) Are public sector workers underpaid in Russia? Estimating the public-private wage gap, IZA Discussion Paper 3941.
- Gluschenko, Konstantin P. (2010) Methodologies of analyzing inter-regional income inequality and their applications to Russia, William Davidson Institute Working Paper 984, April.
- Gluschenko, Konstantin P. (2011a) Price convergence and market integration in Russia, *Regional Science and Urban Economics* 41(2):160–172.
- Gluschenko, Konstantin P. (2011b) Studies on income inequality among Russian regions: variations in social-economic development by region, *Regional Research of Russia* 1(4):319–330.
- Gorodnichenko, Yuriy, Jorge Martinez-Vazquez, and Klara Sabirianova-Peter (2009) Myth and reality of flat tax reform: micro estimates of tax evasion response and welfare effects in Russia, *Journal of Political Economy* 117(3):504–554.
- Gorodnichenko, Yuriy, Klara Sabirianova-Peter, and D. Stolyarov (2010) Inequality and volatility moderation in Russia: evidence from micro-level panel data on consumption and income, *Review of Economic Dynamics* 13:209–237.
- Götz, Linde, Thomas Glauben, and Bernhard Brümmer (2013) Wheat export restrictions and domestic market effects in Russia and Ukraine during the food crisis, *Food Policy* 38:214–226.
- Guriev, Sergei, and Andrei Rachinsky (2005) The role of oligarchs in Russian capitalism, *Journal of Economic Perspectives* 19(1):131–150.
- Guriev, Sergei, and Andrei Rachinsky (2006) The evolution of personal wealth in the former Soviet Union and Central and Eastern Europe, UNU-Wider.

- Guriev, Sergei, and Elena Vakulenko (2012) Convergence between Russian regions, CEFIR/ES Working Paper 180, October.
- Heshmati, Almas (2004) Regional income inequality in selected large countries, IZA Discussion Paper 1307, September.
- Hlasny, Vladimir (2016) Unit nonresponse bias to inequality measurement: worldwide analysis using Luxembourg Income Study database, Luxembourg Income Study technical working paper 8, March.
- Hlasny, Vladimir (2019) Different faces of inequality across Asia: income gaps across demographic groups, Ch.4 in B. Huang, P.J. Morgan and N. Yoshino (eds.) *Demystifying Rising Inequality in Asia*, pp.38–107, Tokyo: Asian Development Bank Institute.
- Hlasny, Vladimir (2020a) Decomposition of income gaps across socioeconomic groups: the case of six Asian countries. *Journal of Income Distribution* 28(1).
- Hlasny, Vladimir (2020b) Nonresponse bias in inequality measurement: cross-country analysis using Luxembourg Income Study surveys, *Social Science Quarterly* 101(2):712–731.
- Ivanova, Anna, Michael Keen, and Alexander Klemm (2005) The Russian ‘flat tax’ reform, *Economic Policy* 43:397–444.
- Johnson, Toni (2013) Food price volatility and insecurity, Council on Foreign Relations Background Paper, www.cfr.org/backgrounder/food-price-volatility-and-insecurity (accessed 15 April 2019).
- Kolenikov, Stanislav, and Anthony Shorrocks (2005) A decomposition analysis of regional poverty in Russia, *Review of Development Economics* 9(1):25–46.
- Kosareva, Nadezhda B., Raymond J. Struyk, and Andrei Tkachenko (2000) Russia: dramatic shift to demand-side assistance, in R. Stryuk (ed.) *Homeownership and Housing Finance Policy in the Former Soviet Bloc: Costly Populism*, pp. 151–216. Washington, DC: Urban Institute.
- Kozyreva, Polina, Mikhail Kosolapov, and Barry M. Popkin (2015) Data resource profile: the Russian Longitudinal Monitoring Survey-Higher School of Economics phase II: monitoring the economic and health situation in Russia, 1994–2013, *International Journal of Epidemiology* 45(2):395–401.
- Leonard, Carol S., Zafar Nazarov, and Elena S. Vakulenko (2016) The impact of sub-national institutions: recentralization and regional growth in the Russian Federation (2001–2008), *Economics of Transition and Institutional Change* 24(3):421–446.

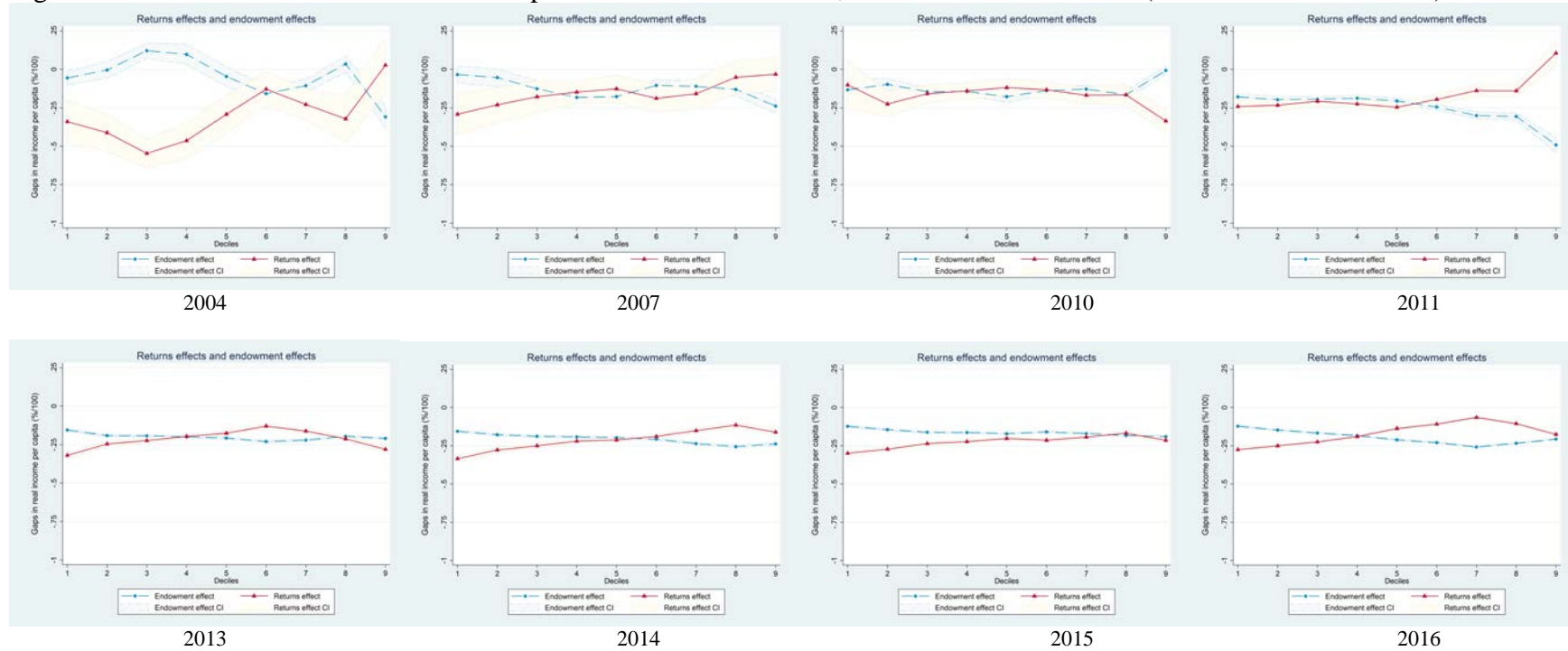
- Lisina, Anastasiya, and Philippe Van Kerm (2019) Understanding inequality and poverty trends in Russia, LISER working paper, May.
- Lukiyanova, Anna (2015) Earnings inequality and informal employment in Russia, *Economics of Transition* 23(2):469–516.
- Lukiyanova, Anna, and Nina Vishnevskaya (2016) Decentralization of Minimum Wage Setting in Russia – Causes and Consequences, *Economic and Labour Relations Review* 27(1):98–117.
- Luxembourg Income Study (LIS) Database, <http://www.lisdatacenter.org> (Russia income reference years 2000–2016; accessed February 2019). Luxembourg: LIS.
- Machado, J.A.F., and J. Mata (2005), Counterfactual decomposition of changes in wage distributions using quantile regression. *Journal of Applied Econometrics* 20(4):445–465.
- Mahler, Christian (2011) Diverging fortunes: recent developments in income inequality across Russian regions, *Opticon* 1826 10(Spring).
- Malkina, Marina (2017) Contribution of various income sources to interregional inequality of the per capita income in the Russian Federation, *Equilibrium–Quarterly Journal of Economics and Economic Policy* 12(3):399–416.
- Novokmet, Filip, Thomas Piketty, and Gabriel Zucman (2018), From Soviets to oligarchs: inequality and property in Russia 1905–2016, *Journal of Economic Inequality* 16:189–223.
- Oaxaca, Ronald (1973), Male–female wage differentials in urban labor markets, *International Economic Review* 14(3):693–709.
- Ovcharova, Lilia N., Daria O. Popova, and AM Rudberg (2016) Decomposition of income inequality in contemporary Russia [in Russian], *Journal of the New Economic Association* 3(31):170–186.
- Popova, Daria, Mikhail Matytsin, and Emily Sinnot (2018) Distributional impact of taxes and social transfers in Russia over the downturn, *Journal of European Social Policy* 28(5):535–548.
- Ravallion, Martin, and Shaohua Chen (2003) Measuring pro-poor growth, *Economics Letters* 78(1):93–99.
- Remington, Thomas F. (2011) *The Politics of Inequality in Russia*. Cambridge, UK: Cambridge University Press.
- Varshavsky, Alexander E. (2019) Excessive Income Inequality – Problems and Threats for Russia. *Sotsiologicheskie issledovaniya* 8:52–61.

Wegren, Stephen K. (2014) Rural Inequality in Post-Soviet Russia, *Problems of Post-Communism* 61(1):52–64.

World Bank (2015) Inflation: GDP Deflator (annual %), World Bank national accounts data, and OECD National Accounts data, World Development Indicators catalog, <http://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG>.

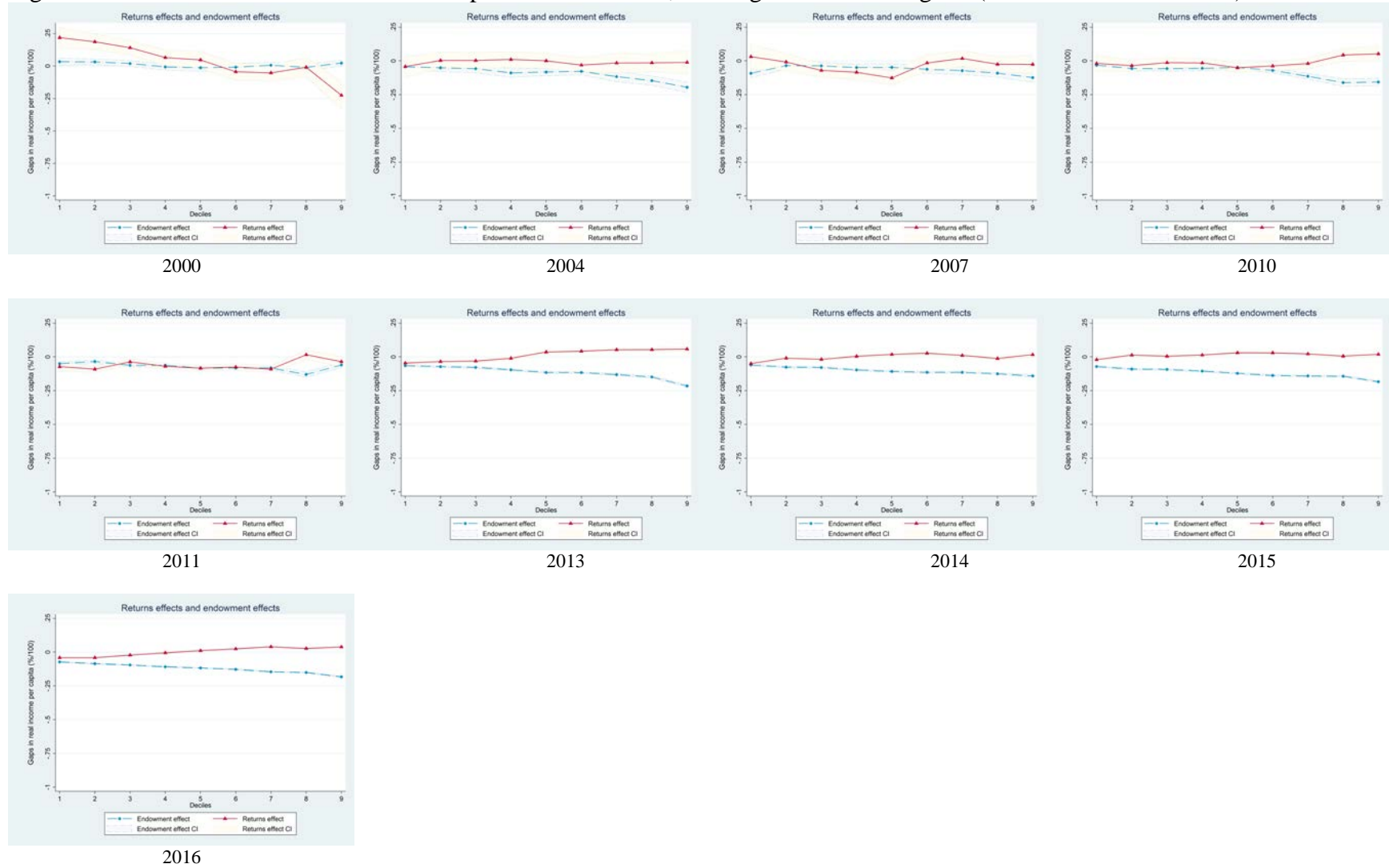
Yemtsov, Ruslan (2008) *Through the looking-glass: what is behind official data on inequality in Russia over 1992–2003*, Washington, DC: World Bank.

Figure 1. Endowment and returns effects: disposable household income, rural vs. urban residence (% differences in income)



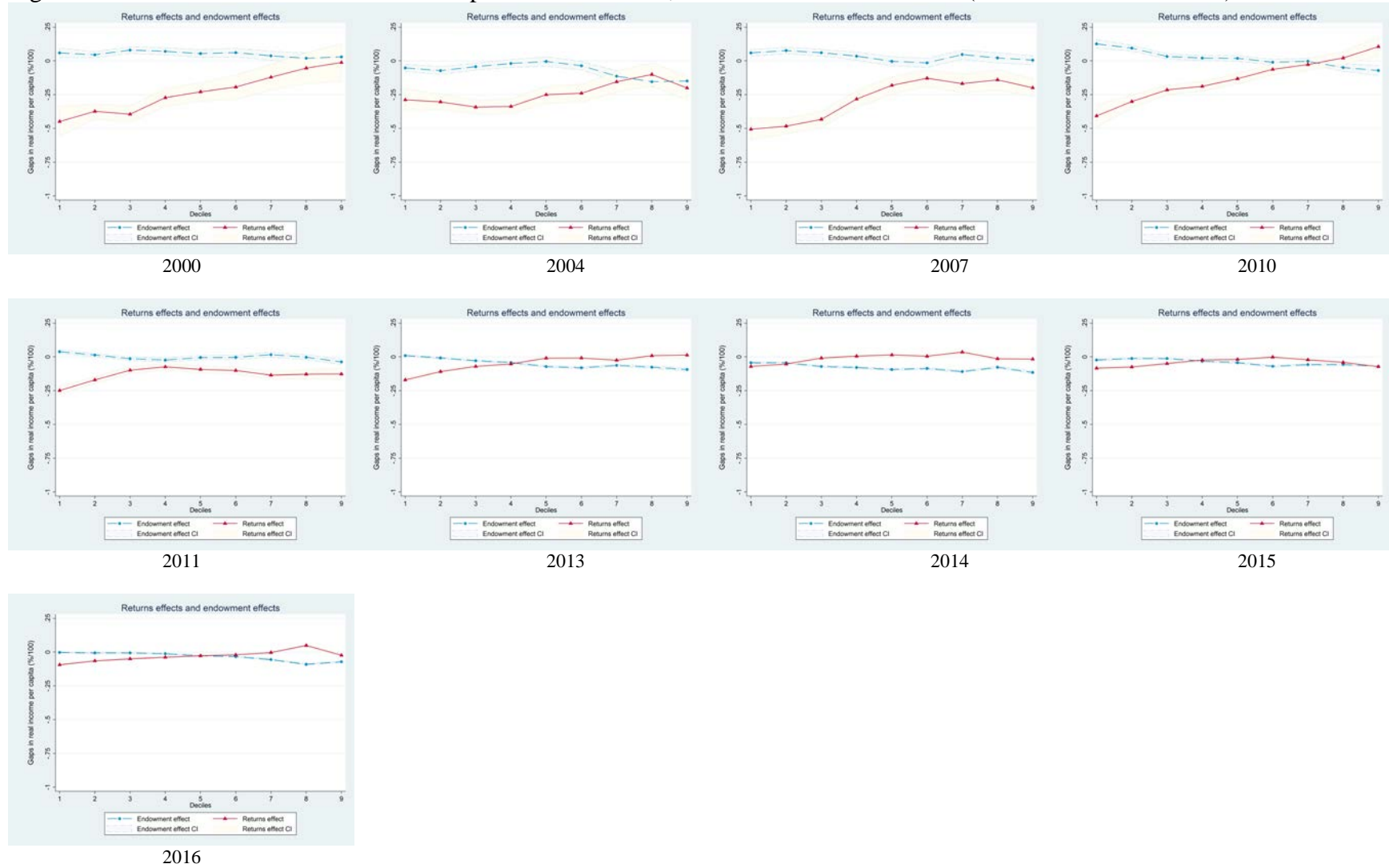
Notes: Author's analysis of LIS data. Urban status unavailable in 2000. The endowment and returns effects show the percentage income gaps ($\times 100$) due to, respectively, differentials in the endowments of all measurable characteristics, and differentials in the returns to all measurable characteristics and other unmeasured differentials. Regression specifications control for head demographics (sex, age, age², marital status), education (years attained, binary edu. levels), employment (binary empl. status, sector indicators, engagement in farming), household composition (size, % children, % elderly, hhd. composition type indicators), and residence (region indicators). Negative effects are pro-urban. The sum of the endowment and returns effects gives the estimated percentage income gap at each decile of the income distribution.

Figure 2. Endowment and returns effects: disposable hh. income, farming vs. non-farming hh. (% differences in income)



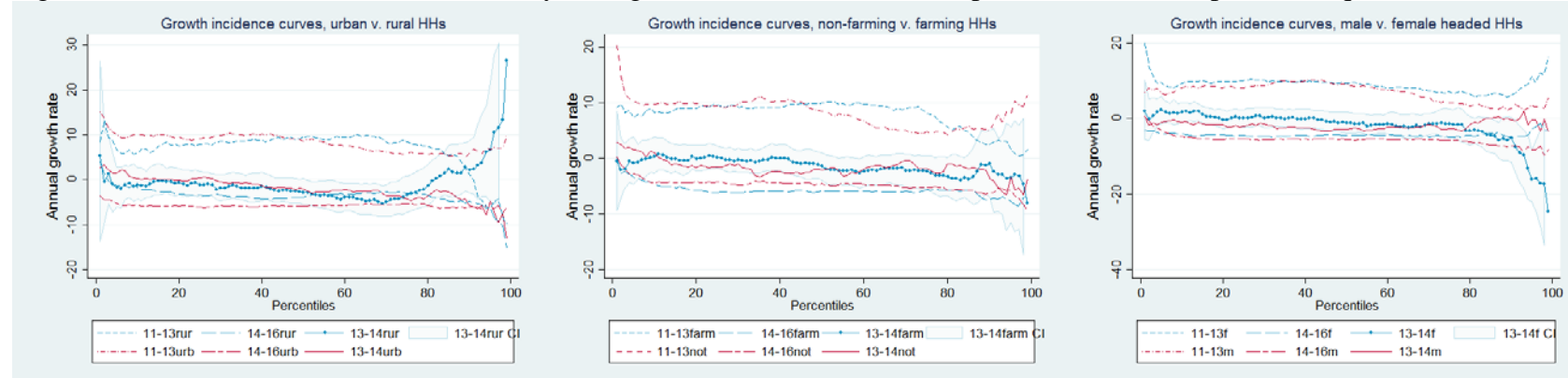
Notes: Author's analysis of LIS data. The endowment and returns effects show the percentage income gaps ($\times 100$) due to, respectively, differentials in the endowments of all measurable characteristics, and differentials in the returns to all measurable characteristics and other unmeasured differentials. Regression specifications control for head demographics (sex, age, age², marital status), education (years attained, binary edu. levels), employment (binary empl. status, sector indicators), household composition (size, % children, % elderly, hhd. composition type indicators), and residence (region indicators). Negative effects are pro-nonfarming households. The sum of the endowment and returns effects gives the estimated percentage income gap at each decile of the income distribution.

Figure 3. Endowment and returns effects: disposable hh. income, female vs. male headed hh. (% differences in income)



Notes: Author's analysis of LIS data. The endowment and returns effects show the percentage income gaps ($\times 100$) due to, respectively, differentials in the endowments of all measurable characteristics, and differentials in the returns to all measurable characteristics and other unmeasured differentials. Regression specifications control for head demographics (age, age², marital status), education (years attained, binary edu. levels), employment (binary empl. status, sector indicators, engagement in farming), household composition (size, % children, % elderly, hhd. composition type indicators), and residence (region indicators). Negative effects are pro-male headed households. The sum of the endowment and returns effects gives the estimated percentage income gap at each decile of the income distribution.

Figure 4. Quasi difference in difference analysis of growth incidence curves, disposable hh. income per adult equivalent



i. Rural/urban households

ii. Farming/non-farming households

iii. Female/male hhds.

Notes: Author's analysis of LIS data.

Appendix. Additional descriptive statistics and detailed results

The following variables in the LIS database are used to identify income inequality in Russia: disposable household income *dhi*, labor income *hil*, home production for own use *hcbown*. The key demographic groups are delineated based on residence type *rural*, farm-household and farming-activity status *farm* and *farming*, and *sex* of the member classified as household head. Other variables used in estimation include: *age*; highest attended education level *educ_c*; employment status *emp*; industry classifications *indc1* and *ind1_c*; cohabitation with partner *hpartner*; household composition *hhstype*; household size *nhhmem*; number of household members 13 or younger *nhhmem13*, and 65 or older *nhhmem65*; administrative regions *area_c* and *region_c*; relationship to household head *relation*; and normalized household sampling weights *hwgt*.

Table A1. Distribution of real income per adult equivalent (2016 Russian rubles)

| Income ref. year | GDP deflator | Hhds. | Avg. inc. (₽) | Median inc. (₽) | Gini | 75/25% Ratio | 90/10% Ratio | GE(0) | GE(2) | Atkinson (0.5) | Atkinson (2) |
|------------------------------------|-----------------|---------|------------------|--------------------|--------------|-----------------|-----------------|-------|-------|-------------------|-----------------|
| <i>Disposable household income</i> | | | | | | | | | | | |
| RLMS 2000 | 0.18964 | 3,067 | 143,410 | 106,051 | 41.99 (1.01) | 2.63 | 6.42 | 32.52 | 76.73 | 15.10 | 55.77 |
| 2004 | 0.33620 | 3,034 | 224,314 | 178,304 | 38.65 (0.59) | 2.64 | 6.15 | 27.81 | 32.67 | 12.33 | 57.64 |
| 2007 | 0.45291 | 3,305 | 305,485 | 259,384 | 34.42 (0.49) | 2.43 | 5.35 | 21.97 | 22.48 | 9.77 | 45.88 |
| 2010 | 0.61653 | 5,600 | 373,429 | 312,185 | 33.90 (0.58) | 2.16 | 4.63 | 21.54 | 32.74 | 9.81 | 53.12 |
| PIS 2011 | 0.66857 | 9,990 | 497,491 | 391,940 | 36.42 (0.59) | 2.44 | 5.39 | 22.99 | 29.26 | 10.71 | 45.09 |
| 2013 | 0.74995 | 45,000 | 572,139 | 470,867 | 35.06 (0.63) | 2.27 | 4.99 | 21.21 | 28.18 | 10.06 | 37.52 |
| 2014 | 0.80860 | 45,000 | 553,679 | 459,103 | 33.96 (0.40) | 2.25 | 4.82 | 19.82 | 24.53 | 9.36 | 35.51 |
| 2015 | 0.93421 | 60,000 | 511,081 | 429,689 | 33.09 (0.35) | 2.24 | 4.71 | 18.75 | 22.25 | 8.84 | 34.55 |
| 2016 | 1.00000 | 160,008 | 493,092 | 414,420 | 33.15 (0.32) | 2.12 | 2.23 | 18.70 | 23.82 | 8.91 | 32.73 |

Notes: Samples weighted using analytical weights and count of household members. Gini, GE and Atkinson inequality indexes multiplied by 100 for clarity. Adult equivalence scale is square root of household members. Results may differ from statistics reported by LIS because an older version of data may have been used.

Source: Author's analysis of LIS data; GDP deflators from World Bank (2015a).

Table A2. Demographic composition of population (%)

| Income ref. year | Urban | Non- farm | Male | 30-50 year-old | Married | Some sec. educ. | Some tert. educ. | Employed | Manuf. | Services | Manager & profess. |
|---------------------|-------|--------------|------|-------------------|---------|--------------------|---------------------|----------|--------|----------|-----------------------|
| RLMS 2000 | -- | 48.7 | 51.1 | 41.4 | 62.3 | 46.5 | 38.8 | 56.9 | -- | -- | 22.5 |
| 2004 | 72.5 | 46.0 | 46.7 | 40.5 | 59.4 | 46.7 | 42.6 | 59.4 | 25.3 | 60.4 | 23.8 |
| 2007 | 73.3 | 52.1 | 46.6 | 40.3 | 59.8 | 46.2 | 45.6 | 62.3 | 22.1 | 61.3 | 25.7 |
| 2010 | 72.8 | 53.3 | 48.6 | 38.1 | 55.8 | 43.7 | 49.9 | 67.4 | 19.9 | 63.3 | 23.7 |
| PIS 2011 | 73.9 | 53.0 | 53.4 | 41.3 | 58.3 | 53.7 | 36.6 | 76.5 | 24.0 | 62.3 | 32.0 |
| 2013 | 74.3 | 52.7 | 56.3 | 41.4 | 59.1 | 53.2 | 39.0 | 78.8 | 24.9 | 62.1 | 31.0 |
| 2014 | 74.0 | 51.4 | 57.2 | 42.2 | 59.4 | 51.9 | 40.7 | 79.8 | 23.6 | 62.6 | 30.5 |
| 2015 | 74.1 | 53.8 | 57.1 | 42.7 | 59.9 | 49.8 | 43.7 | 81.3 | 23.8 | 63.9 | 32.1 |
| 2016 | 74.3 | 53.3 | 57.3 | 43.4 | 59.8 | 48.3 | 46.0 | 80.0 | 26.4 | 62.6 | 31.5 |

Notes: Frequencies are computed among observations with known values only. Samples weighted using analytical weights and count of household members. '--' unavailable.

Source: Author's analysis of LIS data.

Table A3. Demographic composition by income quintile (% of hhds. of a particular type)

| Income ref. | | | | | | |
|---|------------------------------------|------|------|------|------|------|
| year \ Quintile | | 1 | 2 | 3 | 4 | 5 |
| <i>Rural residence</i> | | | | | | |
| RLMS | 2004 | 41.2 | 25.7 | 22.2 | 21.1 | 15.4 |
| | 2007 | 33.7 | 25.2 | 27.1 | 21.0 | 17.7 |
| | 2010 | 34.2 | 27.4 | 23.2 | 22.5 | 18.5 |
| PIS | 2011 | 42.5 | 33.9 | 27.2 | 20.4 | 13.9 |
| | 2013 | 44.7 | 35.2 | 29.5 | 24.4 | 13.4 |
| | 2014 | 44.9 | 35.6 | 30.7 | 24.2 | 12.8 |
| | 2015 | 44.4 | 37.2 | 32.5 | 27.4 | 15.9 |
| | 2016 | 44.9 | 37.6 | 32.1 | 26.2 | 14.9 |
| <i>Female head</i> | | | | | | |
| RLMS | 2000 | 65.6 | 61.2 | 44.3 | 39.6 | 35.8 |
| | 2004 | 71.2 | 65.4 | 49.0 | 42.3 | 36.0 |
| | 2007 | 73.6 | 64.3 | 48.7 | 43.0 | 39.6 |
| | 2010 | 67.8 | 59.2 | 49.7 | 42.7 | 40.1 |
| PIS | 2011 | 65.0 | 55.0 | 46.2 | 44.7 | 37.8 |
| | 2013 | 64.3 | 57.1 | 47.6 | 43.5 | 36.4 |
| | 2014 | 64.0 | 55.8 | 46.8 | 41.9 | 37.3 |
| | 2015 | 64.6 | 57.2 | 47.7 | 43.3 | 38.7 |
| | 2016 | 64.9 | 56.7 | 47.6 | 43.0 | 37.4 |
| | <i>Mainly non-employed head</i> | | | | | |
| RLMS | 2000 | 60.7 | 65.0 | 45.4 | 27.2 | 19.7 |
| | 2004 | 66.8 | 63.4 | 36.4 | 21.9 | 11.6 |
| | 2007 | 68.6 | 56.7 | 36.7 | 18.9 | 10.3 |
| | 2010 | 53.2 | 49.8 | 36.6 | 17.9 | 9.0 |
| PIS | 2011 | 48.8 | 46.3 | 33.5 | 16.2 | 5.9 |
| | 2013 | 55.1 | 53.4 | 37.9 | 18.0 | 3.8 |
| | 2014 | 56.0 | 53.4 | 38.7 | 18.3 | 4.0 |
| | 2015 | 55.8 | 54.7 | 41.3 | 21.2 | 4.3 |
| | 2016 | 60.0 | 57.6 | 43.5 | 21.3 | 4.7 |
| | <i>SME (versus large employer)</i> | | | | | |
| RLMS | 2000 | 52.5 | 47.3 | 51.8 | 47.6 | 37.2 |
| | 2004 | 68.0 | 50.7 | 54.0 | 50.6 | 45.5 |
| | 2007 | 72.2 | 62.5 | 53.5 | 52.1 | 49.2 |
| | 2010 | 68.1 | 64.5 | 58.3 | 56.0 | 50.3 |
| <i>Employed in services (vs. agriculture, industry)</i> | | | | | | |
| RLMS | 2004 | 23.3 | 25.8 | 31.8 | 37.2 | 33.8 |
| | 2007 | 23.2 | 23.4 | 29.7 | 33.8 | 38.5 |
| | 2010 | 23.3 | 25.2 | 30.3 | 33.7 | 34.1 |
| PIS | 2011 | 24.8 | 32.0 | 33.0 | 33.7 | 31.1 |
| | 2013 | 26.3 | 30.2 | 34.2 | 32.8 | 33.2 |
| | 2014 | 25.1 | 30.0 | 32.1 | 34.1 | 31.2 |
| | 2015 | 23.2 | 29.4 | 30.7 | 32.5 | 30.0 |
| | 2016 | 23.8 | 29.0 | 31.5 | 32.7 | 31.1 |
| | <i>Non-working age head</i> | | | | | |
| RLMS | 2000 | 62.3 | 73.3 | 61.9 | 54.8 | 44.3 |
| | 2004 | 65.4 | 70.8 | 60.0 | 52.8 | 45.7 |
| | 2007 | 70.4 | 71.2 | 57.9 | 54.7 | 48.2 |
| | 2010 | 61.8 | 70.0 | 67.9 | 59.4 | 53.7 |
| PIS | 2011 | 63.7 | 68.7 | 64.5 | 57.1 | 51.1 |
| | 2013 | 67.7 | 72.1 | 66.5 | 57.9 | 48.8 |
| | 2014 | 68.4 | 71.5 | 66.8 | 57.6 | 49.5 |
| | 2015 | 68.8 | 72.3 | 67.7 | 58.9 | 49.6 |
| | 2016 | 70.2 | 73.1 | 67.5 | 57.7 | 48.0 |

Notes: ** Difference significant at 5%, * 10%, two-sided test. Samples weighted using analytical weights and count of household members. '--' unavailable. Source: Author's analysis of LIS data.

Table A4. Cross-group decomposition of Gini of disposable hh. income

| Income ref. year | Rural | Urban | pure between group contrib to Gini (%) | Farm | Nonfarm | pure betw. group contrib. to | | pure betw.- group contrib. to | | | Industry | pure betw.- group contrib. to Gini (%) | |
|---------------------|-------|-------|--|------|---------|------------------------------------|--------|-------------------------------------|----------|----------|----------|---|------|
| | | | | | | Gini (%) | Female | Male | Gini (%) | Services | | | |
| RLMS 2000 | -- | -- | -- | 39.6 | 45.8** | 18.2 | 42.9 | 41.4 | 14.5 | -- | -- | -- | |
| 2004 | 39.6 | 38.0 | 15.0 | 38.0 | 40.1* | 6.3 | 40.5 | 36.2** | 20.6 | 36.9 | 32.9* | 85.1 | |
| 2007 | 35.3 | 34.2 | 11.8 | 33.5 | 36.0** | 4.0 | 37.2 | 31.8** | 19.0 | 32.8 | 30.2** | 79.3 | |
| 2010 | 35.0 | 33.7 | 11.1 | 32.4 | 36.2** | 4.1 | 37.4 | 31.6** | 12.1 | 33.5 | 30.3** | 74.6 | |
| PIS | 2011 | 35.9 | 35.0 | 19.6 | 37.0 | 35.6 | 5.7 | 35.9 | 35.8 | 15.9 | 35.5 | 32.4 | 66.6 |
| | 2013 | 31.8 | 34.0** | 22.7 | 34.7 | 35.2 | 7.7 | 36.6 | 33.6* | 10.6 | 34.3 | 31.1* | 61.2 |
| | 2014 | 33.5 | 32.4 | 21.5 | 33.2 | 34.5 | 8.5 | 32.9 | 33.7 | 14.1 | 32.4 | 30.5* | 60.6 |
| | 2015 | 31.0 | 32.0 | 22.0 | 31.6 | 34.1** | 10.0 | 32.6 | 32.7 | 13.1 | 32.1 | 29.7** | 58.2 |
| | 2016 | 31.3 | 32.2* | 20.9 | 32.6 | 33.3 | 9.7 | 33.1 | 32.6 | 12.3 | 31.9 | 30.1** | 57.8 |

Notes: ** Difference significant at 5%, * 10%, two-sided test. Samples weighted using analytical weights and count of household members. '--' unavailable.

Source: Author's analysis of LIS data.

Table A5. Quantile decomposition of disposable income gaps by rural/urban residence: estimates at the median

| | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 |
|-------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|
| Rural | 12.00*** (0.07) | 12.44*** (0.05) | 12.55*** (0.04) | 12.65*** (0.02) | 12.87*** (0.01) | 12.81*** (0.01) | 12.78*** (0.01) | 12.76*** (0.00) |
| Urban | 12.34*** (0.03) | 12.74*** (0.03) | 12.84*** (0.02) | 13.10*** (0.01) | 13.25*** (0.00) | 13.22*** (0.00) | 13.15*** (0.00) | 13.11*** (0.00) |
| Overall gap | -0.34*** (0.08) | -0.30*** (0.06) | -0.30*** (0.04) | -0.45*** (0.02) | -0.38*** (0.01) | -0.41*** (0.01) | -0.37*** (0.01) | -0.35*** (0.01) |
| Endowments | -0.05 (0.14) | -0.18** (0.08) | -0.18*** (0.05) | -0.21*** (0.02) | -0.21*** (0.01) | -0.20*** (0.01) | -0.17*** (0.01) | -0.21*** (0.01) |
| Constant (Unexplained) | -1.99 (1.80) | -0.42 (1.83) | -0.55 (0.92) | 0.40 (0.59) | 0.18 (0.21) | 0.43* (0.24) | -0.01 (0.22) | -0.01 (0.17) |
| Returns on endow.+Constant | -0.29* (0.15) | -0.13 (0.10) | -0.12** (0.06) | -0.25*** (0.03) | -0.18*** (0.01) | -0.21*** (0.01) | -0.20*** (0.01) | -0.14*** (0.01) |
| Endowments Effects | Demographics of hhd. head | 0.04 (0.03) | 0.00 (0.02) | 0.00 (0.01) | 0.00 (0.01) | -0.003* (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| | Head education | -0.01 (0.04) | -0.01 (0.02) | -0.02 (0.01) | -0.05*** (0.01) | -0.06*** (0.01) | -0.07*** (0.01) | -0.06*** (0.01) |
| | Head employment | -0.02 (0.12) | -0.16** (0.08) | -0.10** (0.05) | -0.10*** (0.02) | -0.06*** (0.01) | -0.05*** (0.01) | -0.01* (0.01) |
| | Household composition | -0.02 (0.04) | -0.01 (0.02) | -0.02 (0.02) | -0.03*** (0.01) | -0.02*** (0.00) | -0.02*** (0.00) | -0.03*** (0.00) |
| | Administr. region | -0.04 (0.07) | 0.00 (0.03) | -0.03* (0.02) | -0.03*** (0.01) | -0.07*** (0.01) | -0.06*** (0.00) | -0.06*** (0.00) |
| Returns Effects | Demographics of hhd. head | 1.20 (0.94) | -0.20 (0.66) | -0.63 (0.43) | -0.33 (0.27) | -0.352*** (0.12) | -0.36*** (0.12) | -0.12 (0.10) |
| | Head education | 0.68 (1.50) | -0.16 (1.68) | 1.07 (0.80) | -0.37 (0.51) | 0.04 (0.16) | -0.18 (0.20) | 0.06 (0.19) |
| | Head employment | 0.11 (0.32) | 0.22 (0.29) | -0.04 (0.16) | -0.11 (0.12) | -0.16*** (0.05) | -0.26*** (0.05) | -0.14*** (0.05) |
| | Household composition | -0.48 (0.46) | 0.08 (0.36) | -0.12 (0.21) | 0.12 (0.12) | 0.03 (0.05) | 0.01 (0.04) | -0.10*** (0.04) |
| | Administr. region | 0.18 (0.15) | 0.362** (0.15) | 0.16 (0.10) | 0.04 (0.06) | 0.09*** (0.02) | 0.16*** (0.02) | 0.10*** (0.02) |
| Observations | 1,260 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 |

Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Table A6. Quantile decomposition of disposable income gaps by rural/urban residence: estimates at the 20th percentile

| | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 | |
|-------------------------------|------------------------------|------------------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|
| Rural | 11.35*** (0.07) | 11.89*** (0.07) | 12.03*** (0.05) | 12.15*** (0.02) | 12.33*** (0.01) | 12.31*** (0.01) | 12.26*** (0.01) | 12.25*** (0.00) | |
| Urban | 11.77*** (0.02) | 12.17*** (0.03) | 12.35*** (0.02) | 12.58*** (0.01) | 12.77*** (0.01) | 12.76*** (0.01) | 12.68*** (0.00) | 12.65*** (0.00) | |
| Overall gap | -0.41*** (0.07) | -0.28*** (0.07) | -0.32*** (0.05) | -0.43*** (0.02) | -0.44*** (0.01) | -0.46*** (0.01) | -0.42*** (0.01) | -0.40*** (0.01) | |
| Endowments | 0.00 (0.14) | -0.05 (0.11) | -0.10 (0.07) | -0.20*** (0.03) | -0.19*** (0.01) | -0.18*** (0.01) | -0.14*** (0.01) | -0.15*** (0.01) | |
| Constant (Unexplained) | -0.97 (1.77) | -1.52 (2.12) | -0.36 (1.19) | 1.69*** (0.65) | -0.09 (0.24) | 0.42 (0.29) | 0.36 (0.26) | 0.00 (0.18) | |
| Returns on endow.+Constant | -0.41*** (0.15) | -0.23* (0.12) | -0.23*** (0.08) | -0.23*** (0.03) | -0.25*** (0.02) | -0.28*** (0.02) | -0.27*** (0.01) | -0.25*** (0.01) | |
| Endowments Effects | Demographics of hhd. head | 0.01 (0.03) | -0.02 (0.03) | -0.01 (0.01) | -0.01 (0.01) | -0.006*** (0.00) | -0.006** (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| | Head education | 0.00 (0.04) | -0.05 (0.03) | -0.04** (0.02) | -0.04*** (0.01) | -0.05*** (0.01) | -0.05*** (0.01) | -0.04*** (0.01) | -0.05*** (0.00) |
| | Head employment | 0.00 (0.12) | 0.05 (0.10) | 0.00 (0.06) | -0.09*** (0.03) | -0.05*** (0.01) | -0.05*** (0.01) | -0.01 (0.01) | -0.04*** (0.01) |
| | Household composition | 0.05 (0.04) | -0.02 (0.03) | -0.06** (0.03) | -0.02* (0.01) | -0.02*** (0.00) | -0.01*** (0.00) | -0.04*** (0.00) | -0.02*** (0.00) |
| | Administr. region | -0.06 (0.06) | 0.00 (0.03) | 0.01 (0.03) | -0.03*** (0.01) | -0.06*** (0.01) | -0.06*** (0.01) | -0.06*** (0.00) | -0.04*** (0.00) |
| | Returns Effects | Demographics of hhd. head | -1.07 (0.93) | -0.87 (0.81) | -0.13 (0.58) | -0.71** (0.31) | -0.11 (0.15) | -0.17 (0.15) | 0.05 (0.12) |
| Head education | | 1.60 (1.48) | 1.45 (1.93) | 0.73 (1.02) | -1.24** (0.56) | 0.00 (0.19) | -0.40* (0.24) | -0.46** (0.22) | -0.19 (0.17) |
| Head employment | | -0.20 (0.32) | 0.76** (0.34) | -0.41** (0.21) | -0.16 (0.13) | -0.22*** (0.06) | -0.26*** (0.06) | -0.24*** (0.06) | -0.01 (0.03) |
| Household composition | | 0.19 (0.45) | -0.26 (0.46) | -0.12 (0.28) | 0.17 (0.14) | 0.15*** (0.06) | 0.06 (0.06) | -0.01 (0.04) | 0.08*** (0.03) |
| Administr. region | | 0.04 (0.15) | 0.21 (0.18) | 0.07 (0.14) | 0.01 (0.07) | 0.02 (0.02) | 0.07*** (0.02) | 0.03 (0.02) | 0.06*** (0.01) |
| Observations | | 1,260 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 |

Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Table A7. Quantile decomposition of disposable income gaps by rural/urban residence: estimates at the 80th percentile

| | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 | |
|-------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|
| Rural | 12.57*** (0.08) | 12.97*** (0.06) | 12.96*** (0.04) | 13.14*** (0.02) | 13.30*** (0.01) | 13.30*** (0.01) | 13.24*** (0.01) | 13.22*** (0.00) | |
| Urban | 12.86*** (0.03) | 13.15*** (0.03) | 13.29*** (0.02) | 13.58*** (0.01) | 13.71*** (0.01) | 13.67*** (0.01) | 13.59*** (0.01) | 13.56*** (0.00) | |
| Overall gap | -0.29*** (0.09) | -0.18*** (0.06) | -0.33*** (0.04) | -0.45*** (0.03) | -0.41*** (0.01) | -0.37*** (0.01) | -0.35*** (0.01) | -0.34*** (0.01) | |
| Endowments | 0.04 (0.17) | -0.13 (0.10) | -0.17*** (0.06) | -0.31*** (0.03) | -0.20*** (0.01) | -0.26*** (0.01) | -0.18*** (0.01) | -0.23*** (0.01) | |
| Constant (Unexplained) | -0.87 (2.19) | -0.77 (2.01) | 1.84* (1.10) | 0.08 (0.68) | -0.48** (0.24) | 0.01 (0.34) | -0.41 (0.29) | 0.08 (0.20) | |
| Returns on endow.+Constant | -0.32* (0.19) | -0.05 (0.11) | -0.17** (0.07) | -0.14*** (0.04) | -0.21*** (0.01) | -0.12*** (0.02) | -0.17*** (0.01) | -0.11*** (0.01) | |
| Endowments Effects | Demographics of hhd. head | 0.00 (0.03) | 0.02 (0.02) | 0.00 (0.01) | -0.01 (0.01) | -0.006*** (0.00) | 0.00 (0.00) | 0.00 (0.00) | -0.002* (0.00) |
| | Head education | -0.04 (0.05) | -0.02 (0.03) | -0.02 (0.02) | -0.03** (0.02) | -0.06*** (0.01) | -0.11*** (0.01) | -0.08*** (0.01) | -0.05*** (0.00) |
| | Head employment | 0.12 (0.15) | -0.11 (0.09) | -0.11** (0.05) | -0.17*** (0.03) | -0.05*** (0.01) | -0.05*** (0.01) | 0.00 (0.01) | -0.09*** (0.01) |
| | Household composition | 0.06 (0.05) | -0.03 (0.03) | 0.01 (0.02) | -0.02** (0.01) | -0.01 (0.00) | -0.02*** (0.01) | -0.02*** (0.00) | -0.02*** (0.00) |
| | Administr. region | -0.10 (0.08) | 0.01 (0.03) | -0.05** (0.02) | -0.07*** (0.01) | -0.08*** (0.01) | -0.07*** (0.01) | -0.08*** (0.01) | -0.07*** (0.00) |
| Returns Effects | Demographics of hhd. head | 0.85 (1.15) | 0.78 (0.75) | -0.54 (0.50) | -0.32 (0.32) | 0.06 (0.14) | -0.28* (0.17) | -0.21 (0.13) | -0.41*** (0.08) |
| | Head education | -0.36 (1.83) | -0.47 (1.83) | -1.88** (0.96) | -0.15 (0.58) | 0.08 (0.18) | 0.10 (0.28) | 0.50** (0.25) | -0.02 (0.18) |
| | Head employment | -0.50 (0.39) | -0.10 (0.32) | -0.07 (0.20) | 0.31** (0.14) | -0.11* (0.06) | -0.27*** (0.07) | -0.14** (0.06) | 0.03 (0.04) |
| | Household composition | 0.16 (0.56) | -0.16 (0.42) | 0.05 (0.24) | 0.02 (0.15) | 0.05 (0.05) | 0.08 (0.06) | -0.10** (0.05) | 0.00 (0.03) |
| | Administr. region | 0.40** (0.18) | 0.65*** (0.17) | 0.43*** (0.12) | -0.09 (0.08) | 0.19*** (0.02) | 0.25*** (0.03) | 0.19*** (0.02) | 0.21*** (0.01) |
| Observations | 1,260 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 | |

Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Table A8. Quantile decomposition of disposable income gaps by farming/non-farming household: estimates at the median

| | 2000 | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 | |
|-------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Farming | 11.78*** (0.04) | 12.24*** (0.03) | 12.57*** (0.03) | 12.73*** (0.02) | 12.91*** (0.01) | 13.13*** (0.01) | 13.09*** (0.01) | 13.03*** (0.01) | 12.98*** (0.00) | |
| Non-farming | 11.74*** (0.04) | 12.32*** (0.04) | 12.74*** (0.04) | 12.83*** (0.02) | 13.07*** (0.02) | 13.21*** (0.01) | 13.18*** (0.01) | 13.12*** (0.01) | 13.09*** (0.00) | |
| Overall gap | 0.03 (0.05) | -0.08 (0.05) | -0.17*** (0.05) | -0.10*** (0.03) | -0.17*** (0.02) | -0.08*** (0.01) | -0.09*** (0.01) | -0.09*** (0.01) | -0.11*** (0.00) | |
| Endowments | -0.01 (0.04) | -0.08** (0.04) | -0.05 (0.03) | -0.05** (0.02) | -0.08*** (0.01) | -0.12*** (0.01) | -0.11*** (0.01) | -0.12*** (0.01) | -0.12*** (0.00) | |
| Constant (Unexplained) | 0.95 (1.63) | -0.77 (1.14) | 1.26 (0.85) | -0.86 (0.83) | 1.06 (1.04) | 0.22 (0.21) | 0.17 (0.24) | 0.28 (0.24) | 0.08 (0.17) | |
| Returns on endow.+Constant | 0.05 (0.06) | 0.00 (0.05) | -0.13** (0.05) | -0.05* (0.03) | -0.08*** (0.02) | 0.04*** (0.01) | 0.02** (0.01) | 0.03*** (0.01) | 0.01** (0.00) | |
| Endowments Effects | Demographics of hhd. head | 0.00 (0.02) | 0.00 (0.02) | -0.01 (0.01) | 0.01 (0.01) | 0.02** (0.01) | 0.02*** (0.00) | 0.01*** (0.00) | 0.02*** (0.00) | 0.02*** (0.00) |
| | Head education | -0.01 (0.01) | 0.00 (0.01) | 0.00 (0.01) | -0.01* (0.00) | -0.03*** (0.01) | -0.03*** (0.00) | -0.04*** (0.00) | -0.03*** (0.00) | -0.03*** (0.00) |
| | Head employment | 0.00 (0.01) | 0.00 (0.01) | -0.02* (0.01) | -0.02*** (0.01) | -0.03*** (0.01) | -0.02*** (0.00) | -0.02*** (0.00) | -0.02*** (0.00) | -0.03*** (0.00) |
| | Household composition | 0.07*** (0.03) | 0.04* (0.02) | 0.05*** (0.02) | 0.06*** (0.01) | 0.03*** (0.01) | 0.02*** (0.00) | 0.03*** (0.00) | 0.02*** (0.00) | 0.02*** (0.00) |
| | Administr. region | -0.07*** (0.02) | -0.12*** (0.03) | -0.05** (0.02) | -0.09*** (0.02) | -0.07*** (0.01) | -0.11*** (0.00) | -0.10*** (0.00) | -0.10*** (0.00) | -0.09*** (0.00) |
| Returns Effects | Demographics of hhd. head | -0.15 (0.68) | 1.24** (0.55) | -0.51 (0.52) | -0.04 (0.34) | -0.47* (0.26) | -0.18 (0.11) | -0.31*** (0.11) | -0.53*** (0.10) | -0.44*** (0.06) |
| | Head education | -0.75 (1.49) | -0.97 (0.96) | -0.88 (0.68) | 0.57 (0.75) | -0.97 (1.00) | 0.01 (0.17) | -0.05 (0.21) | 0.18 (0.22) | 0.12 (0.16) |
| | Head employment | -0.17 (0.11) | 0.30** (0.12) | 0.01 (0.12) | 0.17** (0.07) | 0.11 (0.13) | -0.01 (0.05) | 0.03 (0.05) | 0.05* (0.03) | 0.15*** (0.02) |
| | Household composition | 0.58 (0.41) | -0.15 (0.24) | -0.05 (0.25) | -0.01 (0.14) | -0.06 (0.11) | -0.05 (0.04) | 0.07* (0.04) | 0.05 (0.03) | 0.00 (0.02) |
| | Administr. region | -0.41** (0.20) | 0.34 (0.23) | 0.05 (0.20) | 0.12 (0.12) | 0.24*** (0.08) | 0.05* (0.03) | 0.12*** (0.03) | 0.00 (0.02) | 0.10*** (0.01) |
| Observations | 1,157 | 1,259 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 | |

Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Table A9. Quantile decomposition of disposable income gaps by farming/non-farming household: estimates at the 20th percentile

| | 2000 | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 | |
|-------------------------------|------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Farming | 11.25*** (0.03) | 11.64*** (0.03) | 12.05*** (0.03) | 12.22*** (0.02) | 12.40*** (0.01) | 12.60*** (0.01) | 12.60*** (0.01) | 12.53*** (0.01) | 12.47*** (0.00) | |
| Non-farming | 11.03*** (0.03) | 11.68*** (0.04) | 12.09*** (0.03) | 12.31*** (0.02) | 12.52*** (0.01) | 12.71*** (0.01) | 12.68*** (0.01) | 12.60*** (0.01) | 12.60*** (0.00) | |
| Overall gap | 0.22*** (0.05) | -0.05 (0.05) | -0.04 (0.05) | -0.09*** (0.03) | -0.12*** (0.02) | -0.11*** (0.01) | -0.08*** (0.01) | -0.08*** (0.01) | -0.13*** (0.01) | |
| Endowments | 0.03 (0.03) | -0.05 (0.04) | -0.03 (0.04) | -0.06** (0.02) | -0.03** (0.01) | -0.07*** (0.01) | -0.08*** (0.01) | -0.09*** (0.01) | -0.09*** (0.00) | |
| Constant (Unexplained) | 1.58 (1.45) | -0.62 (1.22) | -0.20 (0.88) | 0.40 (0.91) | 1.25 (1.03) | -0.22 (0.24) | 0.28 (0.28) | 0.32 (0.27) | -0.39** (0.19) | |
| Returns on endow.+Constant | 0.19*** (0.05) | 0.00 (0.06) | -0.01 (0.06) | -0.03 (0.04) | -0.09*** (0.02) | -0.03*** (0.01) | -0.01 (0.01) | 0.01 (0.01) | -0.04*** (0.01) | |
| Endowments Effects | Demographics of hhd. head | -0.02 (0.02) | -0.01 (0.02) | -0.02 (0.02) | 0.00 (0.01) | 0.02*** (0.01) | 0.00 (0.00) | 0.00 (0.00) | 0.02*** (0.00) | 0.008*** (0.00) |
| | Head education | 0.00 (0.00) | -0.01 (0.01) | 0.00 (0.01) | -0.01* (0.01) | -0.02*** (0.01) | -0.03*** (0.00) | -0.03*** (0.00) | -0.03*** (0.00) | -0.03*** (0.00) |
| | Head employment | 0.00 (0.01) | -0.02* (0.01) | -0.03** (0.01) | -0.02*** (0.01) | -0.01 (0.01) | -0.02*** (0.00) | -0.02*** (0.00) | -0.02*** (0.00) | -0.02*** (0.00) |
| | Household composition | 0.09*** (0.02) | 0.09*** (0.02) | 0.05** (0.02) | 0.05*** (0.01) | 0.02** (0.01) | 0.04*** (0.00) | 0.05*** (0.00) | 0.02*** (0.00) | 0.03*** (0.00) |
| | Administr. region | -0.04** (0.02) | -0.10*** (0.03) | -0.03 (0.03) | -0.07*** (0.02) | -0.05*** (0.01) | -0.07*** (0.00) | -0.07*** (0.00) | -0.07*** (0.00) | -0.06*** (0.00) |
| | Returns Effects | Demographics of hhd. head | -0.03 (0.62) | 0.48 (0.59) | -0.09 (0.54) | -0.66* (0.39) | 0.16 (0.26) | -0.28** (0.12) | -0.56*** (0.13) | -0.28*** (0.11) |
| Head education | | -1.51 (1.32) | -0.24 (1.03) | 0.38 (0.71) | 0.34 (0.81) | -1.51 (0.99) | 0.37** (0.19) | 0.16 (0.24) | 0.04 (0.24) | 0.23 (0.18) |
| Head employment | | -0.11 (0.09) | 0.39*** (0.13) | 0.05 (0.12) | 0.00 (0.08) | 0.04 (0.12) | 0.05 (0.06) | 0.00 (0.06) | 0.02 (0.03) | 0.24*** (0.02) |
| Household composition | | 0.33 (0.37) | 0.14 (0.26) | -0.23 (0.27) | 0.00 (0.16) | -0.15 (0.11) | 0.02 (0.05) | 0.12*** (0.04) | -0.02 (0.04) | 0.05** (0.02) |
| Administr. region | | -0.08 (0.18) | -0.14 (0.24) | 0.09 (0.21) | -0.12 (0.14) | 0.12 (0.08) | 0.03 (0.03) | 0.00 (0.03) | -0.08*** (0.03) | 0.02 (0.02) |
| Observations | | 1,157 | 1,259 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 |

Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Table A10. Quantile decomposition of disposable income gaps by farming/non-farming household: estimates at the 80th percentile

| | 2000 | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 | |
|-------------------------------|------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|
| Farming | 12.29*** (0.04) | 12.73*** (0.04) | 13.04*** (0.03) | 13.16*** (0.03) | 13.47*** (0.02) | 13.59*** (0.01) | 13.54*** (0.01) | 13.45*** (0.01) | 13.43*** (0.00) | |
| Non-farming | 12.31*** (0.05) | 12.89*** (0.04) | 13.15*** (0.04) | 13.27*** (0.03) | 13.58*** (0.02) | 13.68*** (0.01) | 13.67*** (0.01) | 13.59*** (0.01) | 13.55*** (0.00) | |
| Overall gap | -0.02 (0.06) | -0.16*** (0.06) | -0.12** (0.05) | -0.12*** (0.04) | -0.11*** (0.03) | -0.09*** (0.01) | -0.14*** (0.01) | -0.14*** (0.01) | -0.12*** (0.01) | |
| Endowments | -0.01 (0.04) | -0.15*** (0.04) | -0.09** (0.04) | -0.16*** (0.03) | -0.13*** (0.02) | -0.15*** (0.01) | -0.12*** (0.01) | -0.14*** (0.01) | -0.15*** (0.00) | |
| Constant (Unexplained) | -0.38 (2.10) | -0.69 (1.32) | 0.81 (0.88) | 1.03 (1.04) | 1.00 (1.09) | -0.20 (0.26) | 0.36 (0.31) | 0.04 (0.28) | 0.10 (0.22) | |
| Returns on endow.+Constant | -0.01 (0.07) | -0.01 (0.06) | -0.02 (0.05) | 0.04 (0.04) | 0.02 (0.03) | 0.05*** (0.01) | -0.01 (0.01) | 0.01 (0.01) | 0.03*** (0.01) | |
| Endowments Effects | Demographics of hhd. head | 0.01 (0.02) | -0.02 (0.02) | -0.01 (0.01) | 0.00 (0.01) | -0.01 (0.01) | 0.015*** (0.00) | 0.017*** (0.00) | 0.01*** (0.00) | 0.012*** (0.00) |
| | Head education | 0.00 (0.01) | 0.00 (0.01) | -0.01 (0.01) | -0.009* (0.00) | -0.04*** (0.01) | -0.03*** (0.00) | -0.04*** (0.00) | -0.04*** (0.00) | -0.03*** (0.00) |
| | Head employment | -0.01 (0.01) | 0.03** (0.01) | -0.02 (0.01) | -0.02* (0.01) | -0.04*** (0.01) | -0.03*** (0.00) | -0.008*** (0.00) | -0.02*** (0.00) | -0.03*** (0.00) |
| | Household composition | 0.06** (0.03) | 0.05** (0.02) | 0.03** (0.02) | 0.06*** (0.01) | 0.04*** (0.01) | 0.02*** (0.00) | 0.02*** (0.00) | 0.02*** (0.00) | 0.015*** (0.00) |
| | Administr. region | -0.07*** (0.02) | -0.20*** (0.04) | -0.08*** (0.03) | -0.19*** (0.03) | -0.09*** (0.02) | -0.13*** (0.01) | -0.11*** (0.01) | -0.11*** (0.00) | -0.12*** (0.00) |
| | Returns Effects | Demographics of hhd. head | 0.39 (0.84) | 0.05 (0.65) | -0.04 (0.54) | 0.25 (0.44) | -0.29 (0.32) | 0.09 (0.13) | -0.31** (0.14) | -0.23** (0.11) |
| Head education | | 0.44 (1.95) | 0.63 (1.12) | -0.32 (0.71) | -0.79 (0.92) | -0.79 (1.04) | 0.05 (0.21) | -0.21 (0.27) | 0.14 (0.25) | 0.28 (0.20) |
| Head employment | | -0.02 (0.13) | 0.22 (0.14) | 0.01 (0.12) | 0.00 (0.09) | 0.03 (0.14) | 0.14** (0.07) | -0.09 (0.07) | -0.08** (0.03) | -0.02 (0.02) |
| Household composition | | -0.08 (0.49) | -0.10 (0.28) | -0.34 (0.26) | 0.05 (0.19) | 0.01 (0.13) | 0.05 (0.05) | 0.16*** (0.05) | 0.08** (0.04) | 0.10*** (0.03) |
| Administr. region | | -0.36 (0.24) | -0.13 (0.27) | -0.15 (0.21) | -0.50*** (0.16) | 0.06 (0.09) | -0.07** (0.03) | 0.08*** (0.03) | 0.04 (0.03) | 0.01 (0.02) |
| Observations | | 1,157 | 1,259 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 |

Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Table A11. Quantile decomposition of disposable income gaps by female/male household: estimates at the median

| | 2000 | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 | |
|-------------------------------|------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|
| Female | 11.69*** (0.04) | 12.13*** (0.04) | 12.56*** (0.04) | 12.70*** (0.02) | 12.93*** (0.02) | 13.11*** (0.01) | 13.08*** (0.01) | 13.03*** (0.01) | 13.00*** (0.00) | |
| Male | 11.86*** (0.03) | 12.38*** (0.03) | 12.74*** (0.03) | 12.81*** (0.02) | 13.03*** (0.01) | 13.19*** (0.01) | 13.16*** (0.01) | 13.09*** (0.01) | 13.05*** (0.00) | |
| Overall gap | -0.17*** (0.05) | -0.25*** (0.05) | -0.18*** (0.05) | -0.11*** (0.03) | -0.10*** (0.02) | -0.08*** (0.01) | -0.08*** (0.01) | -0.06*** (0.01) | -0.05*** (0.00) | |
| Endowments | 0.05 (0.04) | 0.00 (0.04) | 0.00 (0.04) | 0.02 (0.03) | 0.00 (0.02) | -0.07*** (0.01) | -0.09*** (0.01) | -0.04*** (0.01) | -0.03*** (0.01) | |
| Constant (Unexplained) | -0.86 (1.02) | -1.80* (1.01) | 0.63 (1.53) | 1.15 (0.78) | -0.27 (0.57) | 0.69*** (0.23) | 0.11 (0.26) | 0.36 (0.24) | 0.41*** (0.16) | |
| Returns on endow.+Constant | -0.23*** (0.06) | -0.25*** (0.06) | -0.18*** (0.06) | -0.13*** (0.03) | -0.09*** (0.03) | -0.01 (0.01) | 0.02 (0.01) | -0.02* (0.01) | -0.03*** (0.01) | |
| Endowments Effects | Demographics of hhd. head | 0.04 (0.05) | -0.01 (0.03) | -0.02 (0.03) | -0.04** (0.02) | -0.09*** (0.01) | -0.04*** (0.01) | 0.00 (0.01) | -0.03*** (0.00) | |
| | Head education | 0.05** (0.02) | 0.02 (0.02) | 0.11*** (0.03) | 0.03*** (0.01) | 0.04*** (0.01) | 0.04*** (0.00) | 0.03*** (0.00) | 0.02*** (0.00) | |
| | Head employment | 0.01 (0.02) | 0.04 (0.03) | -0.02 (0.02) | -0.03** (0.01) | -0.04* (0.02) | -0.05*** (0.01) | -0.06*** (0.01) | -0.04*** (0.01) | -0.016*** (0.00) |
| | Household composition | -0.05 (0.04) | -0.04 (0.04) | -0.05* (0.03) | 0.05** (0.02) | 0.07*** (0.02) | -0.02** (0.01) | -0.02** (0.01) | -0.02*** (0.01) | 0.00 (0.00) |
| | Administr. region | 0.00 (0.01) | -0.02 (0.02) | -0.02 (0.01) | 0.01 (0.01) | 0.01 (0.01) | 0.00 (0.00) | -0.008*** (0.00) | -0.012*** (0.00) | 0.00 (0.00) |
| | Returns Effects | Demographics of hhd. head | 1.24* (0.72) | 0.73 (0.55) | -1.26** (0.54) | -0.96*** (0.34) | -0.07 (0.26) | -0.44*** (0.11) | -0.34*** (0.11) | -0.42*** (0.10) |
| Head education | | -0.21 (0.67) | 0.74 (0.84) | 1.03 (1.41) | -0.19 (0.70) | 0.22 (0.50) | -0.08 (0.19) | 0.28 (0.23) | 0.13 (0.22) | -0.25* (0.14) |
| Head employment | | 0.01 (0.12) | -0.15 (0.12) | -0.08 (0.24) | -0.01 (0.08) | 0.19* (0.10) | -0.21*** (0.05) | -0.19*** (0.05) | -0.24*** (0.04) | -0.20*** (0.03) |
| Household composition | | -0.75 (0.49) | 0.08 (0.26) | -0.25 (0.30) | -0.01 (0.16) | -0.33*** (0.12) | 0.04 (0.04) | 0.12*** (0.04) | 0.15*** (0.04) | 0.01 (0.02) |
| Administr. region | | 0.35* (0.19) | 0.15 (0.16) | -0.25 (0.18) | -0.12 (0.11) | 0.16** (0.07) | -0.01 (0.02) | 0.04* (0.02) | 0.00 (0.02) | 0.01 (0.01) |
| Observations | 1,157 | 1,259 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 | |

Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Table A12. Quantile decomposition of disposable income gaps by female/male household: estimates at the 20th percentile

| | 2000 | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 | |
|-------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|---------------------|
| Female | 10.96*** (0.03) | 11.51*** (0.03) | 11.87*** (0.03) | 12.15*** (0.03) | 12.36*** (0.01) | 12.57*** (0.01) | 12.57*** (0.01) | 12.51*** (0.01) | 12.48*** (0.00) | |
| Male | 11.28*** (0.03) | 11.88*** (0.03) | 12.27*** (0.03) | 12.36*** (0.02) | 12.52*** (0.01) | 12.69*** (0.01) | 12.67*** (0.01) | 12.59*** (0.01) | 12.55*** (0.00) | |
| Overall gap | -0.33*** (0.05) | -0.38*** (0.05) | -0.41*** (0.04) | -0.21*** (0.03) | -0.16*** (0.02) | -0.12*** (0.01) | -0.10*** (0.01) | -0.09*** (0.01) | -0.07*** (0.00) | |
| Endowments | 0.05 (0.03) | -0.07* (0.04) | 0.08** (0.04) | 0.10*** (0.03) | 0.01 (0.02) | -0.01 (0.01) | -0.04*** (0.01) | -0.01 (0.01) | -0.01 (0.01) | |
| Constant (Unexplained) | -0.18 (0.88) | -0.32 (1.11) | 1.11 (1.39) | 0.39 (0.92) | -0.22 (0.58) | 1.30*** (0.25) | 0.38 (0.30) | 0.77*** (0.26) | 0.49*** (0.17) | |
| Returns on endow.+Constant | -0.37*** (0.05) | -0.30*** (0.06) | -0.48*** (0.05) | -0.30*** (0.04) | -0.17*** (0.03) | -0.11*** (0.01) | -0.05*** (0.01) | -0.07*** (0.01) | -0.06*** (0.01) | |
| Endowments Effects | Demographics of hhd. head | 0.05 (0.04) | -0.02 (0.03) | -0.02 (0.03) | 0.01 (0.02) | 0.00 (0.02) | 0.01 (0.01) | 0.00 (0.01) | 0.00 (0.00) | |
| | Head education | 0.04** (0.02) | 0.03 (0.02) | 0.08*** (0.02) | 0.06*** (0.01) | 0.04*** (0.01) | 0.03*** (0.00) | 0.03*** (0.00) | 0.03*** (0.00) | |
| | Head employment | 0.01 (0.01) | 0.00 (0.02) | 0.02 (0.02) | 0.00 (0.02) | -0.04* (0.02) | -0.02** (0.01) | -0.05*** (0.01) | -0.04*** (0.01) | -0.03*** (0.01) |
| | Household composition | -0.05 (0.03) | -0.07** (0.04) | 0.00 (0.03) | 0.02 (0.02) | 0.01 (0.02) | -0.02*** (0.01) | -0.03*** (0.01) | 0.01 (0.01) | 0.00 (0.00) |
| | Administr. region | -0.01 (0.01) | -0.01 (0.01) | -0.01 (0.01) | 0.01 (0.01) | 0.00 (0.00) | -0.004** (0.00) | -0.006*** (0.00) | -0.008*** (0.00) | -0.003*** (0.00) |
| Returns Effects | Demographics of hhd. head | 0.08 (0.63) | -0.57 (0.56) | -0.69 (0.50) | -0.48 (0.40) | -0.60** (0.26) | -0.32*** (0.12) | -0.30** (0.12) | -0.24** (0.11) | -0.19*** (0.07) |
| | Head education | 0.61 (0.56) | 0.33 (0.95) | -0.14 (1.28) | 0.20 (0.83) | 0.62 (0.50) | -0.76*** (0.21) | -0.05 (0.26) | -0.47** (0.23) | -0.22 (0.15) |
| | Head employment | -0.03 (0.11) | 0.14 (0.13) | -0.58** (0.22) | -0.06 (0.09) | 0.09 (0.10) | -0.30*** (0.06) | -0.23*** (0.05) | -0.21*** (0.05) | -0.22*** (0.03) |
| | Household composition | -0.95** (0.45) | 0.09 (0.29) | -0.09 (0.28) | -0.30 (0.20) | -0.06 (0.12) | 0.01 (0.05) | 0.12** (0.05) | 0.09** (0.04) | 0.07*** (0.03) |
| | Administr. region | 0.10 (0.17) | 0.04 (0.17) | -0.09 (0.16) | -0.05 (0.13) | 0.01 (0.07) | -0.02 (0.03) | 0.03 (0.02) | -0.01 (0.02) | 0.01 (0.01) |
| Observations | 1,157 | 1,259 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 | |

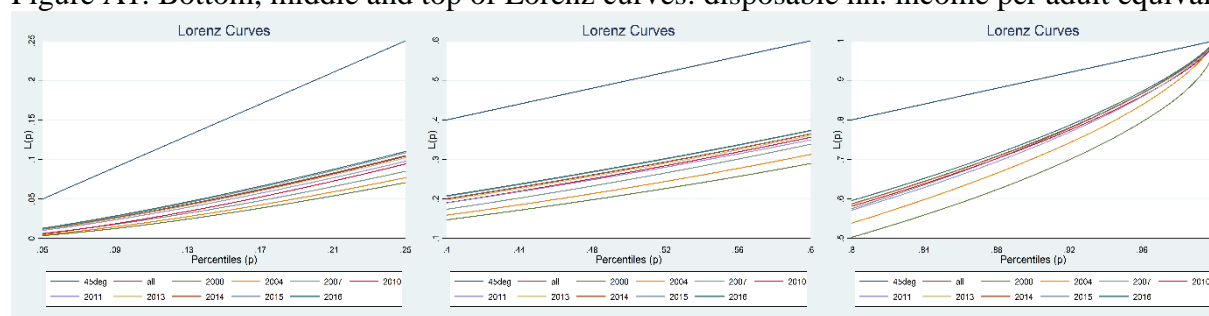
Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Table A13. Quantile decomposition of disposable income gaps by female/male household: estimates at the 80th percentile

| | 2000 | 2004 | 2007 | 2010 | 2011 | 2013 | 2014 | 2015 | 2016 | |
|-------------------------------|------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|
| Female | 12.33*** (0.06) | 12.69*** (0.05) | 13.06*** (0.04) | 13.21*** (0.03) | 13.45*** (0.02) | 13.59*** (0.01) | 13.54*** (0.01) | 13.46*** (0.01) | 13.46*** (0.00) | |
| Male | 12.36*** (0.04) | 12.95*** (0.04) | 13.18*** (0.04) | 13.24*** (0.02) | 13.58*** (0.02) | 13.65*** (0.01) | 13.63*** (0.01) | 13.56*** (0.01) | 13.50*** (0.00) | |
| Overall gap | -0.03 (0.08) | -0.25*** (0.06) | -0.12** (0.06) | -0.03 (0.04) | -0.13*** (0.02) | -0.07*** (0.01) | -0.09*** (0.01) | -0.10*** (0.01) | -0.04*** (0.01) | |
| Endowments | 0.02 (0.07) | -0.15*** (0.06) | 0.02 (0.05) | -0.05 (0.03) | 0.00 (0.03) | -0.08*** (0.01) | -0.08*** (0.01) | -0.06*** (0.01) | -0.09*** (0.01) | |
| Constant (Unexplained) | 0.24 (1.55) | -0.14 (1.39) | 0.55 (1.83) | -0.84 (0.97) | 0.17 (0.70) | 0.40 (0.28) | 0.18 (0.32) | 0.03 (0.28) | 0.05 (0.20) | |
| Returns on endow.+Constant | -0.05 (0.10) | -0.10 (0.08) | -0.14** (0.07) | 0.02 (0.04) | -0.13*** (0.04) | 0.01 (0.02) | -0.01 (0.01) | -0.04*** (0.01) | 0.05*** (0.01) | |
| Endowments Effects | Demographics of hhd. head | 0.09 (0.08) | 0.03 (0.04) | 0.00 (0.03) | -0.06*** (0.02) | -0.05* (0.01) | -0.07*** (0.01) | -0.04*** (0.01) | -0.01 (0.01) | -0.05*** (0.01) |
| | Head education | 0.09** (0.04) | 0.03 (0.03) | 0.13*** (0.03) | 0.03* (0.01) | 0.05*** (0.01) | 0.05*** (0.00) | 0.04*** (0.00) | 0.03*** (0.00) | 0.02*** (0.00) |
| | Head employment | 0.00 (0.03) | 0.00 (0.03) | 0.01 (0.03) | -0.03 (0.02) | -0.04 (0.03) | -0.06*** (0.01) | -0.05*** (0.01) | -0.03*** (0.01) | -0.05*** (0.01) |
| | Household composition | -0.16** (0.07) | -0.18*** (0.05) | -0.08** (0.04) | 0.00 (0.02) | 0.03 (0.03) | 0.01 (0.01) | -0.014* (0.01) | -0.03*** (0.01) | 0.00 (0.00) |
| | Administr. region | -0.01 (0.02) | -0.02 (0.02) | -0.03 (0.02) | 0.01 (0.02) | 0.01 (0.01) | 0.00 (0.00) | -0.010*** (0.00) | -0.02*** (0.00) | 0.00 (0.00) |
| | Returns Effects | Demographics of hhd. head | 0.39 (1.09) | -0.50 (0.75) | -0.79 (0.64) | -0.11 (0.42) | -0.36 (0.31) | -0.37*** (0.14) | -0.39*** (0.14) | -0.07 (0.11) |
| Head education | | 0.00 (1.06) | 0.31 (1.16) | 0.16 (1.68) | 0.98 (0.87) | 0.36 (0.61) | 0.23 (0.24) | 0.10 (0.29) | -0.02 (0.25) | 0.36** (0.18) |
| Head employment | | -0.17 (0.18) | -0.18 (0.17) | 0.19 (0.29) | 0.24** (0.10) | 0.09 (0.13) | -0.10 (0.07) | -0.03 (0.06) | -0.06 (0.05) | -0.23*** (0.03) |
| Household composition | | -0.03 (0.69) | 0.53 (0.36) | -0.16 (0.36) | 0.01 (0.21) | -0.31** (0.14) | -0.09 (0.06) | 0.05 (0.05) | 0.07 (0.04) | -0.01 (0.03) |
| Administr. region | | -0.48* (0.28) | -0.12 (0.22) | -0.10 (0.21) | -0.26** (0.13) | -0.07 (0.08) | -0.06** (0.03) | 0.07*** (0.03) | 0.01 (0.02) | 0.00 (0.02) |
| Observations | 1,157 | 1,259 | 1,260 | 2,481 | 6,563 | 28,573 | 28,483 | 37,355 | 96,959 | |

Notes: Standard errors computed using the delta method are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Author's analysis of LIS data.

Figure A1. Bottom, middle and top of Lorenz curves: disposable hh. income per adult equivalent



i. Bottom

ii. Middle

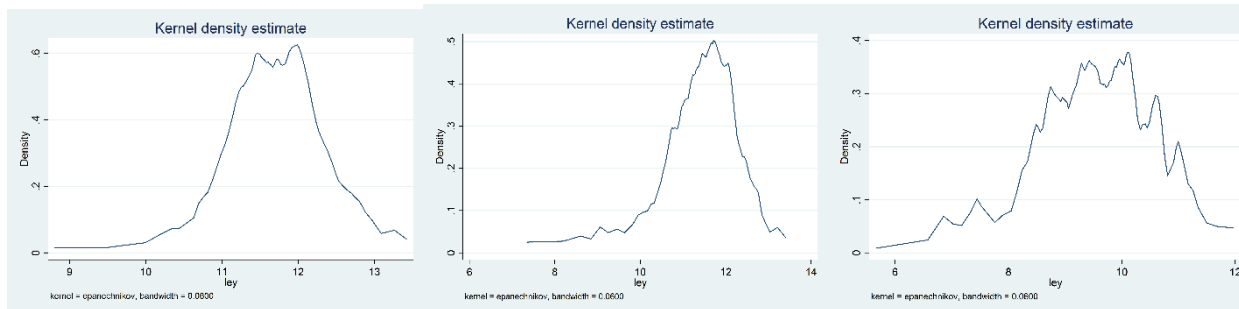
iii. Top

Notes: Lorenz curves are shown piecemeal for clarity.

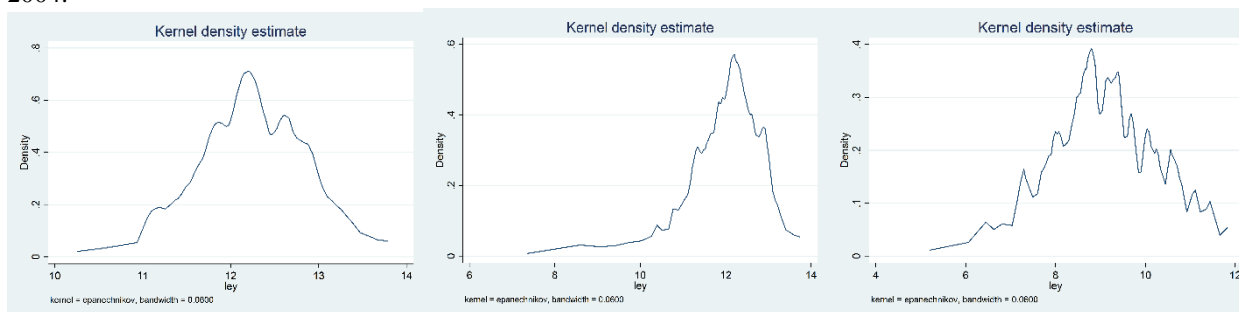
Source: Author's analysis of LIS data.

Figure A2. Kernel density plots of different income concepts per adult equivalent (2000–2010)

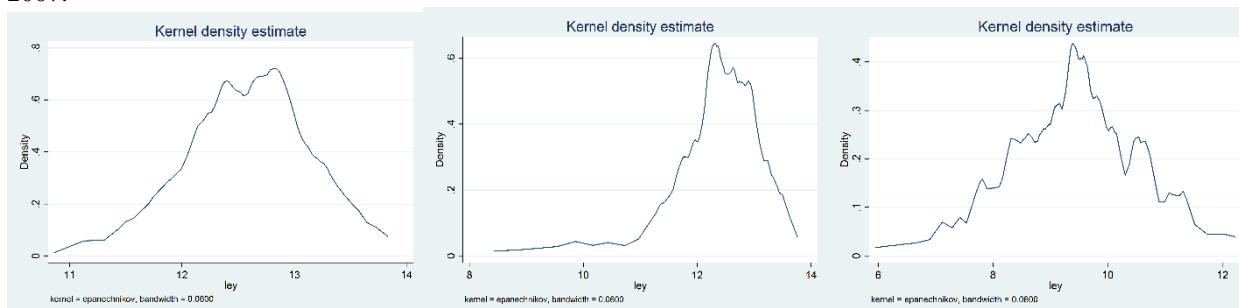
2000: Total disposable income Labor income Home production for own consum.



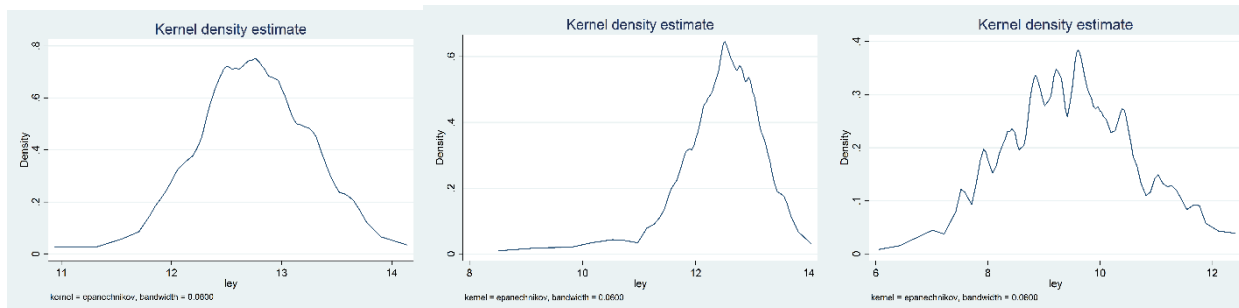
2004:



2007:



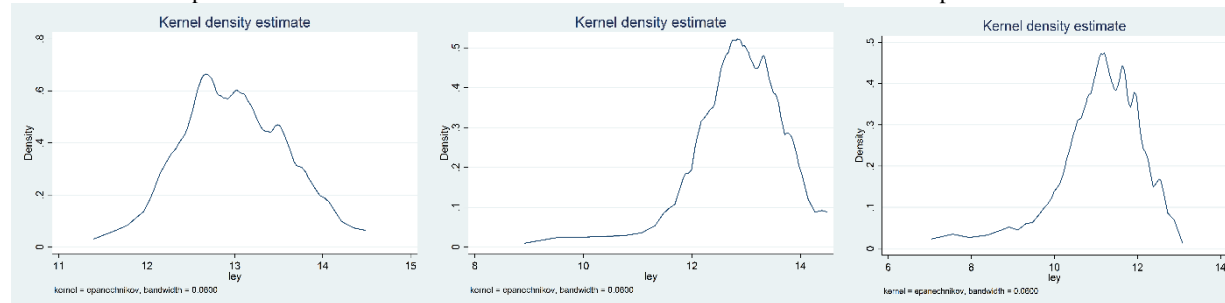
2010:



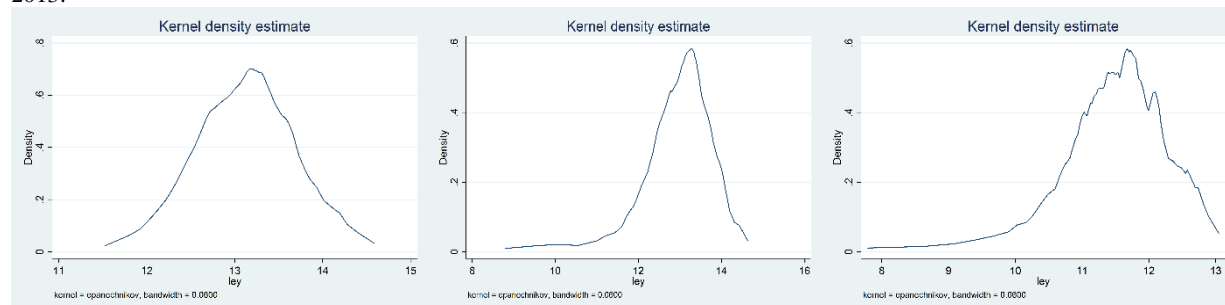
Source: Author's analysis of LIS data.

Figure A2 (cont.). Kernel density plots of income concepts per adult equivalent (2011–2016)

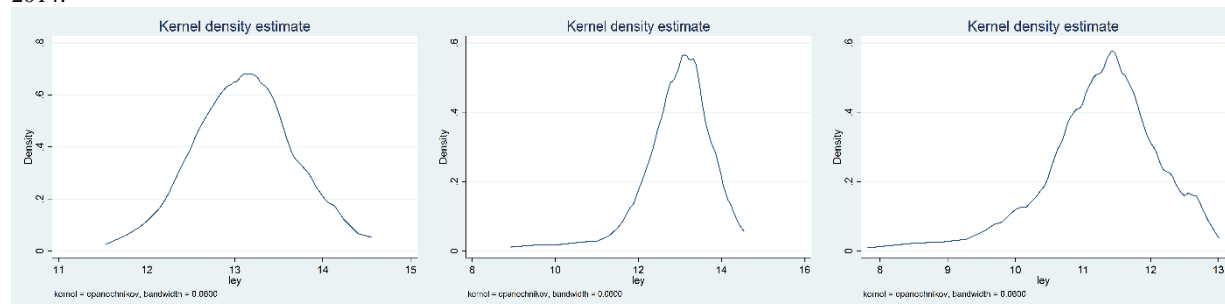
2011: Total disposable income Labor income Home production for own consum.



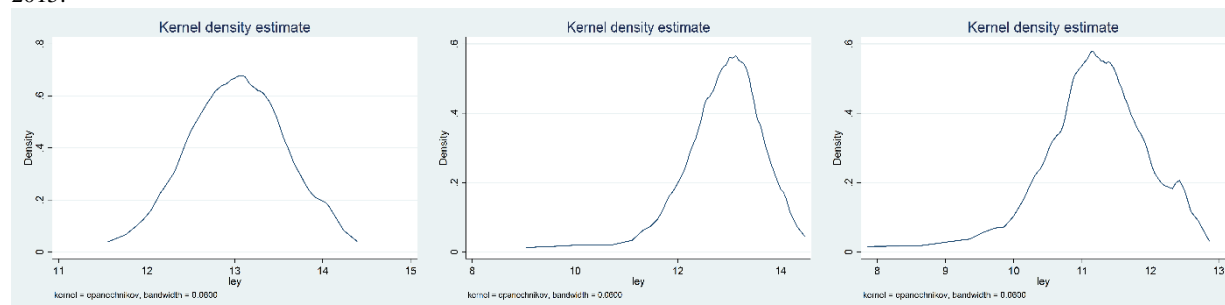
2013:



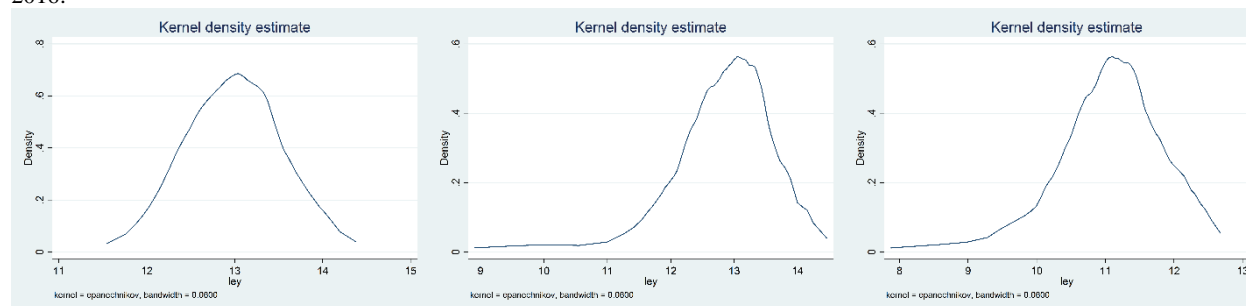
2014:



2015:



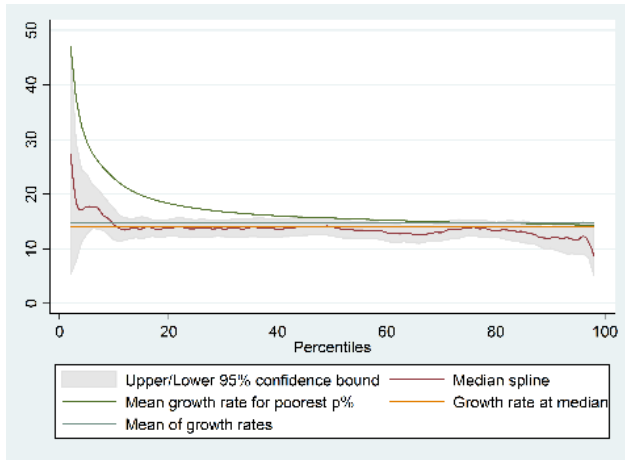
2016:



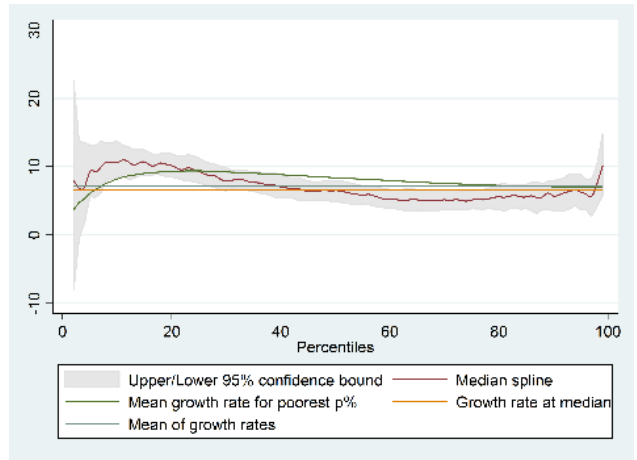
Source: Author's analysis of LIS data.

Figure A3. Growth incidence curves, various income concepts per adult equivalent (2000–2011)

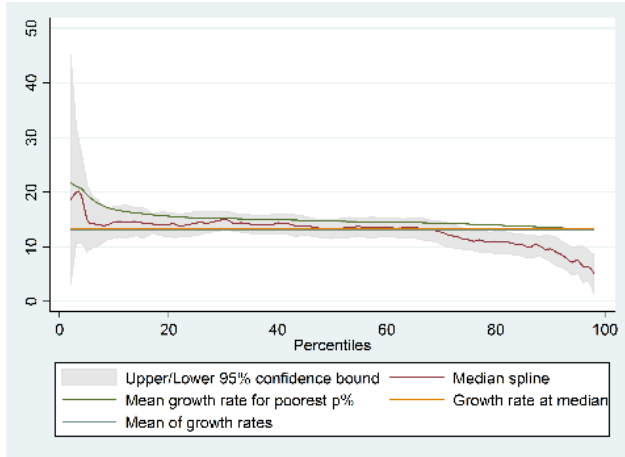
2000–2004:



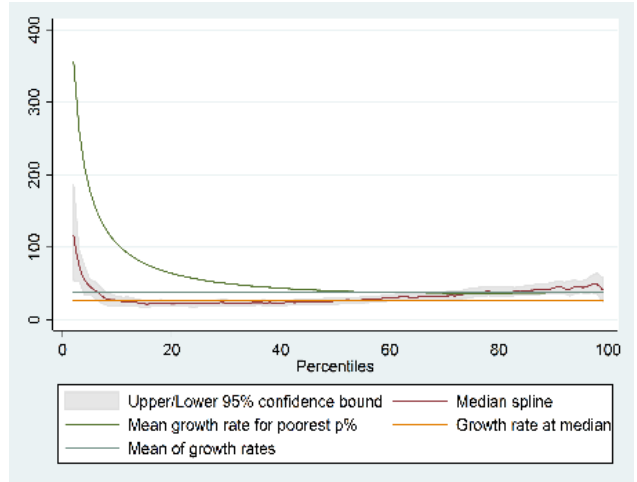
2007–2010:



2004–2007:



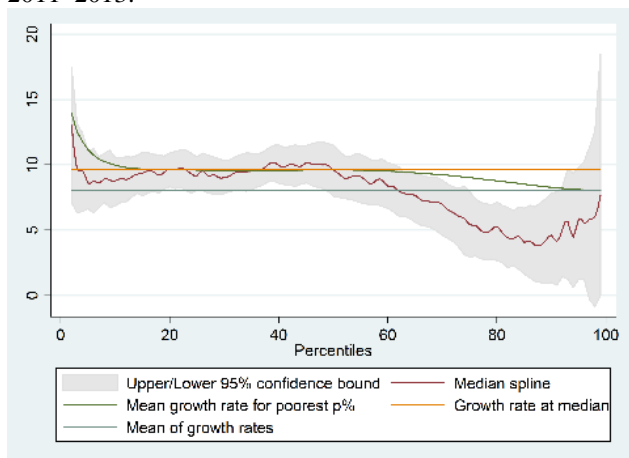
2010–2011:



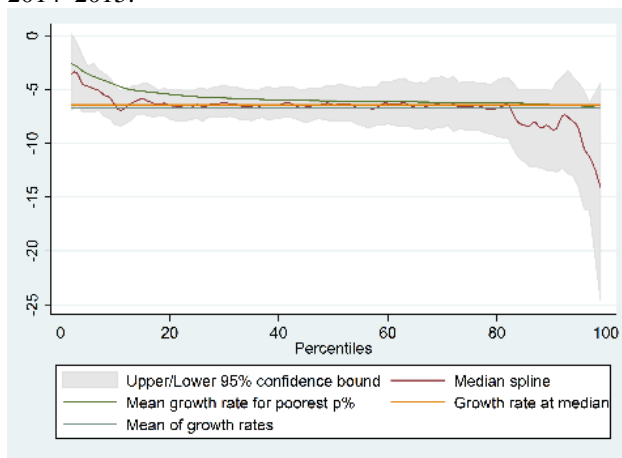
Source: Author's analysis of LIS data.

Figure A3 (cont.). Growth incidence curves, disposable hh. income per adult eqv. (2011–2016)

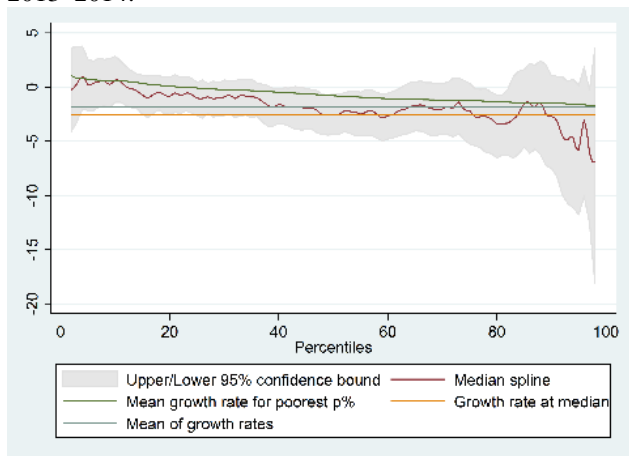
2011–2013:



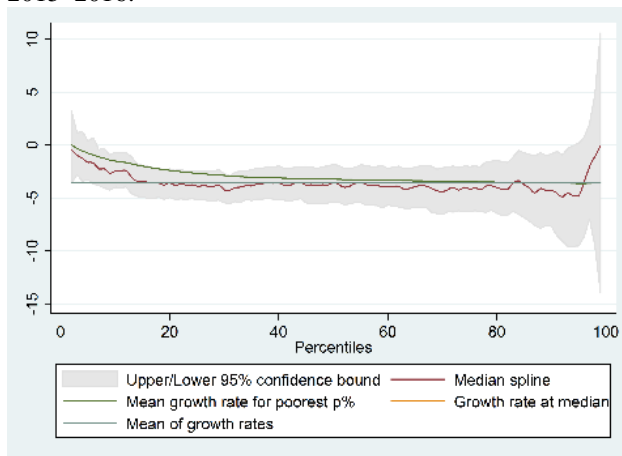
2014–2015:



2013–2014:



2015–2016:



Source: Author's analysis of LIS data.