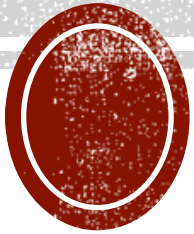
INEQUALITY IN THE DISTRIBUTION OF WORK BETWEEN RUSSIAN HOUSEHOLDS



Anna Lukyanova, HSE (Moscow)

LLMS-CLMS Seminar, Moscow, HSE, 20/09/2016

MOTIVATION

- Employment is typically a family decision BUT has been measured and studied mostly at the individual level
- Indicators of poverty and inequality often use the hh as the unit of analysis, reflecting the fact that incomes are shared within hh's and living standards of individuals depend on the economic circumstances of other hh members.
- OECD (2001): workless hh rates are much more highly correlated with poverty rates than are traditional individual-based unemployment rates.
- Since many social transfers depend on hh income, hh's with no one in paid work are more likely to be dependent on benefit payments and more likely to be poor. The more unequal the distribution of jobs across hh's causes the larger need for government intervention.
- The workless household rate is and important indicator of social exclusion indicators.

LITERATURE

- Chiappori (1988, 1992), Donni (2003), Blundell et al. (2007) - **models of collective labor supply**

  Problems: unobserved heterogeneity ➔ endogeneity ➔ identification issues.

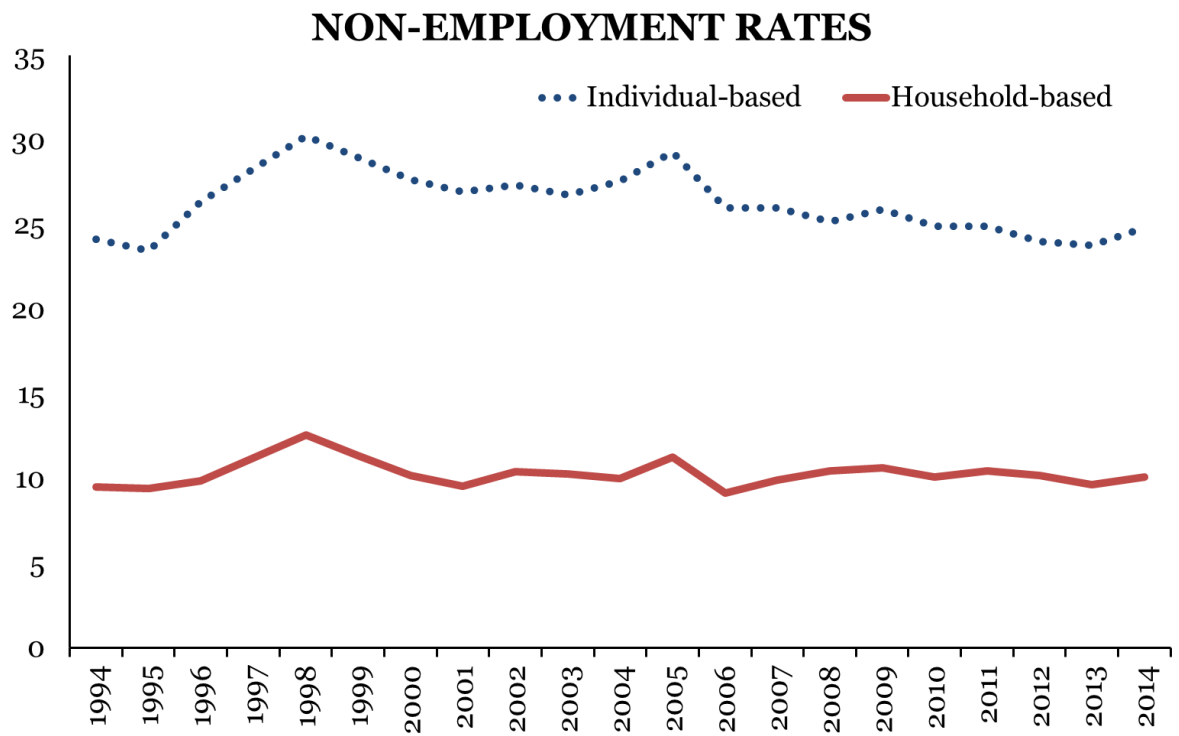
- Gregg and Wadsworth (1996, 1998), Lehmann and Wadsworth (1997), Callister and Singley (2004); Gregg et al. (2010) – descriptive approach.

  Main findings for developed countries: a growing "polarization" of employment across hh's, i.e. the work is increasingly unevenly distributed. In most countries, polarization is concentrated on 2-adult hh's: increasingly either both adults work, or neither adult works.

DATA AND DEFINITIONS

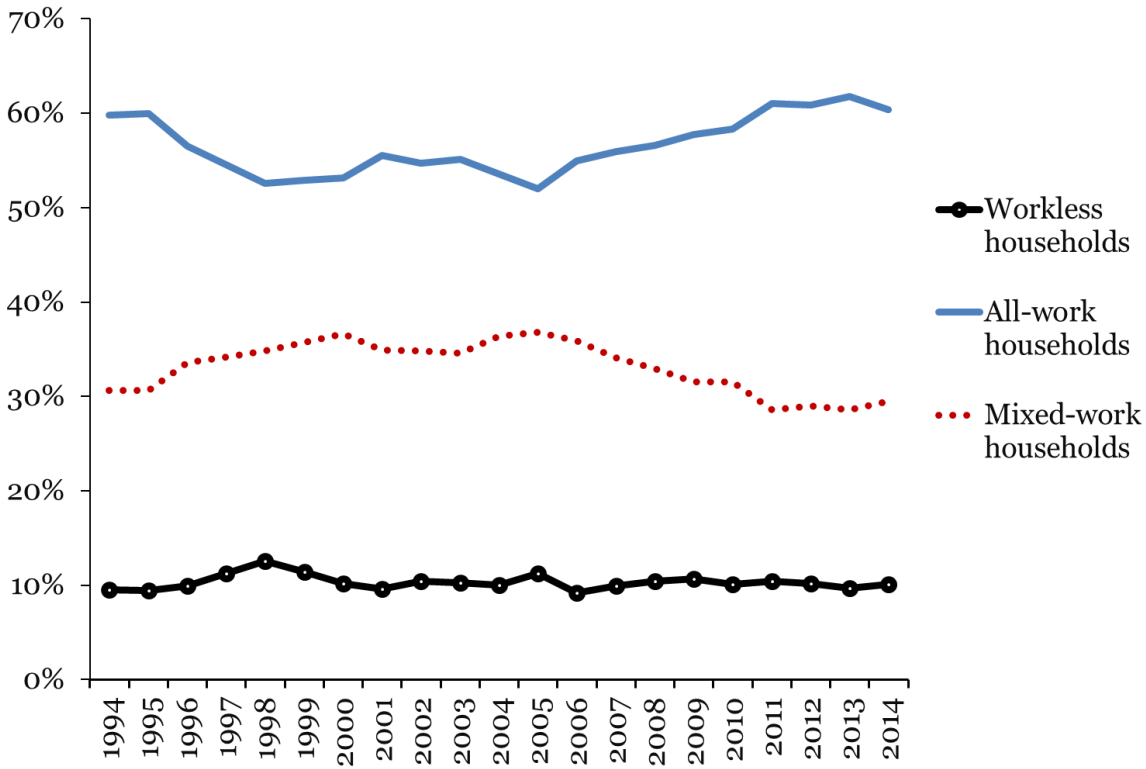
- RLMS: **1994-2014**
- Sample restrictions: Households with at least one person in the working age (females aged 16-55, males – 16-60)
- No distinction between the unemployed and economically inactive: we add the two groups together
- Paid work – permanent job (including those in maternity/ paternity leave) + irregular income-generating activities in last 30 days.
  Robustness check: permanent job – differences only in levels but not in trends
- **Workless households** – all the adult members of the working age are out of work.
- **All-work households** – all adult members of the working age are classified as being in paid work.

DESCRIPTIVE ANALYSIS: NON-EMPLOYMENT RATES



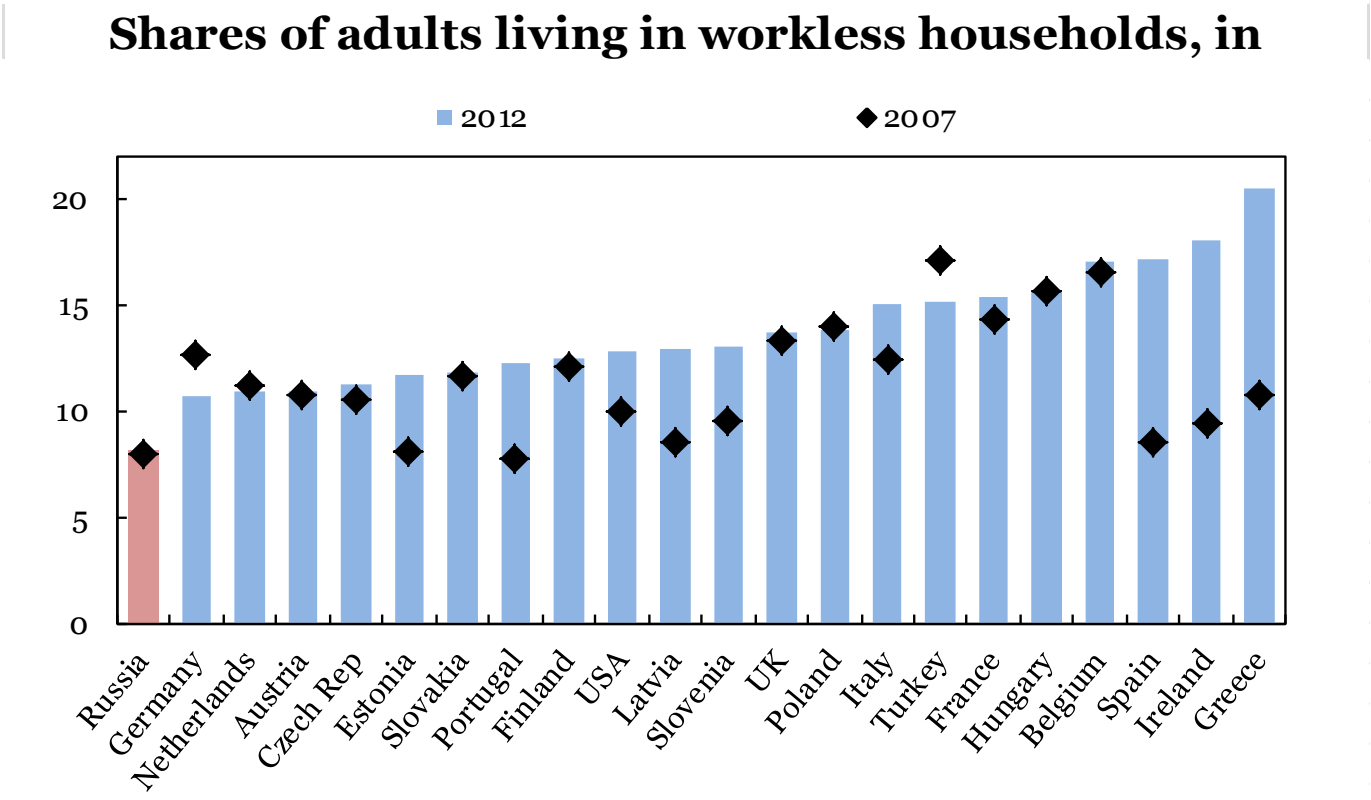
- Individual-based non-employment rates are 2.5-3 times greater than the hh-based rates ➔ majority of the non-employed live in the hh's with other employed members
- 6-7% of working-age adults live in workless hh's (1998 – 9%, 2008 – 8%)
- Both non-employment rates move over the cycle but fluctuations are less pronounced for the hh-based measure

DESCRIPTIVE ANALYSIS: HOUSEHOLD TYPES



- The share of workless hh's has been stable with a modest rise in 1998
- Changes in the hh-based non-employment rates are driven by all-work and mixed-work hh's

INTERNATIONAL COMPARISONS



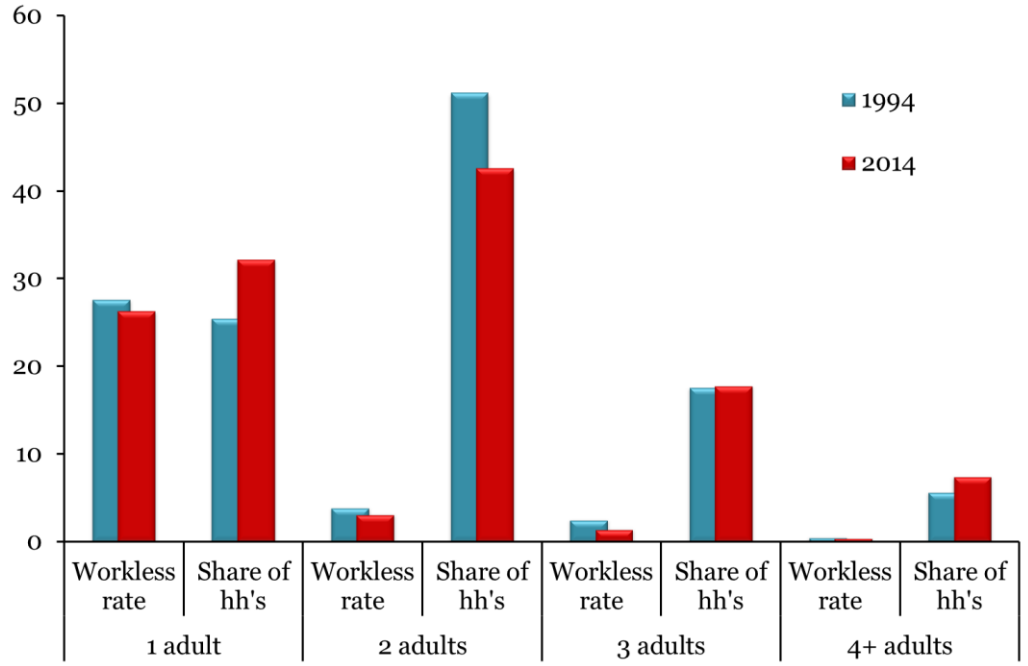
Note: Households are defined as "workless" if all household members are either unemployed or labour-market inactive.

"Adults" refers to the population aged 15-64.

DESCRIPTIVE ANALYSIS: DIFFERENCES IN THE HH COMPOSITION

	HH size	Include children under 16, %	Include the unemployed, %	Include pensioners , %
Workless households				
1994	2,6	29,8		52,9
2004	2,5	24,6	23,9	53,1
2014	2,3	11,6	19,2	63,0
Other households				
1994	3,4	58,5		24,9
2004	3,3	48,3	8,4	26,4
2014	3,2	44,7	5,4	32,0

DESCRIPTIVE ANALYSIS: HH SIZE



- The workless hh rate declines over time for all hh types
- The workless hh rates are highest among single-adult hh's.
- The share of single-adult hh's rises over time, particularly during the latter half of the sample period.
- Which of these within- and between-group effects dominates is one of the major questions.

DEFINING COUNTERFACTUALS

Gregg and Wadsworth (2008): compare an actual workless hh rate with a counterfactual workless hh rate that would occur if jobs were randomly distributed in the population.

Assumptions and notation:

- n – the aggregate individual-based non-employment rate in the population at time t:
- Every working age individual i living in each household h has the same probability of being out of work, given by n

$$E[n_{ih}|n] = n$$

- The counterfactual workless household rate, $\widehat{w}_k$, for every household with k adults is given by:

$$\widehat{w}_k = E[w_k|k,n] = \underbrace{n * \cdots * n}_{k} = n^k$$

- The aggregate counterfactual workless hh rate is then the weighted average of these rates, where the weights, s_k, are the population shares of hh's of size k:

$$\widehat{w} = \sum_{k=1}^{K} s_k \widehat{w}_k = \sum_{k=1}^{K} s_k n^k$$

INEQUALITY OF WORK INDEX

- The **inequality of work index *P* (polarization index)** is then the difference between the actual and counterfactual workless hh rates:

$$P = w - \hat{w} = \sum_{k=1}^{K} s_k w_k - \sum_{k=1}^{K} s_k n^k = \sum_{k=1}^{K} s_k (w_k - n^k)$$

- The index measures the extent to which there are more or fewer workless hh's than would be predicted by a random distribution of employment
- If $P = 0$ ➔ work is equally distributed
- A negative value indicates that work is distributed such that there are fewer workless hh's than by a random draw.
- The further above zero, the greater is the extent of inequality.
- The upper and lower bounds of this measure vary with the level of non-employment and with changes in the relative shares of each hh type. In theory, if non-employment is measured in percentages, the index is bounded by −100 and 100, but with plausible parameters the index lies mostly in the range ±25.

METHODOLOGY: INEQUALITY OF WORK INDEX (2)

Other versions of the inequality index:

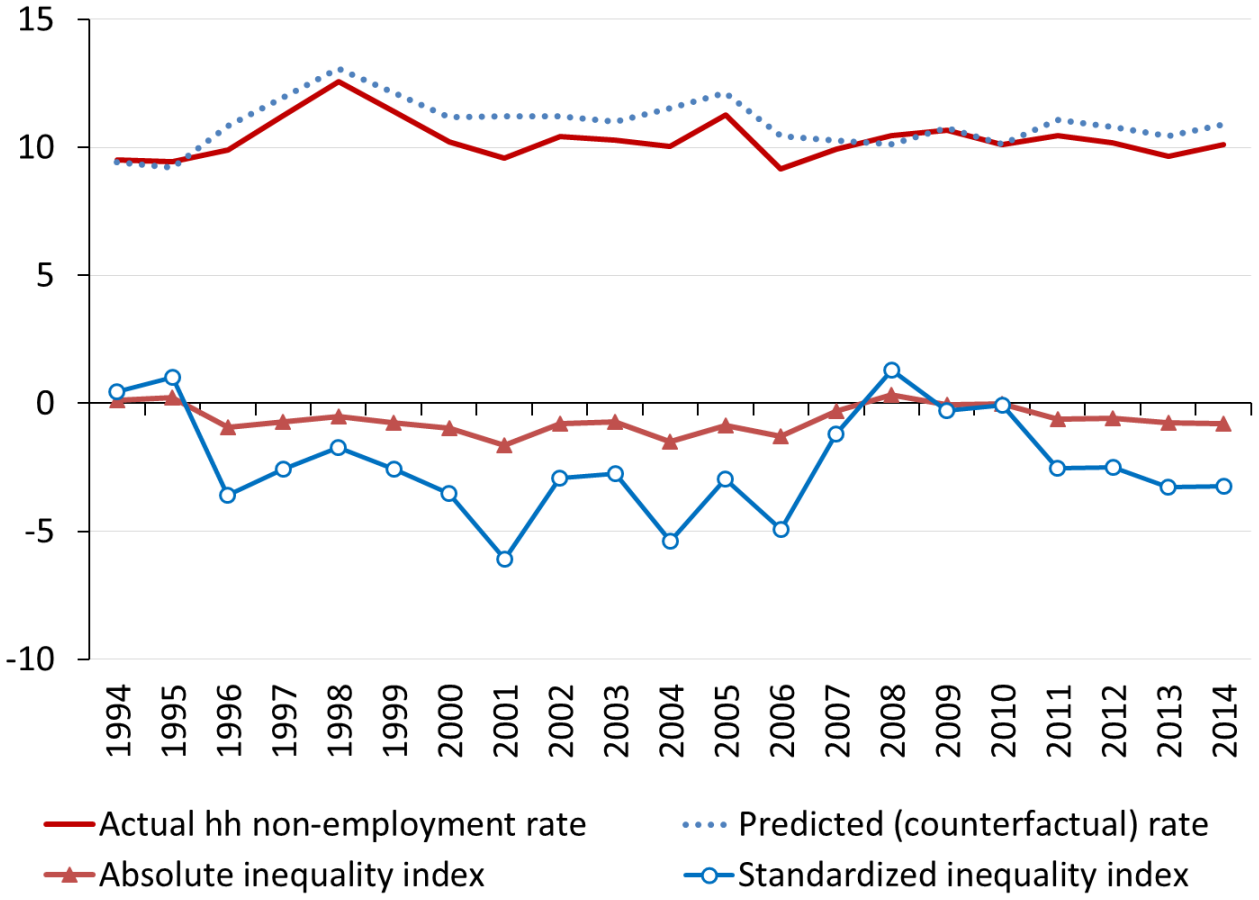
- **Relative** form – as the ratio of the actual and predicted workless household rates:

$$w/\widehat{w}$$

- **Standardized** form – to take account of variation in non-employment rates over the economic cycle:

$$(w - \widehat{w})/n$$

CHANGES IN INEQUALITY OVER TIME



- The inequality index is **negative** for most of the period ➔ fewer workless hh's than expected if employment were randomly allocated
- Development of inequality is **counter-cyclical**

DECOMPOSITION OF CHANGES IN INEQUALITY

The change in polarization between period 0 and 1 is decomposed as:

$$\Delta P = \sum_{k=1}^{K} \Delta\{s_k(w_k - n^k)\} = \sum_{k=1}^{K} \Delta s_k \left[0{,}5(w_k - n^k)_t + 0{,}5(w_k - n^k)_{t+1}\right]$$
$$+ \sum_{k=1}^{K} \Delta(w_k - n^k)\left[0{,}5s_{kt} + 0{,}5s_{k,t+1}\right]$$

- Term 1 = the **between-household type** component (shifts towards hh types with higher inequality)
- Term 2 = the **within-household type** component (changing inequality within hh types). Term 2 can be decomposed further to identify the contribution of each hh type to the within-household component.

DECOMPOSITION OF CHANGES IN THE WORKLESS HH RATE

$$\Delta w = \Delta\widehat{w} + \Delta(w - \widehat{w}) = \sum_{k=1}^{K} \Delta\{s_k n^k\} + \sum_{k=1}^{K} \Delta\{s_k (w_k - n^k)\} =$$

$$= \sum_{k=1}^{K} \Delta s_k \left[0{,}5 n_t^k + 0{,}5 n_{t+1}^k\right] + \sum_{k=1}^{K} \Delta n^k \left[0{,}5 s_{kt} + 0{,}5 s_{k,t+1}\right]$$

$$+ \sum_{k=1}^{K} \Delta s_k \left[0{,}5 \left(w_k - n^k\right)_t + 0{,}5 \left(w_k - n^k\right)_{t+1}\right]$$

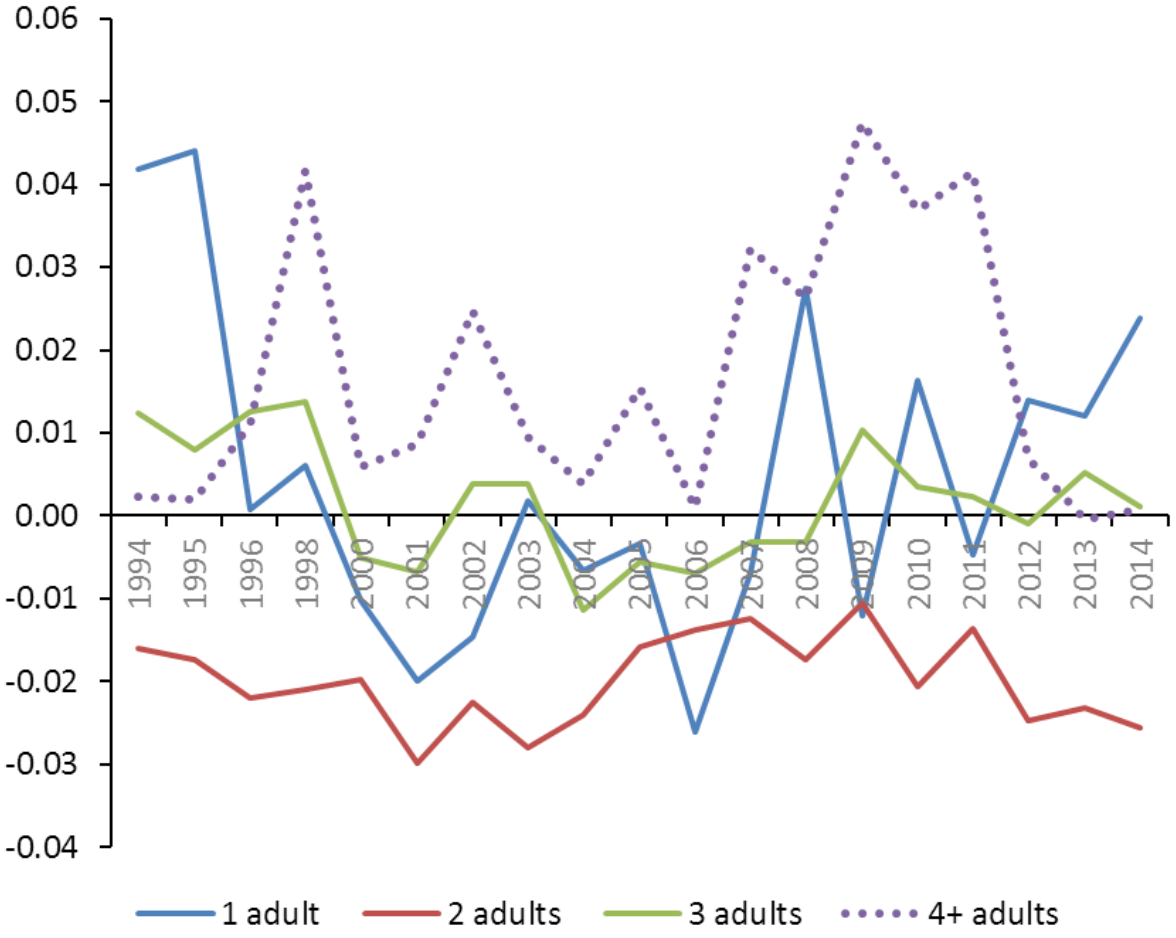
$$+ \sum_{k=1}^{K} \Delta (w_k - n^k) \left[0{,}5 s_{kt} + 0{,}5 s_{k,t+1}\right]$$

- Term 1 = the contribution of the change in the predicted rate due to changing hh shares
- Term 2 = the contribution of the change in the predicted rate due to changing non-employment rates,
- Terms 3 & 4 = the between- and within-group terms for changes in inequality index from the previous equation

DECOMPOSITION OF CHANGES IN THE WORKLESS HH RATE

Period	Actual change	Total predicted change	Of which:		Total inequality change	Of which:					
			due to Δ non-employment	Due to Δ hh shares		Between hh types	Within hh types: Total	Within hh types: Of which 1 adult	Within hh types: Of which 2 adults	Within hh types: Of which 3 adults	Within hh types: Of which 4+ adults
1994-14	**0.6**	**1.5**	**0.3**	**1.1**	**-0.9**	**0.4**	**-1.2**	**-0.5**	**-0.5**	**-0.2**	**0.0**
1994-98	3.1	3.7	3.6	0.2	-0.6	0.2	-0.9	-0.9	-0.2	0.0	0.3
1998-04	-2.5	-1.6	-1.4	0.0	-1.0	0.1	-1.3	-0.4	-0.1	-0.5	-0.3
2004-09	0.6	-0.8	-0.8	0.2	1.4	0.0	1.3	-0.2	0.6	0.4	0.4
2009-14	-0.6	0.2	-1.1	0.8	-0.7	-0.1	-0.1	1.1	-0.6	-0.2	-0.4

INEQUALITY WITHIN HH TYPES



Inequality is:

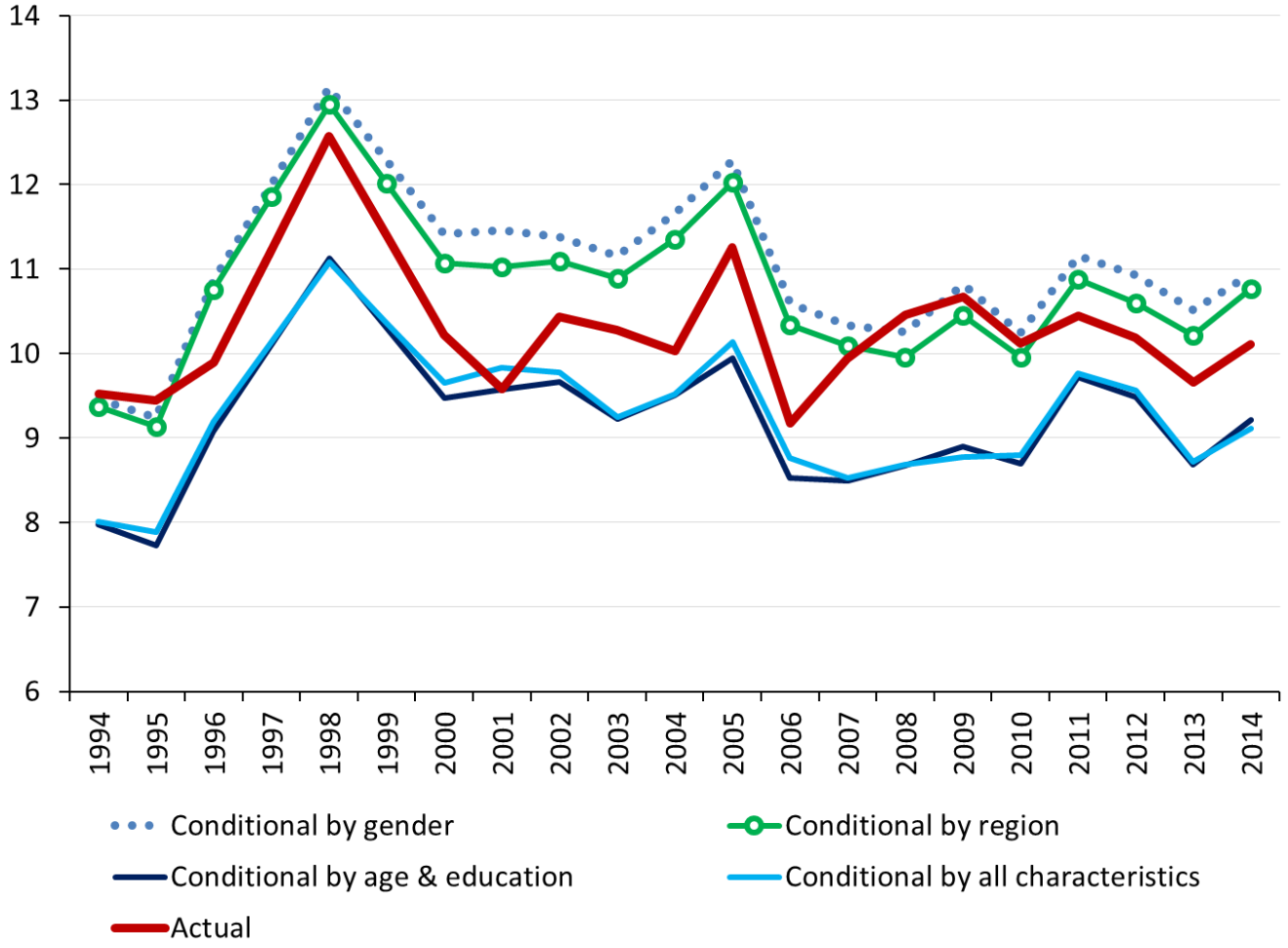
- persistently negative for 2-adult hh's ➔ prevalence of all-work 2-adult hh's
- Persistently positive for 4+ - adult hh's ➔ large hh's have higher workless hh rates than expected
- highly volatile for 1-adult and 4+-adult hh's

CONDITIONAL WORKLESS HH RATES: METHODOLOGY

- The random counterfactual does not take account of the fact that non-employment rates are known to vary by individual characteristics (education, age, gender, region, etc.)
- Members of same hh often have common characteristics, which makes them more likely to experience worklessness simultaneously.
- The counterfactual workless rate can be based on conditional non-employment probabilities: mean non-employment rates of subgroups (n_{X_i}) disaggregated according to a vector of observable characteristics that are known to affect the probability of employment.
- Assuming that, net of these characteristics, individual employment probabilities within a hh are independent, then the counterfactual workless hh rate for a hh with k occupants equals the product of the k individual (conditional) non-employment probabilities,

$$\widehat{w}_X^k = E[w_k|k, n, X_i] = \prod_{i=1}^{k} n_{X_i}$$

CONDITIONAL WORKLESS HH RATES: RESULTS



Region: federal districts (macro-regions),

Age: 16-24, 25-44, 45+

Education: less than secondary, secondary, tertiary non-academic, higher

CONDITIONAL WORKLESS HH RATES: RESULTS

- Gender and regional variation (at the level of federal districts) has little effect on the counterfactual rates.
- Age and education have stronger effect on predicted rates
- Results for detailed disaggregation are driven by age and education ➔ the polarization changes its sign (from ➖ to ➕)
  - Increasing youth non-employment rates due to receiving higher education and later entrance to the labor market
  - Growing population share of 45+'s
  - Growing share of university graduates

CONCLUSIONS

- Russian labor market is characterized by low extent of polarization between households in access to employment.
- Household workless rates increased in recent years due to demographic shifts (reduction in average household size).
- Gender and regional variation has little effect on the workless hh rates
- Expansion of higher education contributed to between-household increase in polarization.