Inclusive economic development in Georgia

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New Results since Bangkok

- **Inequality dynamics and mobility**: standard (horizontal) measures of inequality over-estimate permanent inequality. Inequality has decreased but so has mobility.

- **Spatial decomposition of inequality**: inequality decreased with regions rather than between regions. No spatial correlation between regional outcomes.

- **Gender gap**: has narrowed. "trans-gender" decomposition shows that gender gap not induced by composition.

- **Labor market flexibility**: Evidence of spontaneous job creation through market forces.

Mobility & Inequality

Person	Income	Period 1	Period 2
A	100	0	
B	0	100	
Gini	1	1	
Permanent Gini	0		
Gini mobility index	2		

Gini Dynamics, Mobility & Permanent Gini

$Y_{2i} = \alpha + \beta Y_{1i} + \varepsilon_i$ *absolute mobility* (*beta convergence*)

$$\hat{\beta} = \frac{\text{cov}(Y_2, R_1)}{\text{cov}(Y_1, R_1)}$$ *Gini regression*

$$\Gamma_{21} = \frac{\text{cov}(Y_2, R_1)}{\text{cov}(Y_2, R_2)}$$ *Backwards Gini correlation – relative mobility*
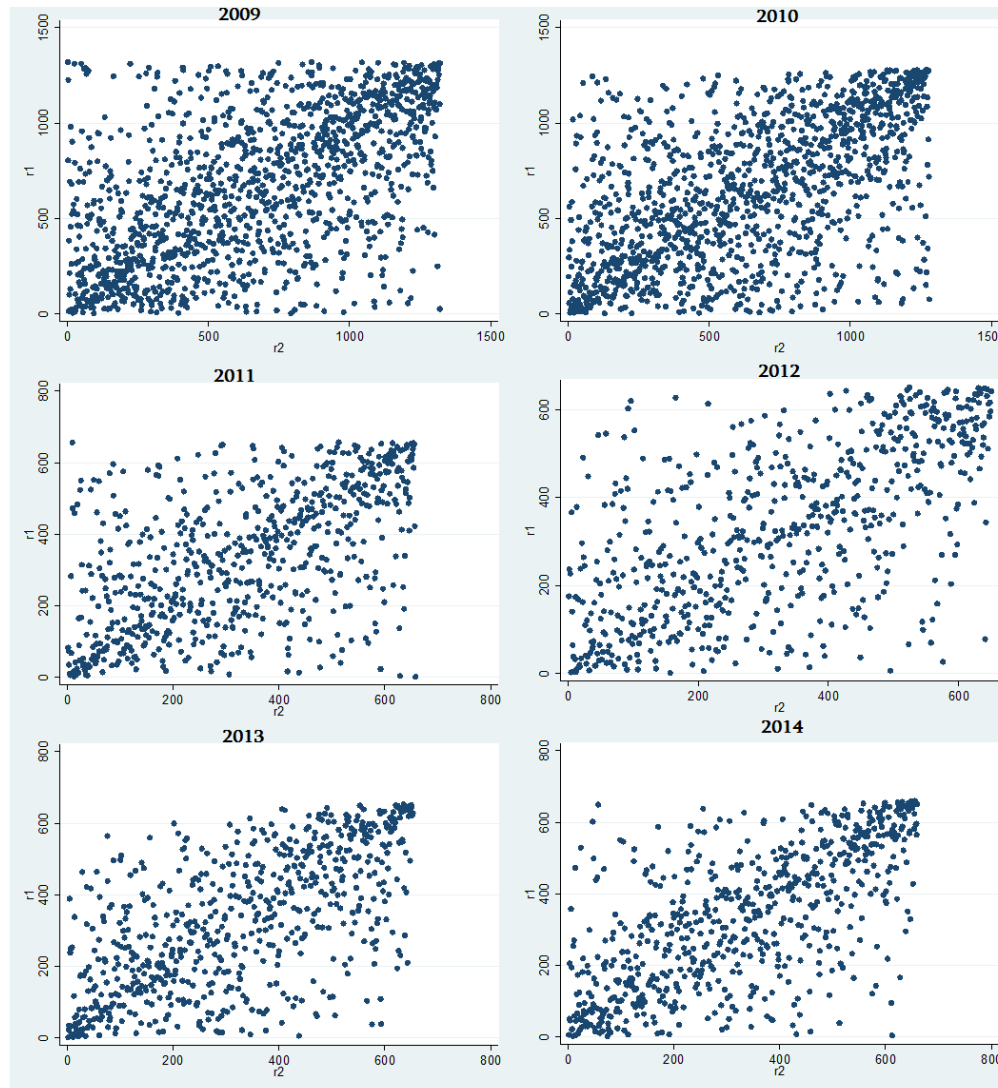
$$\frac{G_2}{G_1} = \frac{\hat{\beta}}{\Gamma_{21}} \frac{\overline{Y}_1}{\overline{Y}_2}$$ *Decomposition of Gini divergence*

$$GMI = \frac{G_1(1 - \Gamma_{12}) + G_2(1 - \Gamma_{21})}{G_1 + G_2}$$ $0 < GMI < 2$ *Gini mobility index*

$G_p^2 = \tfrac{1}{4}\left[G_1^2 + G_2^2 + (\Gamma_{12} + \Gamma_{21})G_1 G_2\right]$ $G_p = $ *Gini of* $\overline{Y}$

$G_p \leq \overline{G}$ *If* $G_1 = G_2 = G$ *then* $G_p = 0.707G$ *Gini of average less than average Gini*

Income rank in Q1 vs rank in Q4

Gini mobility results

	2009	2010	2011	2012	2013	2014
beta	0.498497936	0.516199	0.435179	0.628879	0.700578	0.777732
Gini Q1	0.4500771	0.458201	0.457765	0.428618	0.384062	0.371425
Gini Q4	0.4674973	0.425728	0.378799	0.396736	0.387923	0.408289
Mean income per equivalent adult, Q1	181.5414	213.8188	237.0352	259.3324	288.7045	336.0587
Mean income per equivalent adult, Q4	200.6457	207.7904	220.8013	287.0365	305.6405	356.0305
Permanent Gini	0.395976388	0.390511	0.360155	0.37185	0.350275	0.354848
Gini Mobility Index	0.511320532	0.439609	0.529915	0.376351	0.352976	0.343287
Number of households in the sample	1321	1280	658	650	653	660

Permanent versus transitory Gini

Permanent versus transient Gini
Source: own calculations, based on Integrated Household Survey

Legend: Gini Q1, Gini Q4, Permanent Gini
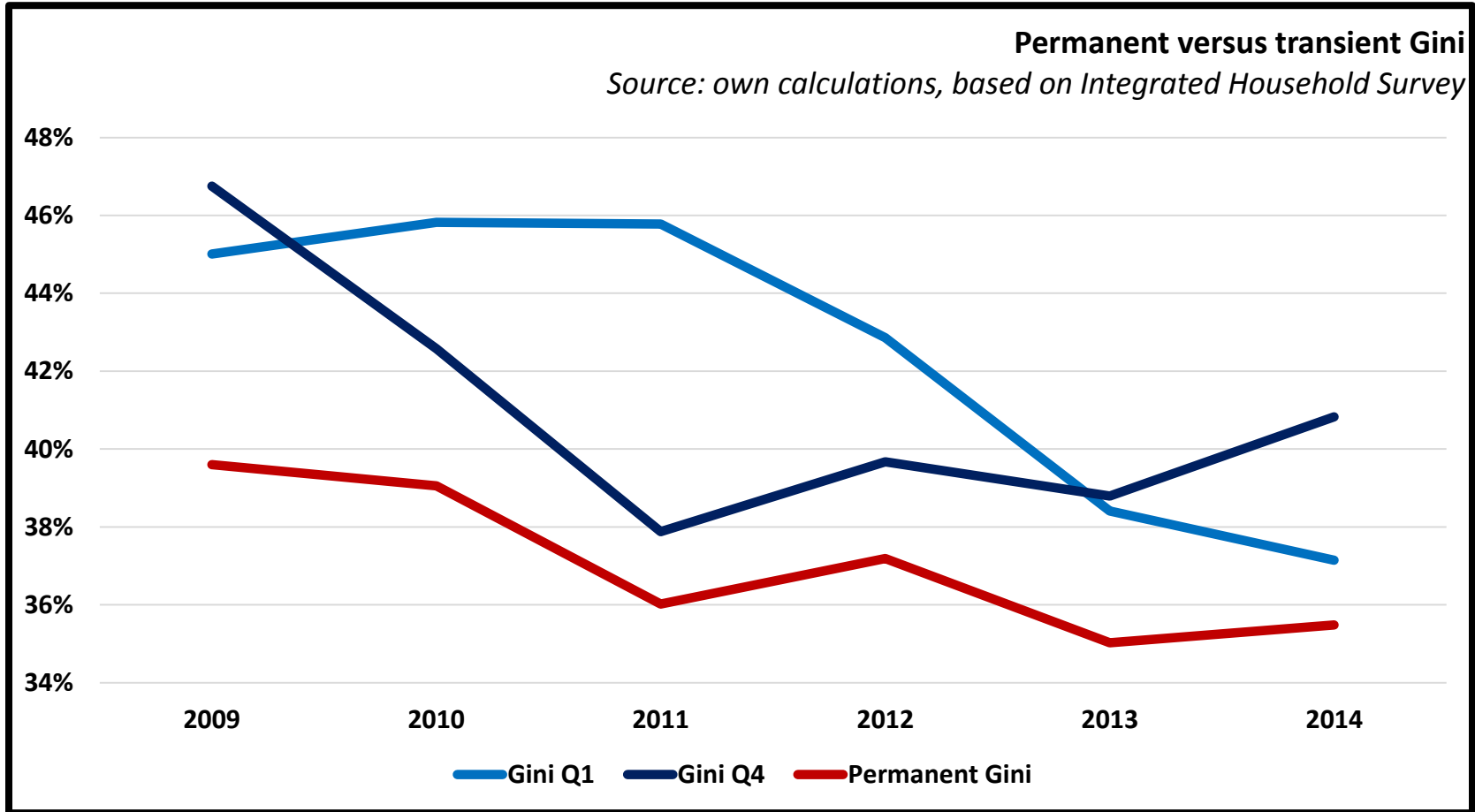
Gini Decomposition

$$G = \sum_{j=1}^{J} s_j O_j G_j + G_b$$

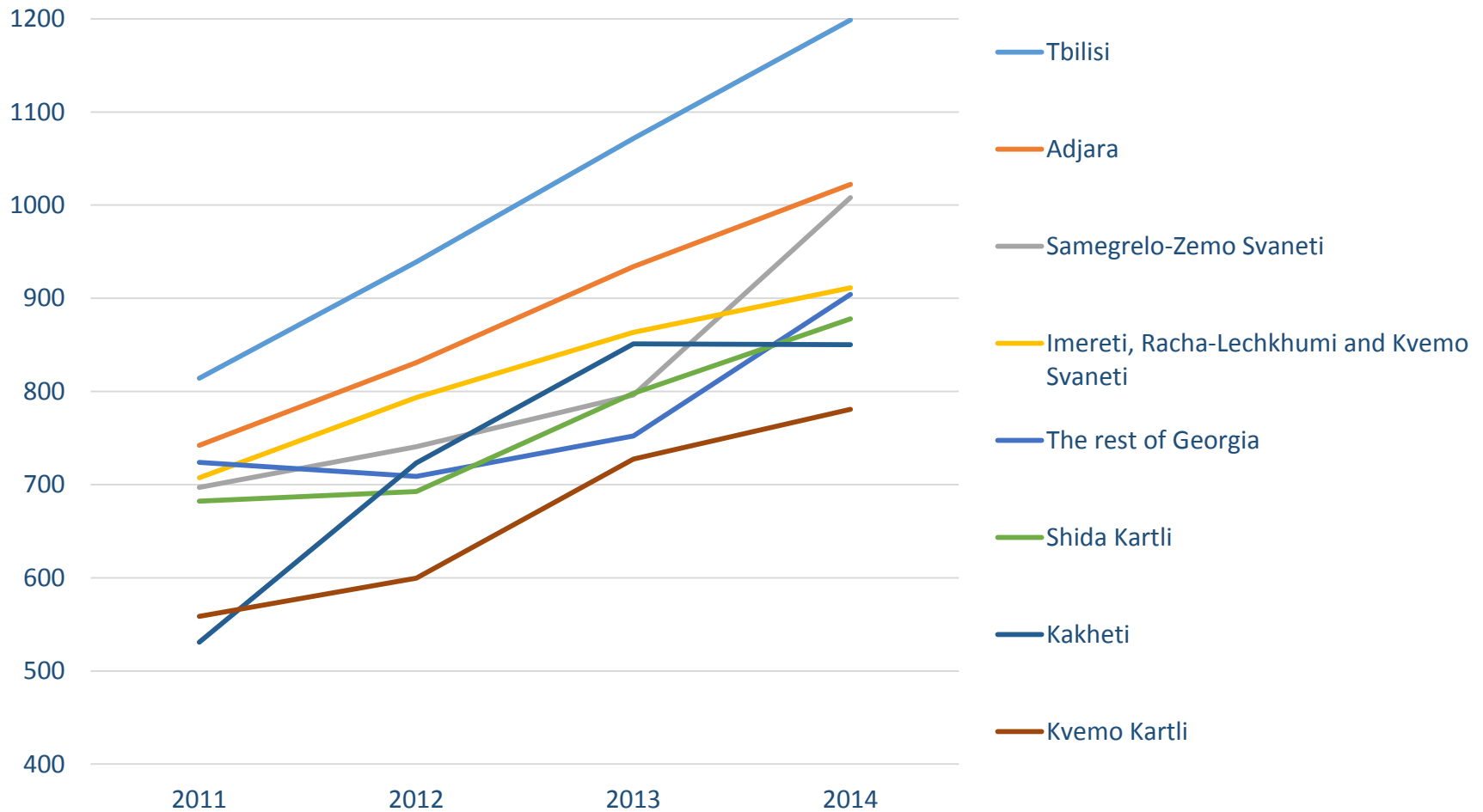$s_j = share\ of\ group\ j$

$O_j = overlapping\ (stratification)\ coefficient$

$$G_b = 2\frac{\text{cov}(\overline{Y}_j, R_j)}{\overline{Y}}\ between\ group\ Gini$$
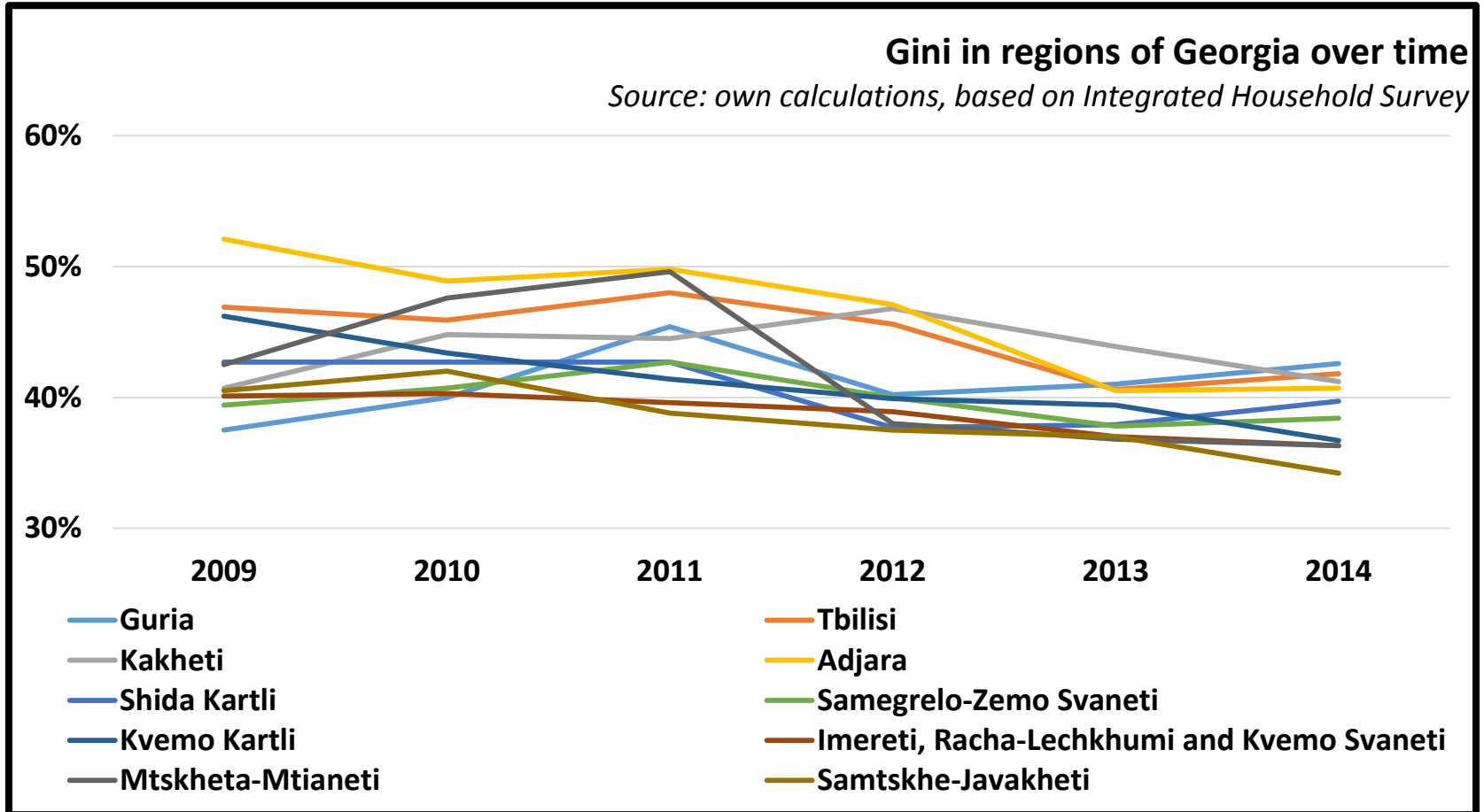
Regional Inequality

Dynamics of Regional Income Inequality: Income per household by region

Source: National Statistics Office of Georgia

Sources of household income (GEL) by region in 2014

Legend:
- Non-cash income
- Other cash inflows
- Money received as gift
- Remittances from abroad
- Pensions, scholarships, assistances
- Property income (leasing, interest on deposit etc.)
- From selling agricultural production
- From self-employment
- Wages
- Borrowing and dissaving
- Property disposal

Regions: Tbilisi, Samtskhe-Javakheti, Adjara, Samegrelo-Zemo Svaneti, Imereti, Racha-Lechkhumi and Kvemo Svaneti, Guria, Shida Kartli, Kakheti, Kvemo Kartli, Mtskheta-Mtianeti

Gini in regions of Georgia

Gini in regions of Georgia over time
Source: own calculations, based on Integrated Household Survey

Legend: Guria, Tbilisi, Kakheti, Adjara, Shida Kartli, Samegrelo-Zemo Svaneti, Kvemo Kartli, Imereti, Racha-Lechkhumi and Kvemo Svaneti, Mtskheta-Mtianeti, Samtskhe-Javakheti
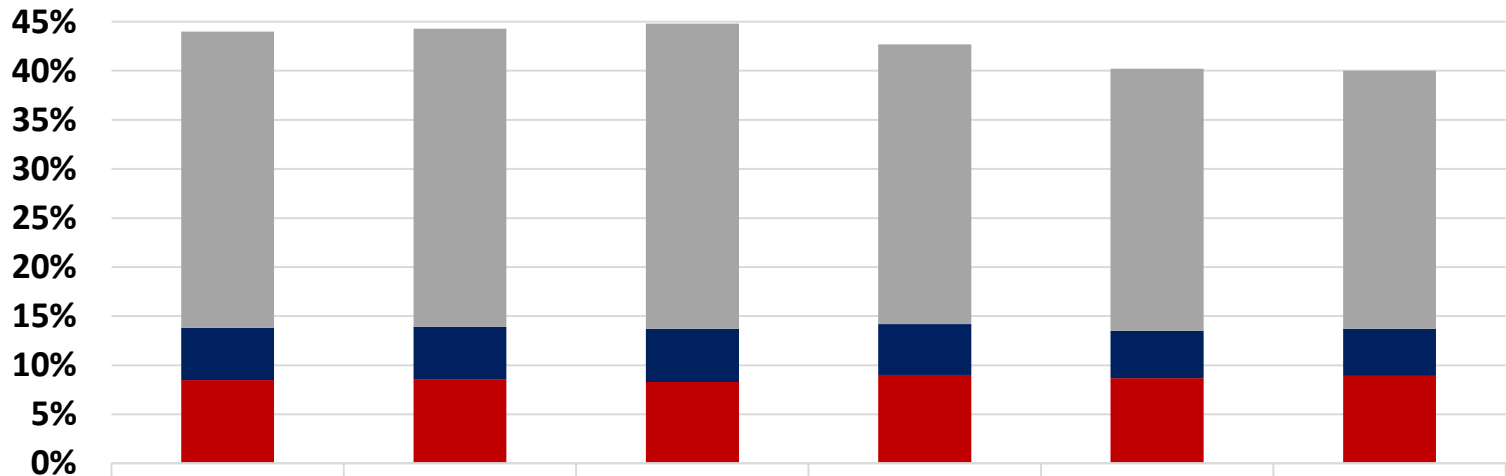
Gini decomposition by region

Gini decomposition by region

Source: own calcularions, based on Integrated Household Survey

	2009	2010	2011	2012	2013	2014
Overlap	30%	30%	31%	29%	27%	26%
Within	5%	5%	5%	5%	5%	5%
Between	9%	9%	8%	9%	9%	9%

Between   Within   Overlap

Spatial Correlation (Moran's I)

	Moran I	P-value
Household income per equivalent adult		
2009	-0.248	0.053
2010	-0.268	0.049
2011	-0.235	0.106
2012	-0.258	0.065
2013	-0.263	0.051
2014	-0.324	0.01
House prices		
2009	-0.252	0.076
2010	-0.137	0.269
2011	-0.065	0.199
2012	-0.013	0.058
2013	-0.156	0.194
2014	0.041	0.017
Share of university graduates		
2009	-0.199	0.039
2010	-0.198	0.028
2011	-0.217	0.039
2012	-0.172	0.136
2013	-0.171	0.15
2014	-0.161	0.143
Unemployment rate		
2010	-0.275	0.011
2011	-0.25	0.045
2012	-0.231	0.068
2013	-0.27	0.028

Gini in urban and rural settlements of Georgia

Gini in urban and rural settlements of Georgia over time
Source: own calculations, based on Integrated Household Survey

Urban — Rural

Gini decomposition by urban-rural

Gini decomposition by urban-rural

Source: own calcularions, based on Integrated Household Survey

	2009	2010	2011	2012	2013	2014
■ Overlap	16%	17%	18%	16%	15%	15%
■ Between	6%	5%	4%	5%	5%	5%
■ Within	22%	23%	23%	22%	21%	20%

■ Within ■ Between ■ Overlap
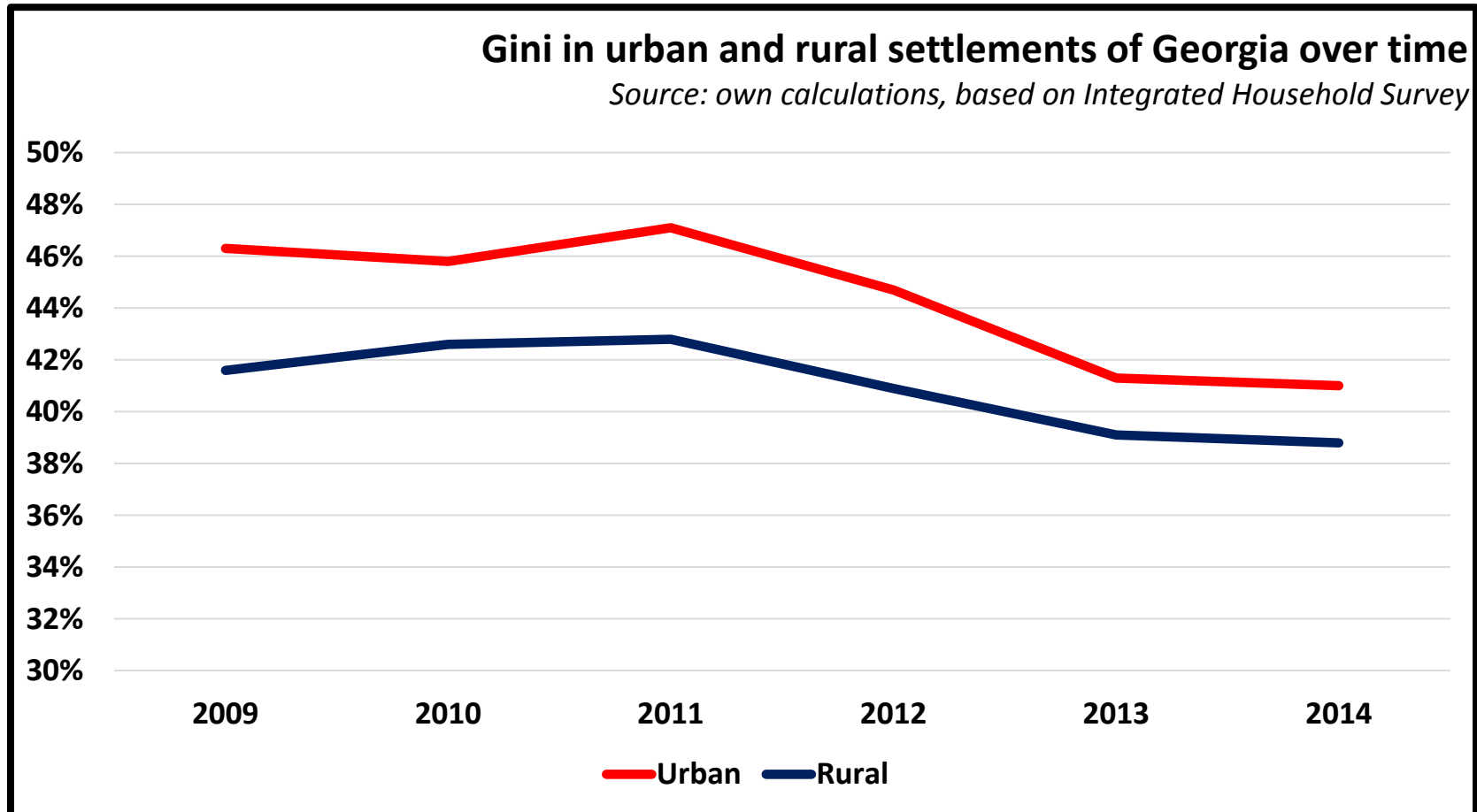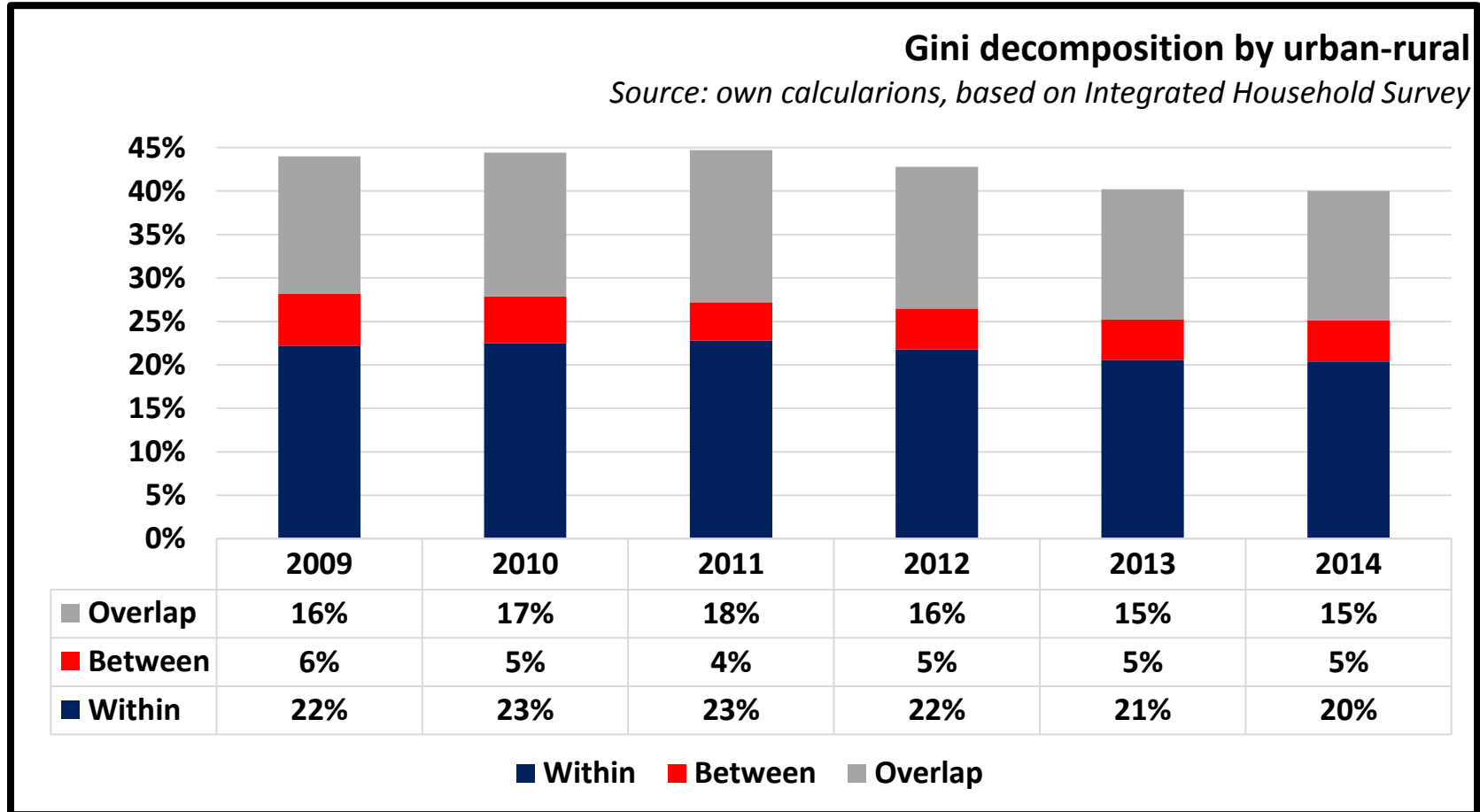
Mincer models for separate years

	2009	2010	2011	2012	2013	2014
Professional Education	7.69%	11.60%	6.23%	5.76%	8.11%	8.11%
Higher Education	61.24%	65.58%	61.82%	63.41%	66.36%	66.36%
Age	2.42%	4.12%	4.51%	4.20%	4.41%	4.41%
Age squared	-0.03%	-0.05%	-0.06%	-0.06%	-0.06%	-0.06%
Male	57.57%	44.82%	43.47%	43.66%	41.79%	41.79%
Constant	4.53	4.21	4.21	4.44	4.46	4.46
Flipping age	36	39	39	36	39	39
R2	23.37%	19.39%	17.94%	20.84%	20.24%	17.26%

Oaxaca Decomposition

- $Y_{Fi} = \alpha_F + \beta_F X_{Fi} + u_i$
- $\bar{Y}_F = \alpha_F + \beta_F \bar{X}_F$
- $\bar{Y}_M = \alpha_M + \beta_M \bar{X}_M$
- $g = \bar{Y}_M - \bar{Y}_F \quad gender\ gap$
- $\quad = \alpha_M - \alpha_F + \beta_M(\bar{X}_M - \bar{X}_F) + (\beta_M - \beta_F)\bar{X}_F$
- $\bar{Y}_{FM} = \alpha_M + \beta_M \bar{X}_F \quad$ female counterfactual
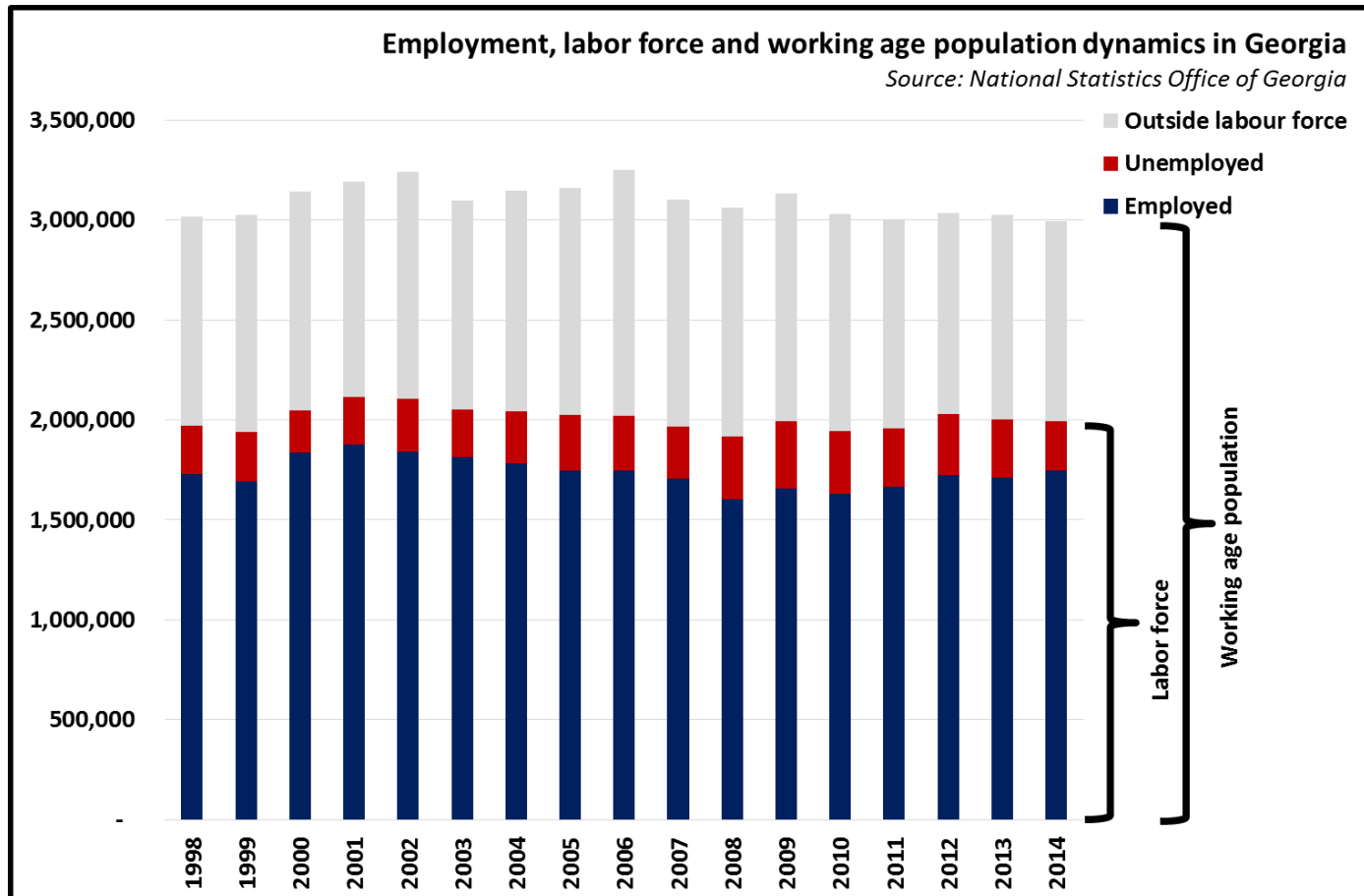- $g_{FM} = \bar{Y}_{FM} - \bar{Y}_F \quad$ "trans-gender" gap

"Trans-gender" wage-gaps

	Predicted earnings of females	Predicted earnings of males	Gender wage gap	Earnings of females, had they been males	Difference between what females would earn had they been males and what they earn in reality
2009	205	378	173	373	168
2010	236	376	140	373	137
2011	240	398	158	391	150
2012	257	444	187	433	176
2013	322	470	148	465	143
2014	335	496	161	490	155

Gender-gap in Employment

Source: The World Bank World Development Indicators & National Statistics Office of Georgia
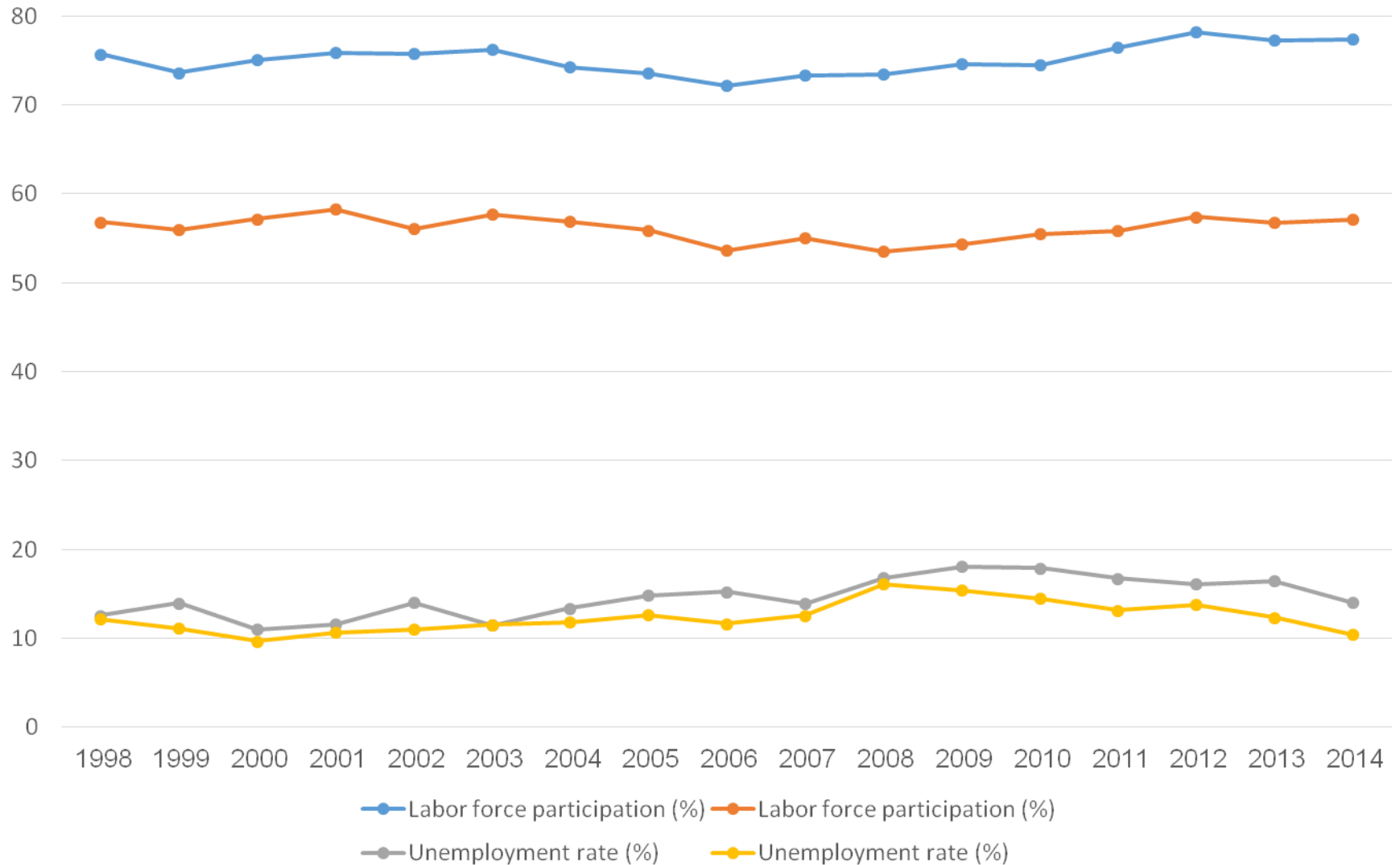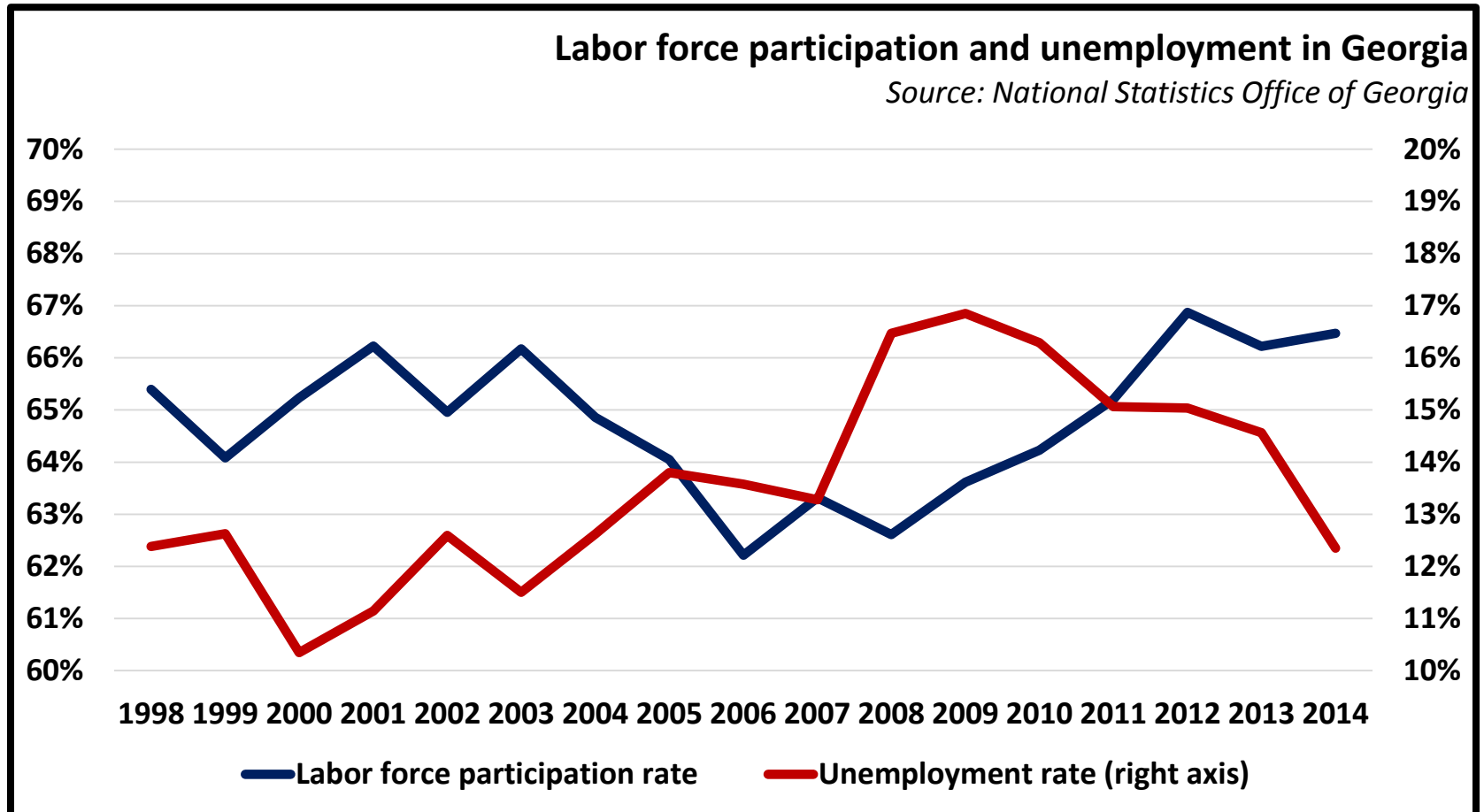
Population of working age, labor force and employment

Participation ratio and unemployment rate

Labor force participation and unemployment in Georgia

Source: National Statistics Office of Georgia

Hired employment, business employment and self-employment

Structure of employment in Georgia
Source: National Statistics Office of Georgia

Legend:
- Business employment
- Other hired employment
- Self-employment
- Non-identified employment

Real wages

Wages of business and hired employees in 1999 prices
Source: National Statistics Office of Georgia, own calculations

Business sector — All hired
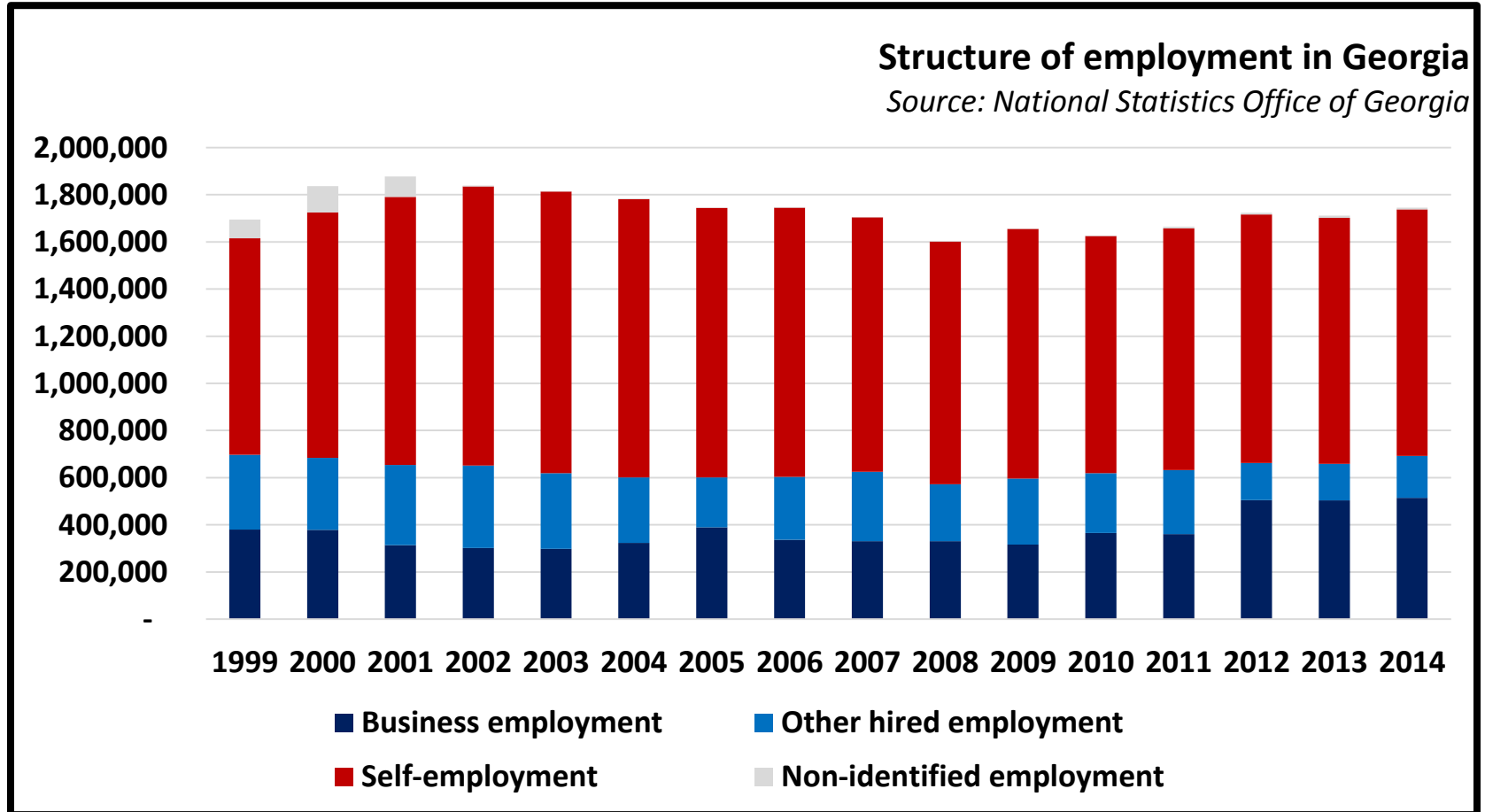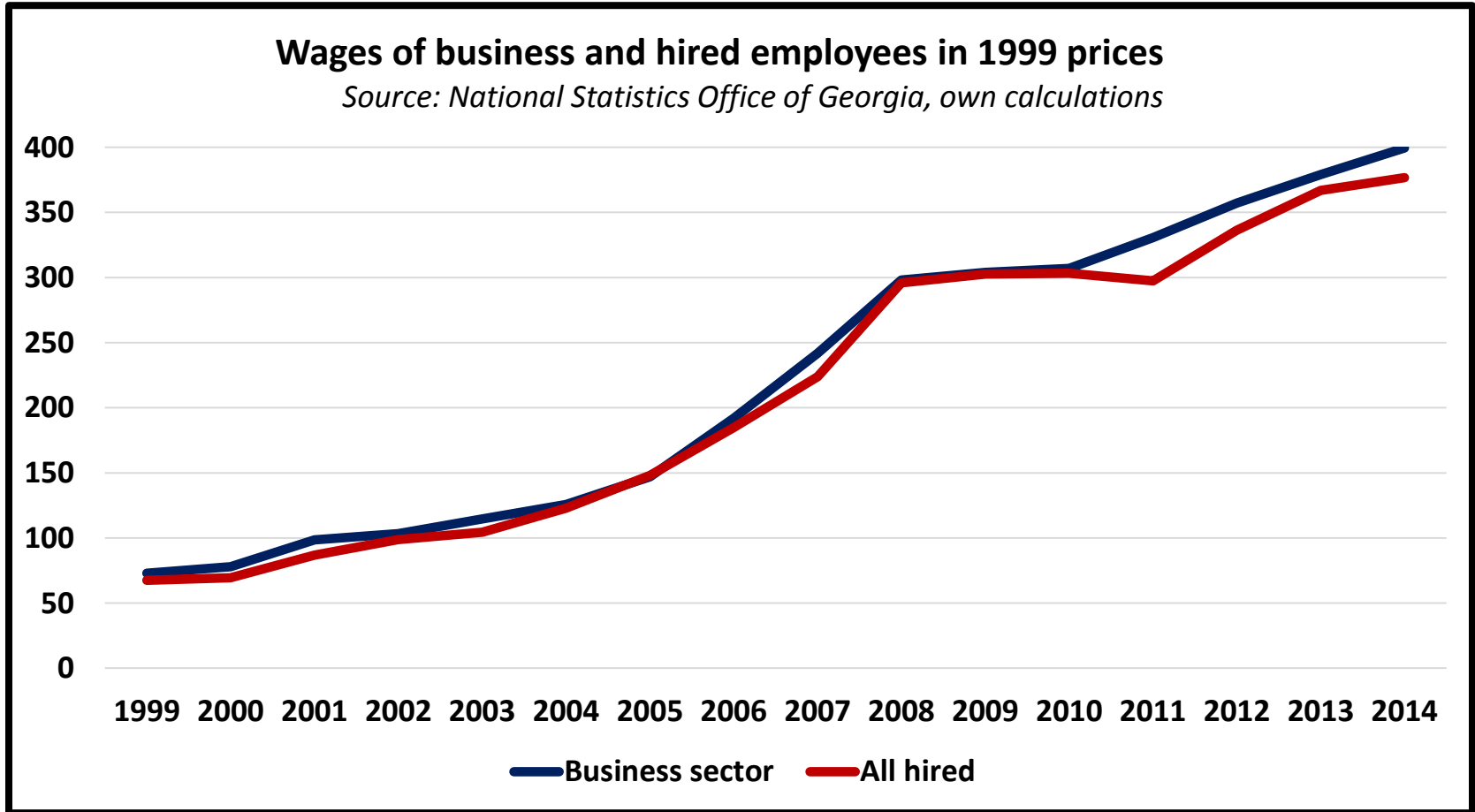
Capital-output ratio

Capital-Output Ratio
Source: National Statistics Office of Georgia, own calculations

1.20 — 1999
1.34 — 2000
1.46 — 2001
1.53 — 2002
1.55 — 2003
1.66 — 2004
1.72 — 2005
1.75 — 2006
1.76 — 2007
1.84 — 2008
1.92 — 2009
1.86 — 2010
1.85 — 2011
1.89 — 2012
1.93 — 2013
1.98 — 2014

Capital-labor ratio (business employment)

Source: National Statistics Office of Georgia, own calculations
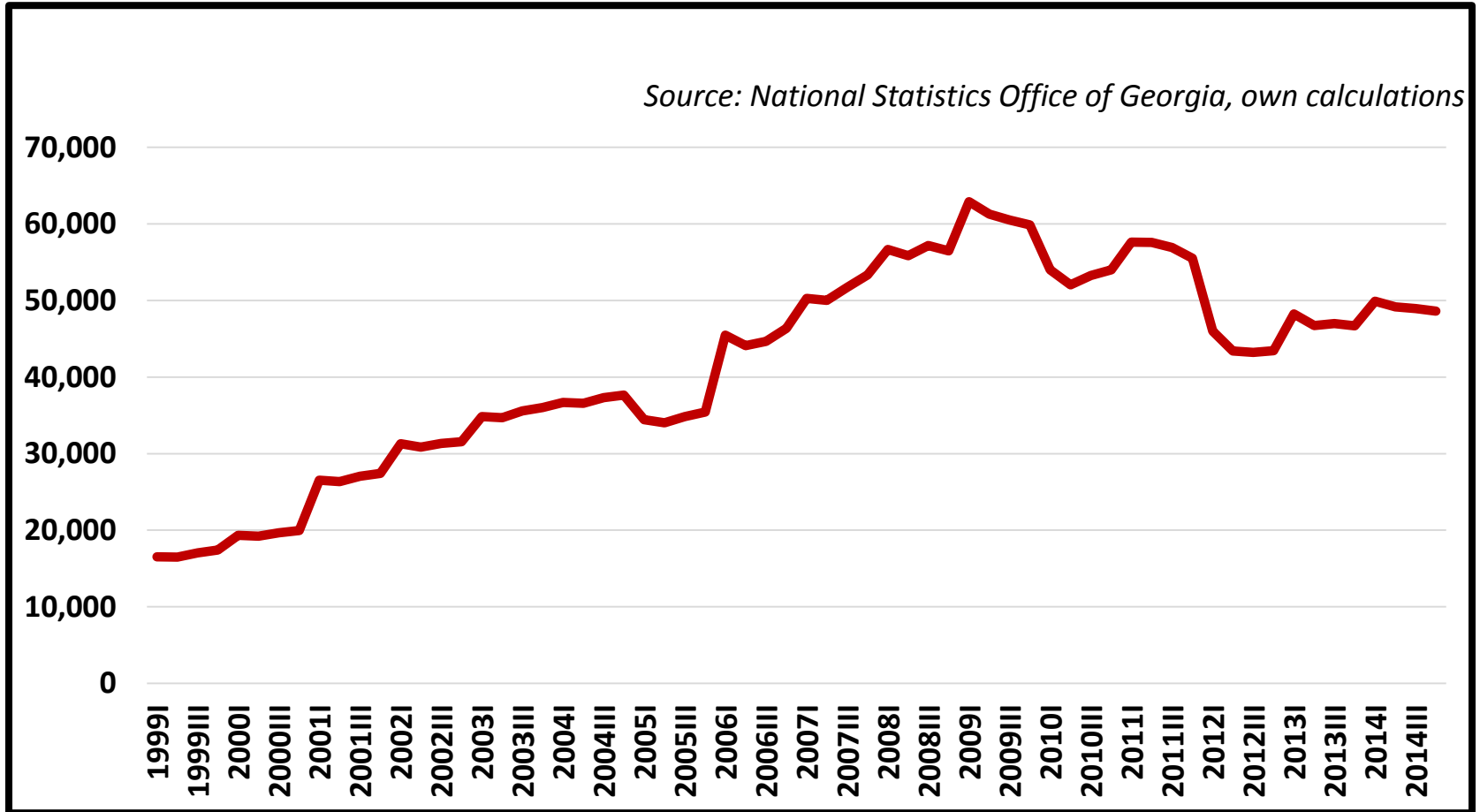
Neoclassical Theory

Increase in capital stock - K

Increase in population - L
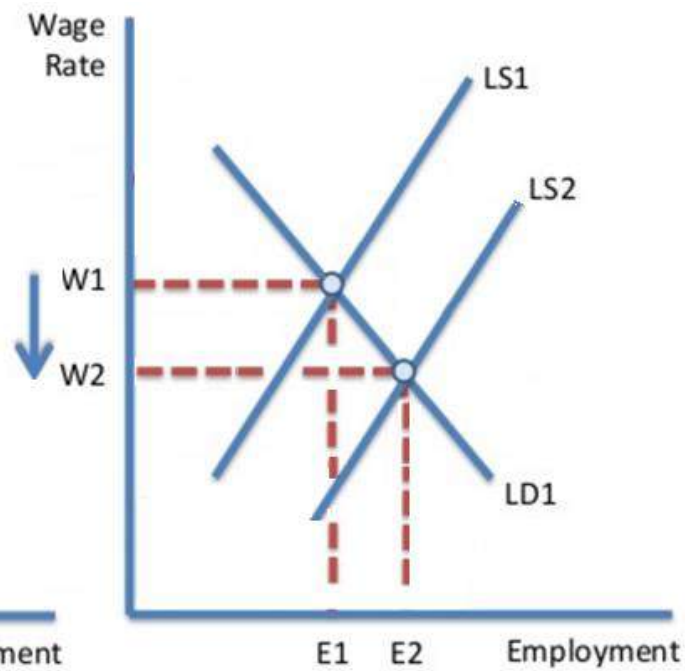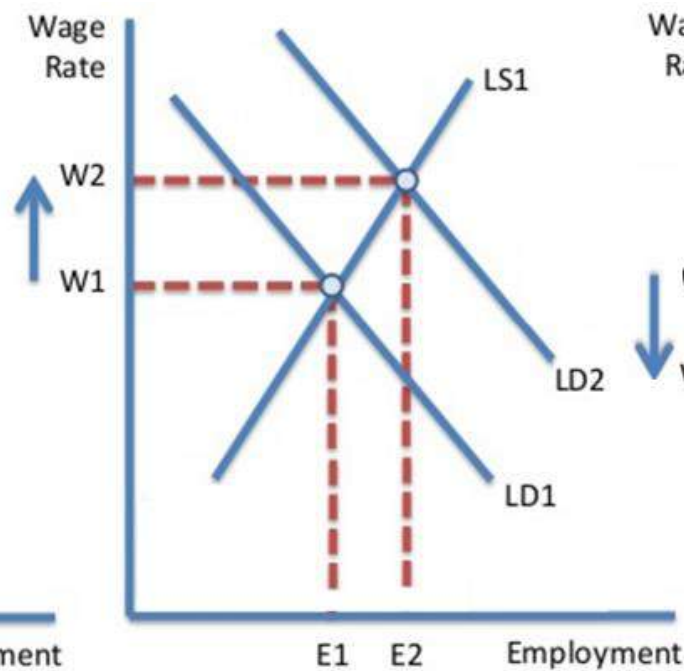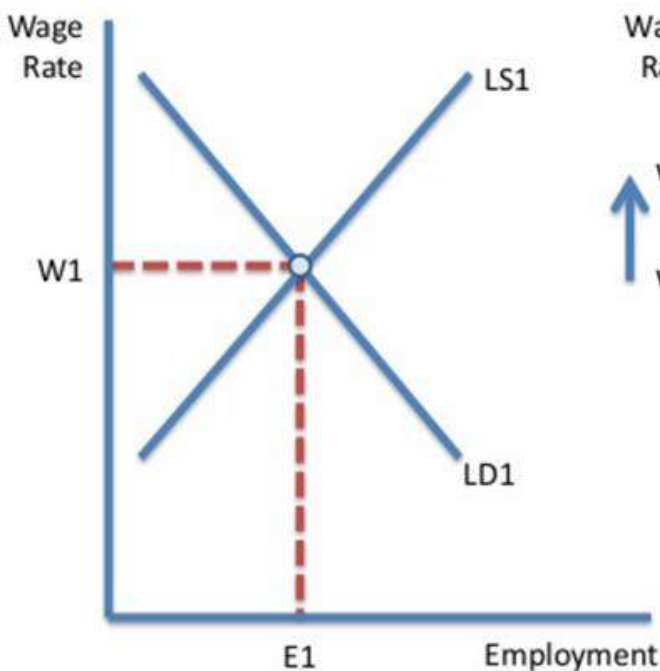
Cointegration Tests 1999Q1 – 2014Q4

	Elasticity					
	wage	Capital	Labor force	R^2	ADF_1	ADF*
Demand	-1.24	2.02		0.9997	-2.86	-3.1
Supply	0.19		1.56	0.9999	-1.97	-3.1
Employment		0.27	1.35	0.9999	-1.91	-3.1
wage		1.41	-1.09	0.9997	-3.36	-3.1

Model Implications

- Rapid real wage growth driven by capital accumulation

- And aided by negative demographics

- Slower (5%) wage growth after 2008 because capital-labor ratio stabilizes

- And higher (17%) unemployment in 2008 – 2013

- Slower wage growth stimulates business employment

- Unemployment rate reverts to "natural" rate of 12%

Provisional Conclusions

- High but declining intra-annual income mobility
- "Permanent" Gini much smaller than standard Gini, and declining since 2009
- Regional inequality stable and spatially uncorrelated
- Wage premia on professional and higher education suggest no serious skill mismatch
- Gender gap decreasing
- Spontaneous job creation thru market forces

Work to be done

- Smallholders: rural-urban migration
- Regional & rural-urban cost-of living differentials
- Spatial equilibrium
- Capital investment