



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

International conference “Industrial organization and spatial economics”

Migration and Regional Convergence in Russia

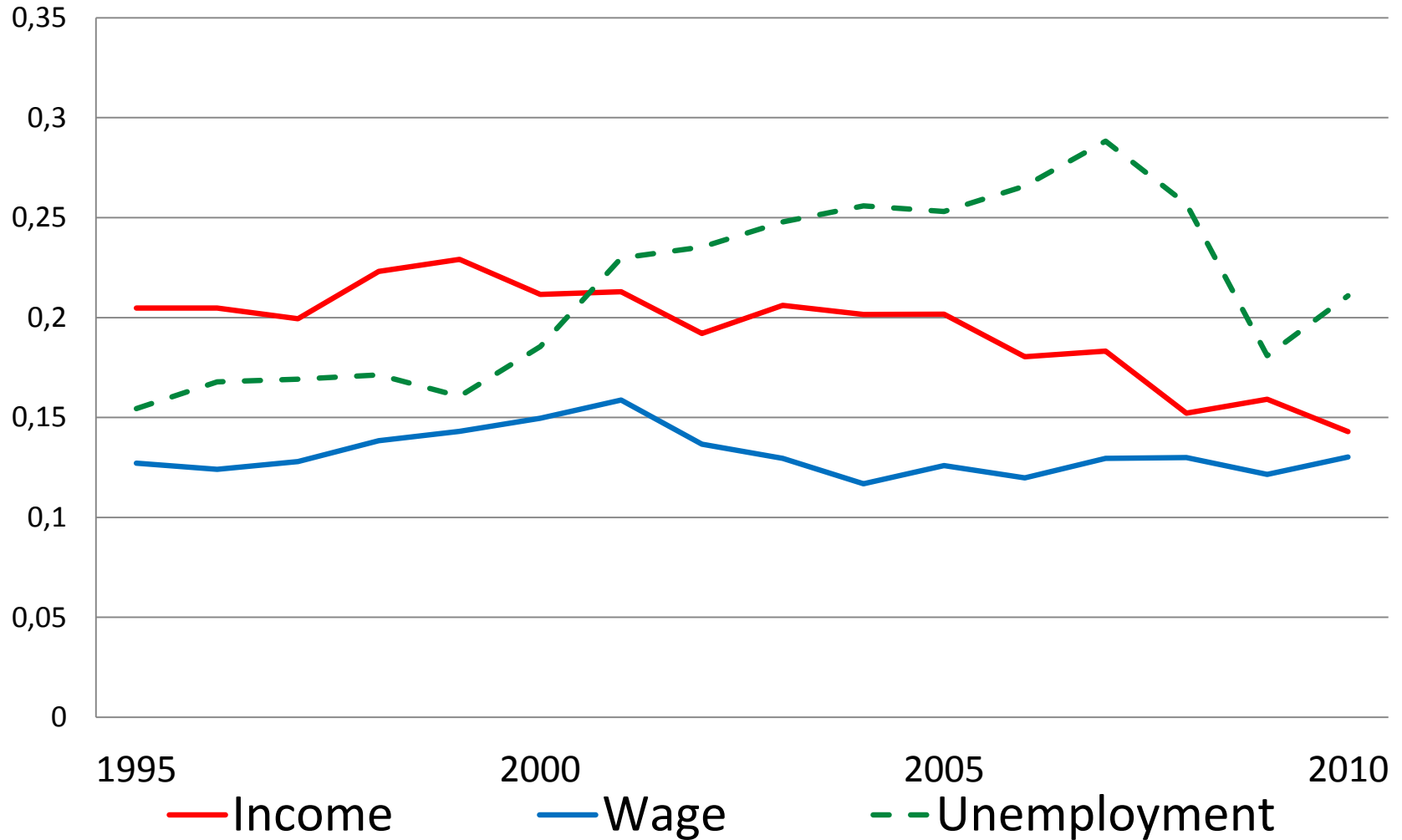
Elena Vakulenko

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Outline

- Motivation
- Migration dynamics
- Theoretical concepts
- Literature review (theoretical and empirical papers)
- Different explanation (convergence and migration)
- Econometric model
- Results

Gini coefficient



Guriev, Vakulenko (2012)

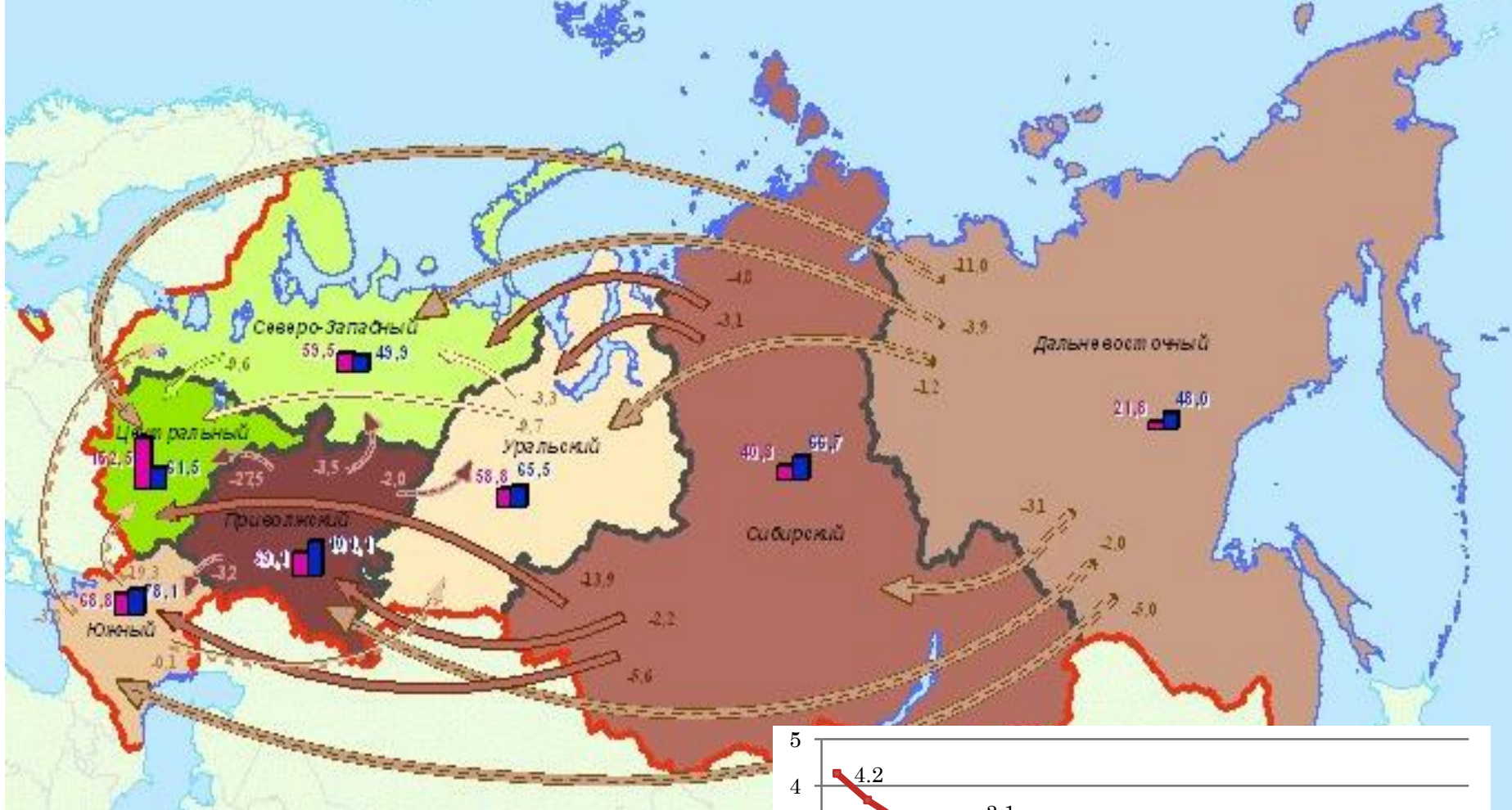
Research question

- Convergence started to happen in the second half of 2000s
 - Especially in incomes, wages, unemployment rates

Reasons:

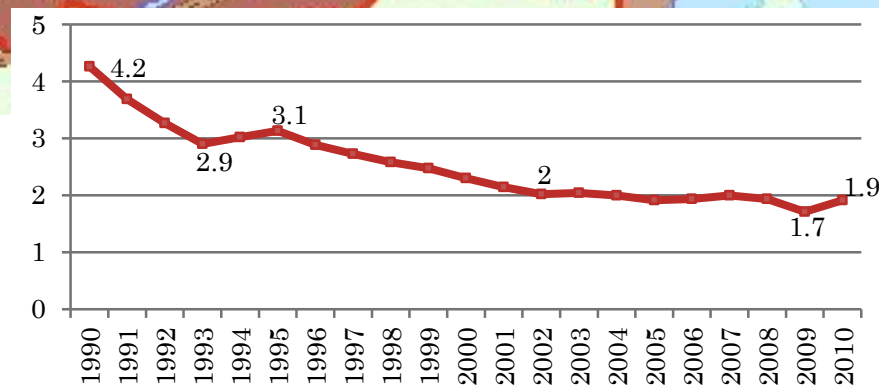
- Fiscal redistributions
- Migration (labor mobility)
- Financial development (capital mobility)

Does migration affect convergence?



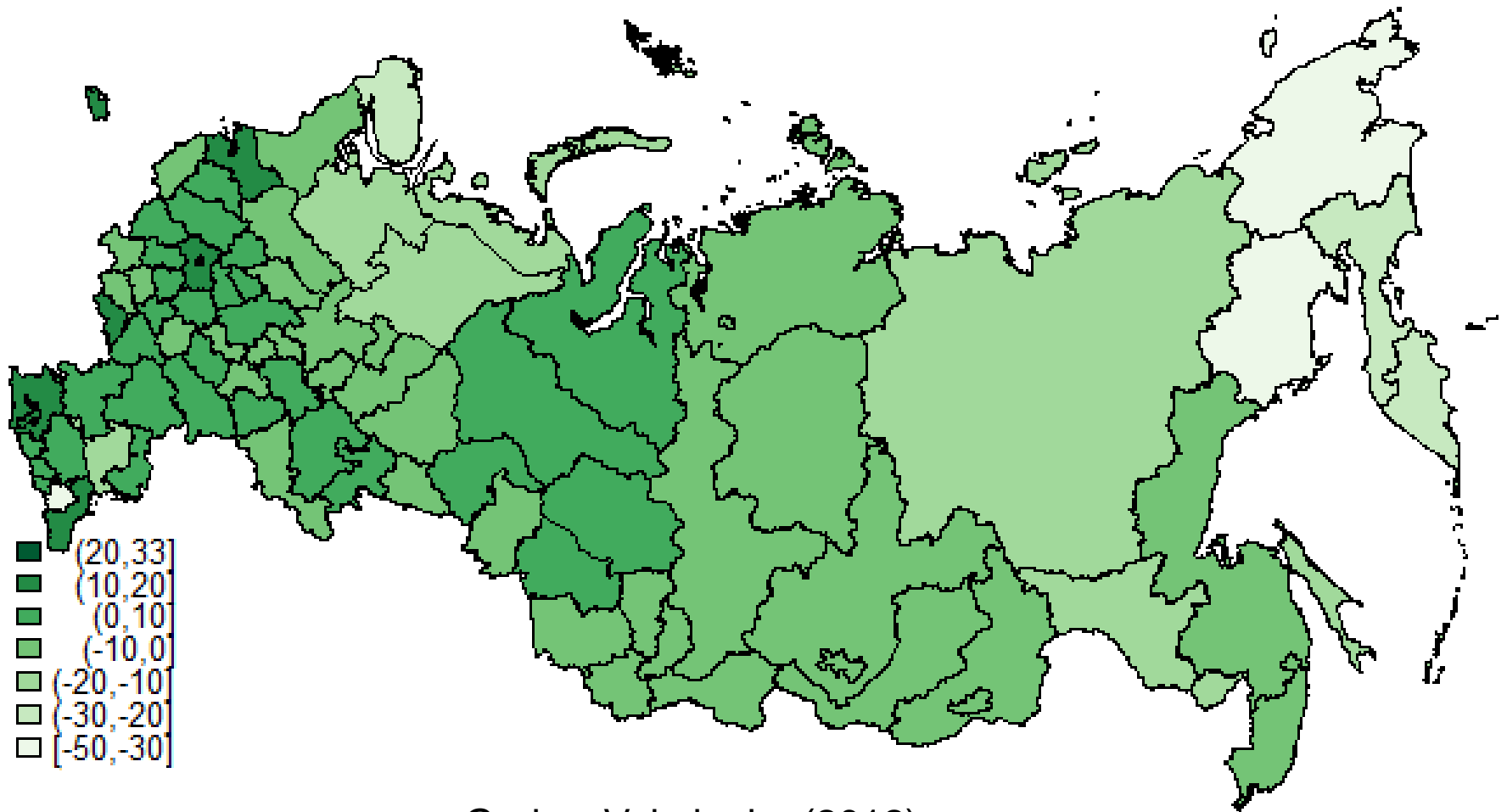
Map of basic migration flows in Russia in 2008

Source: Rosstat.



Internal migration in Russia, 1989-2010 million

Net migration for the period of 1995-2010, % of 1995 population











Guriev, Vakulenko (2012)

Migration determinants

- Poverty traps in 90th years (Andrienko, Guriev, 2004)
- There is no poverty traps from 2005 (Guriev, Vakulenko, 2012)
- Migrants move from region with low wage and higher unemployment to region with high wage and low unemployment

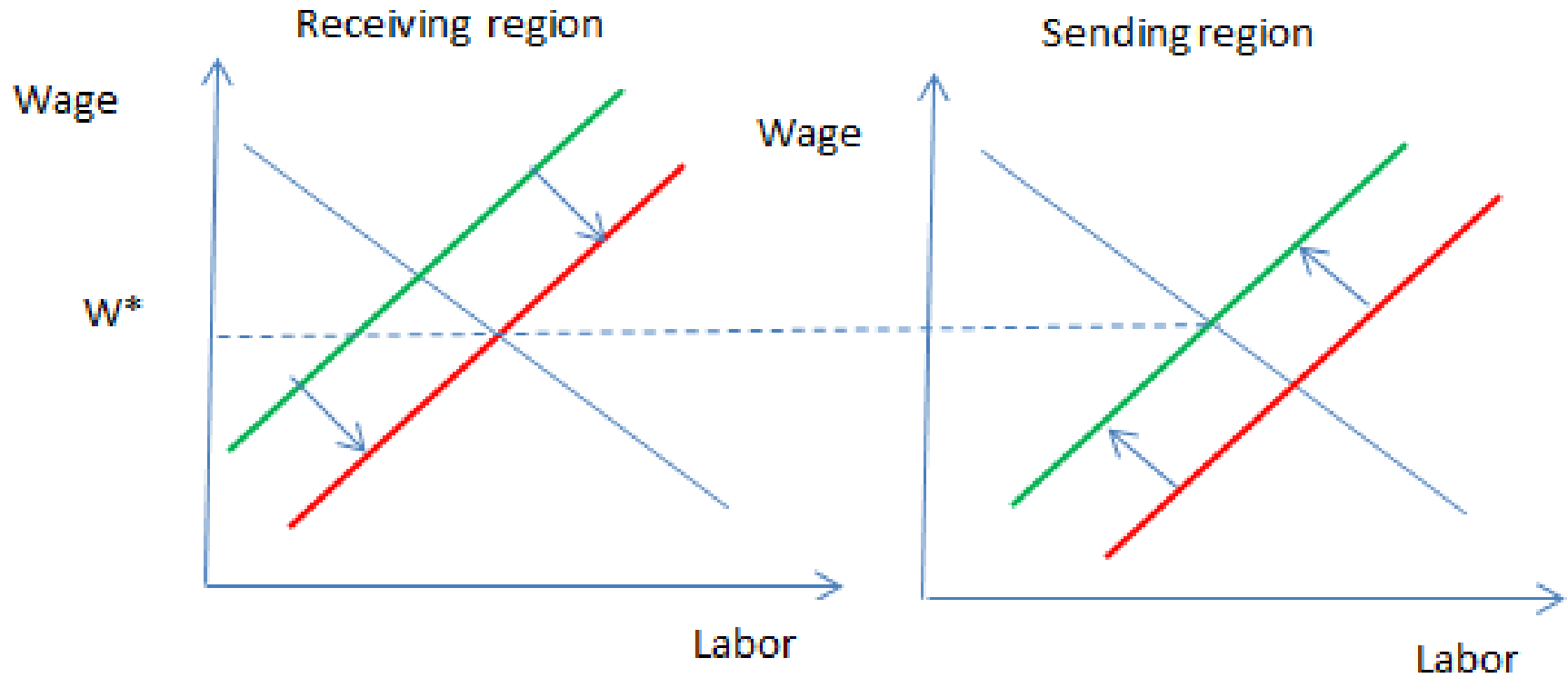
Two different concepts of migration and convergence

Labor supply side	Labor demand side
Labor supply 	Demand for goods and services in receiving region 
Wage in receiving region 	Labor demand 
Wage in sending region 	Wage in receiving region 
Regional disparities 	Regional disparities 

**Neoclassical
theory**

**New Economic
Geography model**

Labor supply side



Neoclassical Theory

- Migration speeds up the convergence process
 - Migrants move from region with low wage and higher unemployment to region with high wage and low unemployment
 - Diminishing return to capital => regions with low capital intensity will grow faster than regions with high intensity
 - Migration increase the capital intensity in regions with net out-migration and decrease it in regions with net in-migration.
- However, migration (?) convergence if labor flow is heterogeneous!

Theoretical works: convergence and migration

- Faini (1996, 2000)
- Borjas (1999, 2009)
- Gillen, Guccione (2000)
- Rappaport (2005)
- Larramona, Sanso (2006)
- Fratesi, Riggi (2007)
- Lucas (2008)
- Nakamura (2008)
- Dustmann, Preston (2011)
- Bröcker (2012) , etc.

Empirical results (+)

Authors	Country/Period	Effect (convergence)	Indicator
Kırdar, Saraçoğlu (2008)	Turkey (1975-2000)	Strong +	Income
Raymond, García (1996)	Spain (60s-80s)	+	Income
Maza (2006)	Spain (1995-2002)	+	GDP per capita
Hierro, Maza (2010)	Spain (1996–2005)	Weak +	Income
Niebuhr et al. (2011)	Germany (1995-2005)	+	Unemployment rate
Persson J. (1994)	Sweden (1906-1990)	+	Income per capita
Cashin P., Sahay R. (1996)	India (1961-1991)	Weak +	Income per capita
Lugovoy et al. (2006)	Russia (1998-2004)	+	GDP per capita
Østbye, Westerlund (2007)	Sweden (1980-2000)	+	GDP per capita
Nakamura R. (2008)	Japan (1955-2005)	+ 1970-75	GDP per capita

Empirical results (No)

Authors	Country/Period	Indicator
Gezici, Hewings (2004)	Turkey (1987-1997)	GDP per capita
Cardenas, Ponton (1995)	Colombia (1960-1989)	Income
Barro , Sala-i Martin (1992, 2004)	USA (1880-1982) Japan (1930-1987)	Income per capita
Soto, Torche (2004)	Chile (1975-2000)	Income Productivity level
ČADIL, KADEŘÁBKOVÁ (2006)	Czech Republic (1995- 2004)	GDP per capita Nominal wage
Rattsø J. and Stokke H. (2010)	Norway (1972-2003)	Income per capita
Toya H., Hosono K., Makino T. (2004)	Philippines (1980- 2000)	GDP per capita
Wolszczak-Derlacz J. (2009)	EU(27) (1990-2007)	GDP per capita
Niebuhr et al. (2011)	Germany (1995-2005)	Wage

Empirical results (-)

Authors	Country/Period	Effect (convergence)	Indicator
Østbye, Westerlund (2007)	Norway (1980-2000)	-	GDP per capita
Araghi M.K., Rahmani T. (2001)	Iran (2000-2006)	-	GDP per capita
Nakamura R. (2008)	Japan (1955-2005)	-divergence	GDP per capita
Phan, Coxhead (2010)	Vietnam (1999-2002)	+ and -	Income per capita
Wolszczak-Derlacz J.	Poland (1995-2006)	No (internal) -(international outflow)	GDP per capita
Capasso S., Carillo M.R., De Siano R. (2011)	Italy (1964-2002)	+ (high skill) - (low skill)	GDP per capita
Peeters (2008)	Belgium (1991-2000)	- (selective migration)	Income per capita
Etzo (2008)	Italy (1983-2002)	- Different effects of skilled and unskilled	GDP per capita
Huber P., Tondl G. (2012)	EU(27) (2000-2007)	No (Unemployment) - GDP per capita - productivity	Unemployment GDP per capita Productivity

Why do migration can affect convergence?

- Effective redistribution of labor force
- High skill-selective migration flows (sharing of ideas, technology transfer).
- Savings of return migration.
- Changes in income distribution (poor or rich migrants, demographic indicators) affect average income in region.

Why do migration can affect divergence?

- Selection migration (high skill migrants move from low production regions). Productivity divergence vs. wage convergence. Composition effect (heterogeneous population) (Shioji, 2001)
- Savings and investments of migrants in a destination region.
- Increasing return on capital in a destination region and disincentive for gross capital investment in origin region.
- Wage of native population and migrants.
- Transfer payments that may go to low-wage, high-unemployment areas can reduce the efficient of outmigration.

Empirical investigations

Conditional beta-convergence

- Barro, Sala-I-Martin (1991, 1992, 1996)

$$(1/T)\log(y_{it}/y_{i,t-T}) = \alpha + [\log(y_{i,t-T})] \left[(1 - e^{-\beta T})/T \right] + \text{other variables} + u_{it}$$



$$\log y_i^t - \log y_i^{t-1} = \alpha \log y_i^{t-1} + \delta Z_i^t + \gamma M_i^t + \lambda_t + \mu_i + \varepsilon_i^t$$



- Østbye, Westerlund (2007)

$$\log y_i^t - \log y_i^{t-1} = \alpha \log y_i^{t-1} + \delta Z_i^t + \gamma_1 MO_i^t + \gamma_2 MI_i^t + \lambda_t + \mu_i + \varepsilon_i^t$$

Z – control variables, M – net migration flow, MO – migration outflow, MI – migration inflow

Econometric model

$$\ln\left(\frac{y_{i,t}}{y_{i,t-1}}\right) = \alpha_i + \delta_t - \beta \ln(y_{i,t-1}) + \gamma \text{Migration}_{i,t-1} + \sum_{j=1}^J \theta_j X_{j,i,t} + \varepsilon_{1,i,t}$$



$$\ln(y_{i,t}) = \alpha_i + \delta_t + (1 - \beta) \ln(y_{i,t-1}) + \gamma \text{Migration}_{i,t-1} + \sum_{j=1}^J \theta_j X_{j,i,t} + \varepsilon_{1,i,t}$$



$$\ln(y_{i,t}) = \alpha_i + \delta_t + (1 - \beta) \ln(y_{i,t-1}) + \rho \sum_{j=1}^{78} \omega_{i,j} \ln(y_{j,t}) + \gamma \text{Migration}_{i,t-1} + \sum_{j=1}^J \theta_j X_{j,i,t} + \varepsilon_{1,i,t}$$

Control variables X

$$y_{i,t} = \begin{cases} \textit{Unemployment rate}_{i,t} \\ \textit{Wage}_{i,t} \\ \textit{Income}_{i,t} \end{cases}$$

- Demographic structure, population growth, infant mortality rate, number of students, sector structure of the economy;

- Transfers, investment per capita.

Estimation comments

- System GMM (Blundell, Bond, 1998)
- Sargan test (test of overidentifying restrictions)
- Arellano-Bond test for first and second-order autocorrelation in the first differenced residuals
- System GMM is suitable for spatial lag variable (Kukenova, Monteiro, 2008)

Migration

- Net migration rate
- In-migration and out-migration
- External and internal (interregional) migration

1995-2010 wage

VARIABLES	(1) Asymmetric influence	(2) Net migration	(3) Net overall migration	(4) Without migration
Wage (t-1)	0.727*** (0.070)	0.727*** (0.066)	0.736*** (0.068)	0.392*** (0.063)
Out-migration (t-1)	0.013** (0.005)			
In-migration (t-1)	-0.010* (0.005)			
Net external migration rate (t-1)	0.004 (0.003)	0.004 (0.003)		
Net internal migration rate (t-1)		-0.013*** (0.004)		
Net migration rate (t-1)			-0.003*** (0.001)	
Observations	1,001	1,001	1,001	1,155
Number of i	77	77	77	77

+ time dummies, control variables. Robust standard errors in parenthesis.

2000-2005 wage

VARIABLES	(1) Asymmetric influence	(2) Net migration	(3) Net overall migration	(4) Without migration
Wage (t-1)	0.593*** (0.098)	0.562*** (0.092)	0.572*** (0.096)	0.582*** (0.095)
Out-migration (t-1)	0.005 (0.006)			
In-migration (t-1)	-0.019** (0.009)			
Net external migration rate (t-1)	-0.001 (0.005)	-0.001 (0.005)		
Net internal migration rate (t-1)		-0.009* (0.006)		
Net migration rate (t-1)			-0.005** (0.002)	
Observations	462	462	462	462
Number of i	77	77	77	77

+ time dummies, control variables. Robust standard errors in parenthesis.

2005-2010 wage

VARIABLES	(1) Asymmetric influence	(2) Net migration	(3) Net overall migration	(4) Without migration
Wage (t-1)	0.582*** (0.171)	0.635*** (0.166)	0.631*** (0.165)	0.620*** (0.156)
Out-migration (t-1)	0.005** (0.003)			
In-migration (t-1)	-0.002 (0.004)			
Net internal migration rate (t-1)		-0.004** (0.002)		
Net migration rate (t-1)			-0.002** (0.001)	
Observations	468	468	468	468
Number of i	78	78	78	78

+ time dummies, control variables, sector structure of the economy. Robust standard errors in parenthesis.

1995-2010 unemployment

VARIABLES	(1) Asymmetric influence	(2) Net migration	(3) Net overall migration	(4) Without migration
Unemployment (t-1)	0.310*** (0.057)	0.312*** (0.060)	0.317*** (0.060)	0.394*** (0.054)
W*unemployment	3.431*** (1.116)	3.583*** (1.182)	3.411*** (1.082)	3.896*** (1.453)
Out-migration (t-1)	0.001 (0.019)			
In-migration (t-1)	-0.004 (0.020)			
Net external migration rate (t-1)	-0.008 (0.014)	-0.006 (0.016)		
Net internal migration rate (t-1)		-0.009 (0.021)		
Net migration rate (t-1)			-0.007* (0.004)	
Observations	1,001	1,001	1,001	1,155
Number of i	77	77	77	77

+ time dummies, control variables. Robust standard errors in parenthesis.

2000-2005 unemployment

VARIABLES	(1) Asymmetric influence	(3) Net migration	(4) Net overall migration	(5) Without migration
Unemployment (t-1)	0.269*** (0.100)	0.305*** (0.106)	0.304*** (0.106)	0.334*** (0.099)
W*unemployment	2.205 (1.476)	1.657 (1.413)	1.612 (1.392)	0.971 (1.388)
Out-migration (t-1)	0.020 (0.027)			
In-migration (t-1)	-0.002 (0.033)			
Net external migration rate (t-1)	-0.011 (0.022)	-0.017 (0.017)		
Net internal migration rate (t-1)		-0.002 (0.022)		
Net migration rate (t-1)			-0.011** (0.005)	
Observations	462	462	462	462
Number of i	77	77	77	77

2005-2010 unemployment

VARIABLES	(1) Asymmetric influence	(2) Net migration	(3) Net overall migration	(4) Without migration
Unemployment (t-1)	0.306*** (0.107)	0.317*** (0.109)	0.320*** (0.109)	0.321*** (0.112)
W*unemployment	4.370* (2.518)	4.567* (2.490)	4.698* (2.555)	4.443* (2.290)
Out-migration (t-1)	-0.003 (0.015)			
In-migration (t-1)	-0.022 (0.033)			
Net internal migration rate (t-1)		-0.006 (0.013)		
Net migration rate (t-1)			-0.004 (0.007)	
Observations	468	468	468	468
Number of i	78	78	78	78

2000-2010 income

VARIABLES	(1) Asymmetric influence	(3) Net migration	(4) Net overall migration	(5) Without migration
Income (t-1)	0.781*** (0.089)	0.759*** (0.086)	0.763*** (0.085)	0.764*** (0.087)
Out-migration (t-1)	0.009* (0.006)			
In-migration (t-1)	-0.004 (0.008)			
Net external migration rate (t-1)	-0.001 (0.005)	-0.001 (0.005)		
Net internal migration rate (t-1)		-0.008 (0.006)		
Net migration rate (t-1)			-0.004*** (0.001)	
Observations	695	695	695	695
Number of i	73	73	73	73

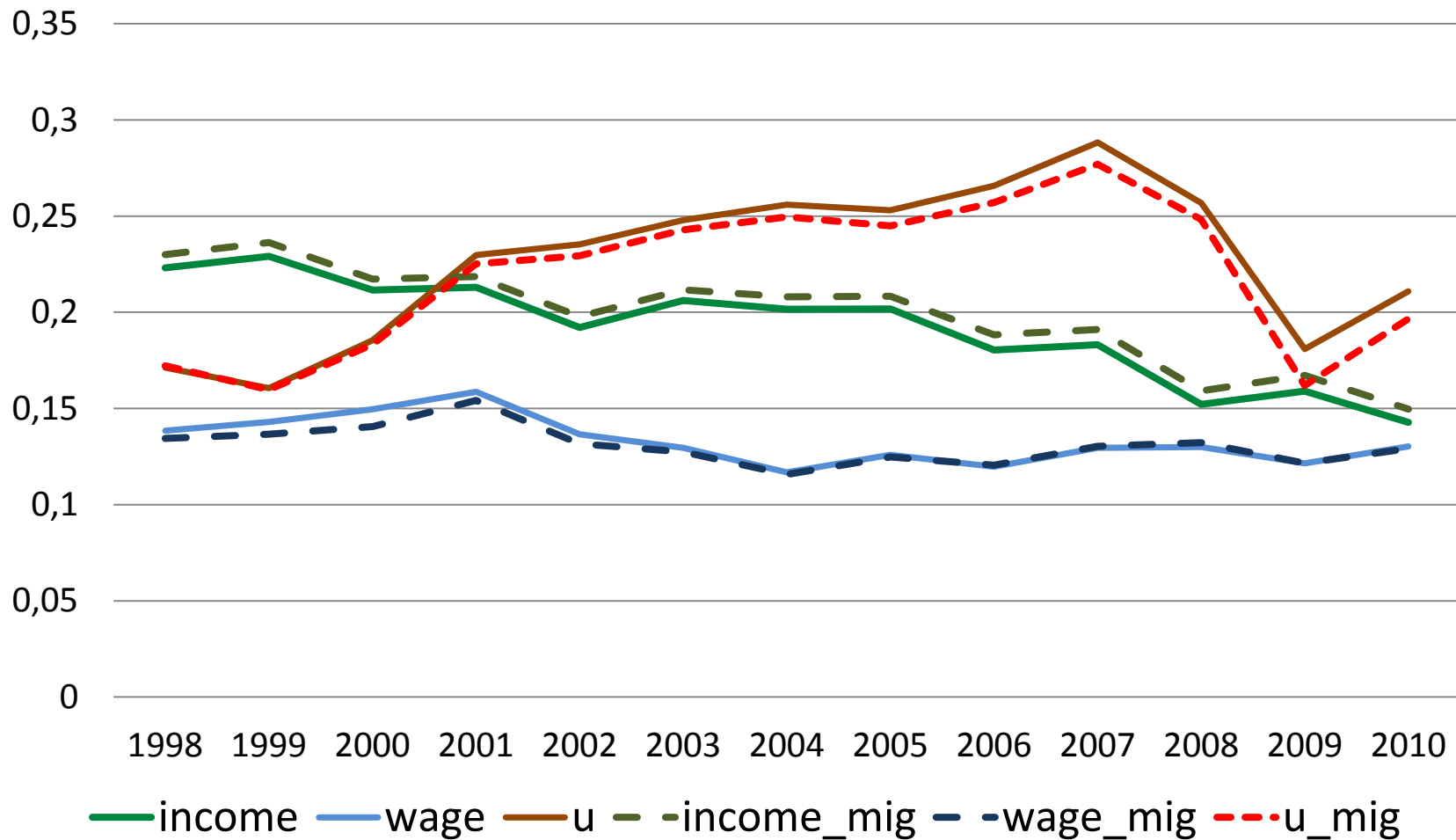
+ time dummies, control variables, sector structure of the economy. Robust standard errors in parenthesis.

2005-2010 income

VARIABLES	(1) Asymmetric influence	(2) Net migration	(3) Net overall migration	(4) Without migration
Income (t-1)	0.658*** (0.190)	0.645*** (0.176)	0.643*** (0.177)	0.694*** (0.171)
Out-migration (t-1)	0.008* (0.005)			
In-migration (t-1)	-0.007 (0.009)			
Net internal migration rate (t-1)		-0.008** (0.004)		
Net migration rate (t-1)			-0.004** (0.002)	
Observations	389	389	389	389
Number of i	71	71	71	71

+ time dummies, control variables, sector structure of economy. Robust standard errors in parenthesis.

Gini decomposition



Results

- Results are consistent with neoclassical theory
- Asymmetric effect of gross migration for wage
- No effect of migration for unemployment
- Out-migration significant for income
- Spatial dependence (spillover effects among neighboring labor markets) for unemployment
- No significant effect of migration on regional disparities (Gini coefficient)

Thank you for your attention!

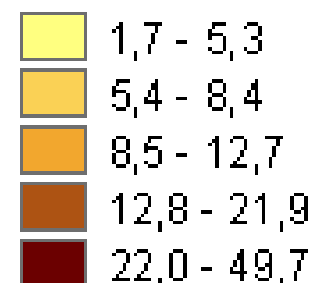
evakulenko@hse.ru

Problems

- Endogeneity problem
- Registered migration flows
- Skilled and unskilled migrants

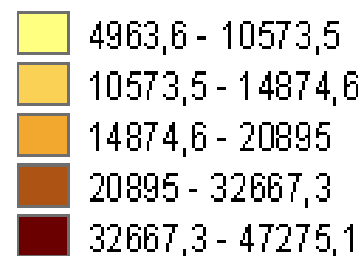


Map of unemployment rate (%) in Russia in 2010





Map of income per capita in Russia in June 2009



Empirical investigations (2)

- Sigma – convergence
- Analysis of GINI, Theil indexes
- Phan, Coxhead (2010)

$$\Delta I_{ij} = \frac{Y_{02}^i}{Y_{02}^j} - \frac{Y_{99}^i}{Y_{99}^j} = \rho_0 + \rho_1 \left(\frac{g_{99-02}^i}{g_{99-02}^j} \right) + \rho_2 mig_{ij}^{94-99} + \varepsilon$$

i – sending region, j – receiving region;

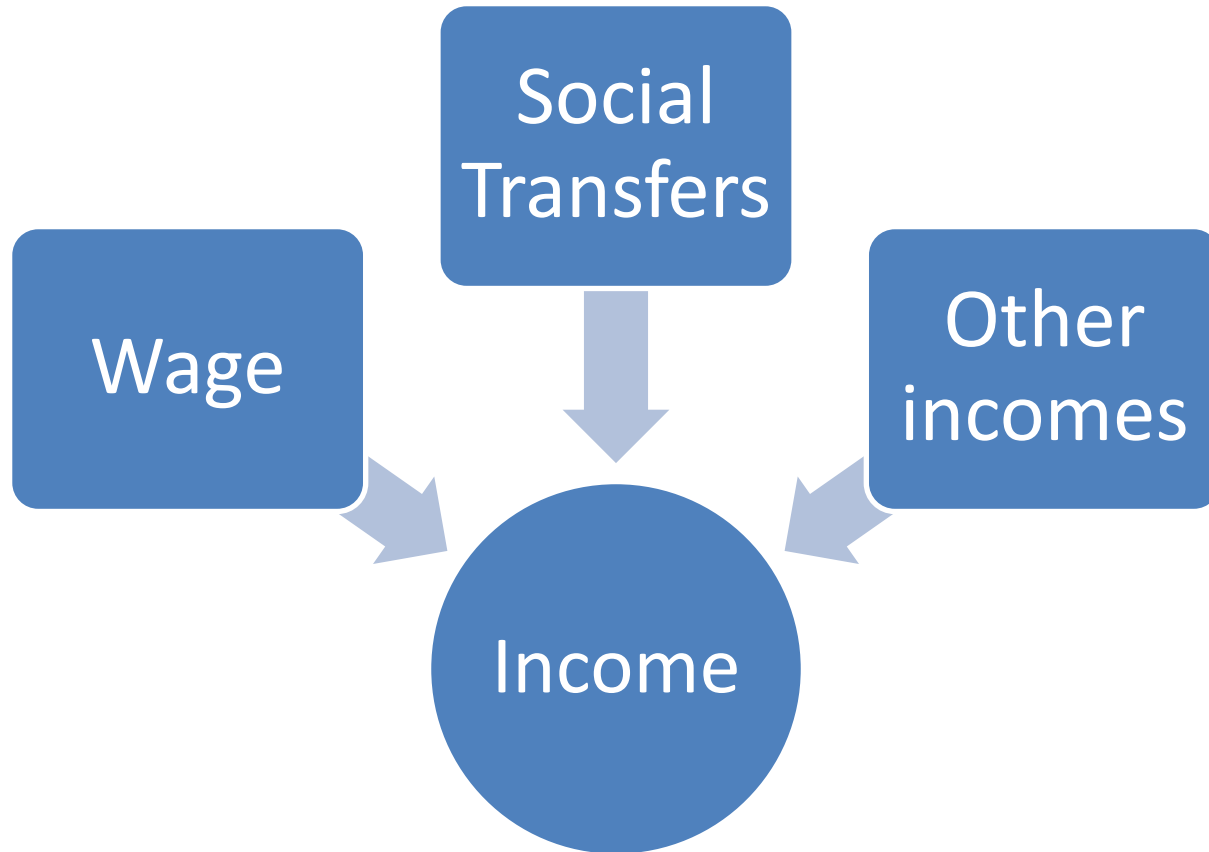
Y_{02} - income per capita in 2002;

Y_{99} - income per capita in 1999;

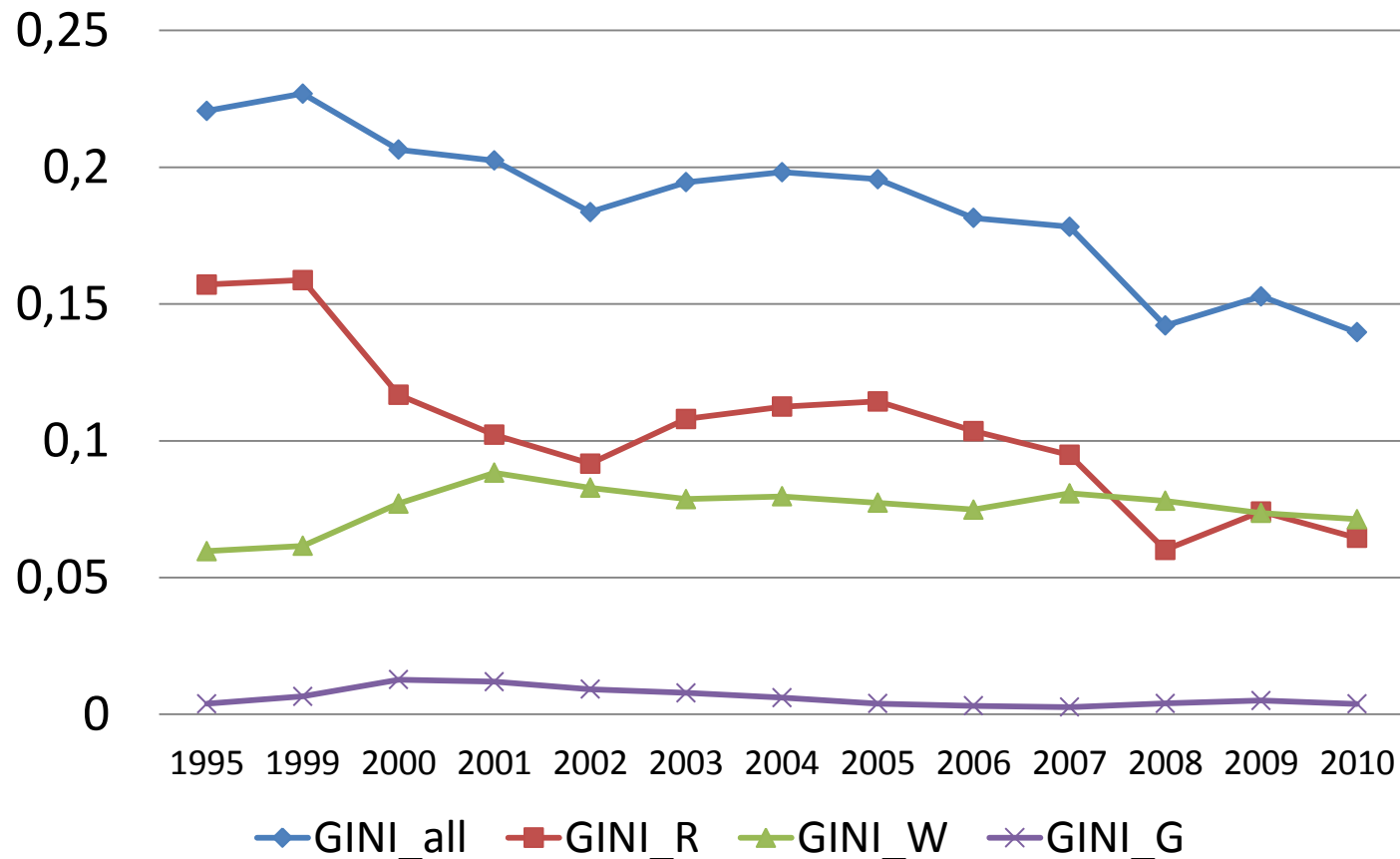
g - GDP growth;

mig - migration rate.

Income structure



Gini coefficient decomposition (Shorrocks (1983))



R – other incomes, W – wage, G – social transfers