Deindustrialization and Polarization of Household Incomes: Urban Agglomerations in Germany

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Introduction

- Overall question:
    - Has deindustrialization and structural change increased wage differentiation (hallowing out middle of wage distribution?);
    - Has income polarization been stronger in metro areas?
    - How does it differ between East and West?

- Actual Analysis:
    - Calculation of two polarization measures for metro and non-metro areas using equivalized household gross incomes;
    - Regression to study determinants of polarization;

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Some details

- 2 data sets: GSOEP and microm (marketing) data;

- Divide country in metro – non-metro

- Divide households in 3 variable-band groups: poor, middle, rich;

- Two polarization measures:
  – Reynal-Qerol (only considers shifts among groups);
  – Esteban Ray (also considers income distance among groups):

$$PRQ(y) = 1 - \sum \left(\frac{0.5 - \pi_i}{0.5} \right)^2 \pi_i$$

- Regression with Polarization measures for 90 planning regions;

$$ER(\pi, y) = \sum_{i=1}^{n} \sum_{i=1}^{n} \pi_i^{1+\alpha} \pi \, | \, y_i - y_j \, |$$

Map 1: Urban Agglomerations in Germany 2011

Western German Urban Agglomerations
Eastern German Urban Agglomerations

Figure 3: Change of Shares of Population in Income Groups in Urban Agglomerations, 1995 to 2011, 2000=100

Agglomerations

Low income

High income

Middle income

Remaining Regions

High income

Low income

Middle income

Figure 4: Change of Mean Income of Income Groups in Urban Agglomerations 1995 to 2011, 2000=100

Figure 5: Polarization Indices in Urban Agglomerations and Rural Areas and Western and Eastern German Urban Agglomerations 1995 to 2011: according to the Esteban-Ray (left axis) and Reynal-Querol (right axis) indices

Table: Panel Regression on Polarization Indices by German planning regions

	Reynal-Querol index		Esteban/Ray index		Esteban/Ray index var[1]	
	Coefficient	t-Value	Coefficient	t-Value	Coefficient	t-Value
Agglomeration	0.019*	2.43	0.008**	3.26	0.007**	2.84
East Germany	0.014	1.32	-0.011***	-4.42	-0.013***	-5.51
Business services[2]	-0.244	-1.12	-0.037	-0.92	-0.040	-0.98
Manufacturing[2]	-0.191	-1.00	-0.066°	-1.84	-0.072*	-2.27
Growth of GDP	-0.072	-0.88	-0.005	-0.26	-0.002	-0.11
Time						
1997	0.009	1.66	0.000	0.28	0.000	0.52
1998	0.013	1.41	0.000	0.02	0.000	0.14
1999	0.020°	1.80	0.001	0.64	0.002	1.10
2000	0.024°	1.89	0.003	1.12	0.003°	1.76
2001	0.027*	2.10	0.004	1.58	0.005*	2.52
2002	0.035**	2.81	0.006*	2.31	0.007***	3.71
2003	0.043***	3.80	0.007**	2.92	0.009***	4.42
2004	0.045***	3.90	0.008**	3.36	0.010***	4.55
2005	0.055***	4.73	0.012***	5.13	0.012***	5.89
2006	0.062***	4.73	0.014***	5.52	0.014***	6.32
2007	0.065***	4.36	0.014***	5.00	0.015***	6.13
2008	0.055***	3.80	0.011***	3.46	0.011***	4.73
2009	0.067***	5.23	0.012***	4.52	0.012***	5.48
2010	0.070***	4.80	0.013***	4.81	0.014***	5.82
R squared	0.13		0.23		0.28	
Observations	1275		1275		1275	

1) Variable income boundaries; 2) Changes in the shares of business services and manufacturing industries

°p<0.1, *p<0.05, **p<0.01, ***p<0.001

Issues

- Clearly two important topics (deindustrialization and polarization);

- Why gross incomes, and not wages or earnings (in line with literature)? Results affected by unearned incomes, transfers, household formation patterns, etc...

- Rising polarization driven by growing gaps between metro areas (e.g. Munich vs. Saarland?)?

- Regressions conditional correlations, weak effects of structural change, interact metro with time?;

- Microm data not really comparable (income cut-off different)

- Polarization at level of metro area a bad thing? Maybe it is healthy and wanted diversity?

5. Conclusions

- Important topic to study;

- Analysis does not quite live up yet to what is promised;

- Not ideal data (sample size too small, consider IAB data or Micro census?);