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Refining Smart Specialisation Strategies in Less Developed Regions: *Lessons from History*

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Rationale

- a significant number of studies revealed the ambiguous impact of regional specialisations on economic growth
- the urbanisation economies also failed to show an unequivocal and positive impact on economic development
- the key to understanding the impact of both specialisation and diversification of regional economies on economic growth turned out to be the combination of these two phenomena in the form of the related variety of industries
- **we still know little about the diversification mechanisms operating in less developed regions** and thus refining of smart specialisation strategies would be difficult

The aim of the paper

1. What is the role of historical related diversity in the creation of new industries today?
2. How far related variety in 2000 is determined by, the historically oldest to capture, related variety in 1931?
3. What are the capabilities of less developed regions to achieve structural changes?

The hypotheses

- *H.1. Diversification in less developed regions is less prolific and thus fewer new industries emerge, than in developed regions.*
- *H.1A.* ***Greater access to industry-specific knowledge pools*** *in less developed regions results in greater opportunities for* ***related diversification*** *than in less developed regions with poorer access to industry-specific knowledge pools.*
- *H.2. Diversification in less developed areas is based on related industries to a greater extent than in more developed areas, and thus unrelated diversification is significantly less frequent.*
- *H.2A.* ***Greater access to general knowledge pools*** *in less developed areas results in greater opportunities for* ***unrelated diversification*** *than in less developed regions with poorer access to knowledge pools.*
- *H.3. It is much more difficult for less developed regions to follow changing trends in the global economy than for more developed regions.*

Findings

Historical data analysed so far

Overview of Poland in 1931

Population density in 1931
[pers. per km^2]

- Mostly populated in the centre (Warsaw, Lodz) and south (Crakow, Lviv)

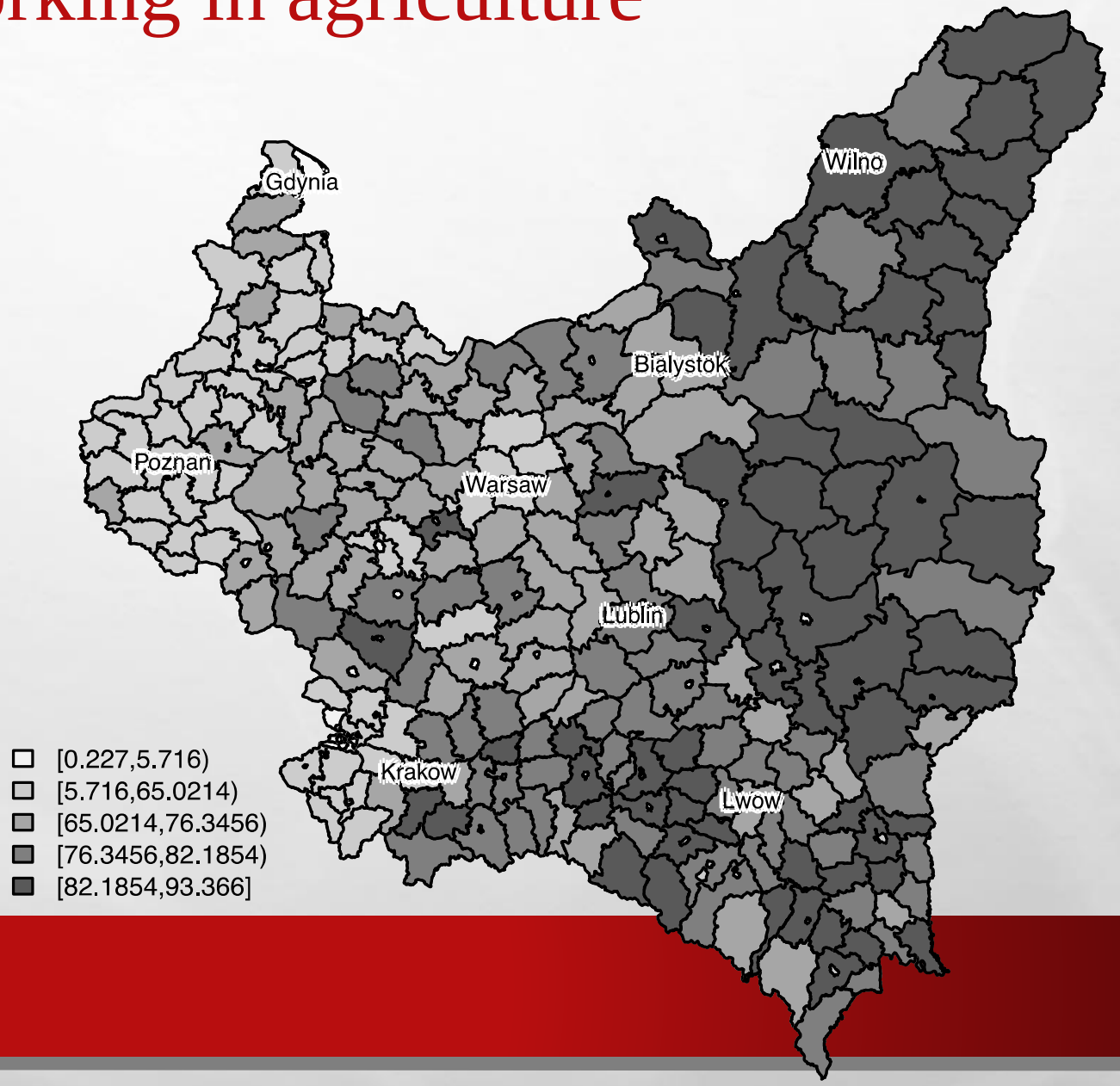
- The least populated area on east and north east

Population change between 1921 and 1931
[%]

- Even that we can see the greatest changes in the population on the east and northern east part of Poland
- Poznan neighbouring areas not changing or even depopulating a little bit
- So is Cracow and Rzeszow area

The share of people working in agriculture *[%]*

- **Eastern part** of Poland is not only weakly populated but also based on agriculture
- The **south** of Poland is the most populated area but at the same time based on agriculture
- **Western part** of Poland is both populated and based on non-agricultural industries



The share of people with literacy skills

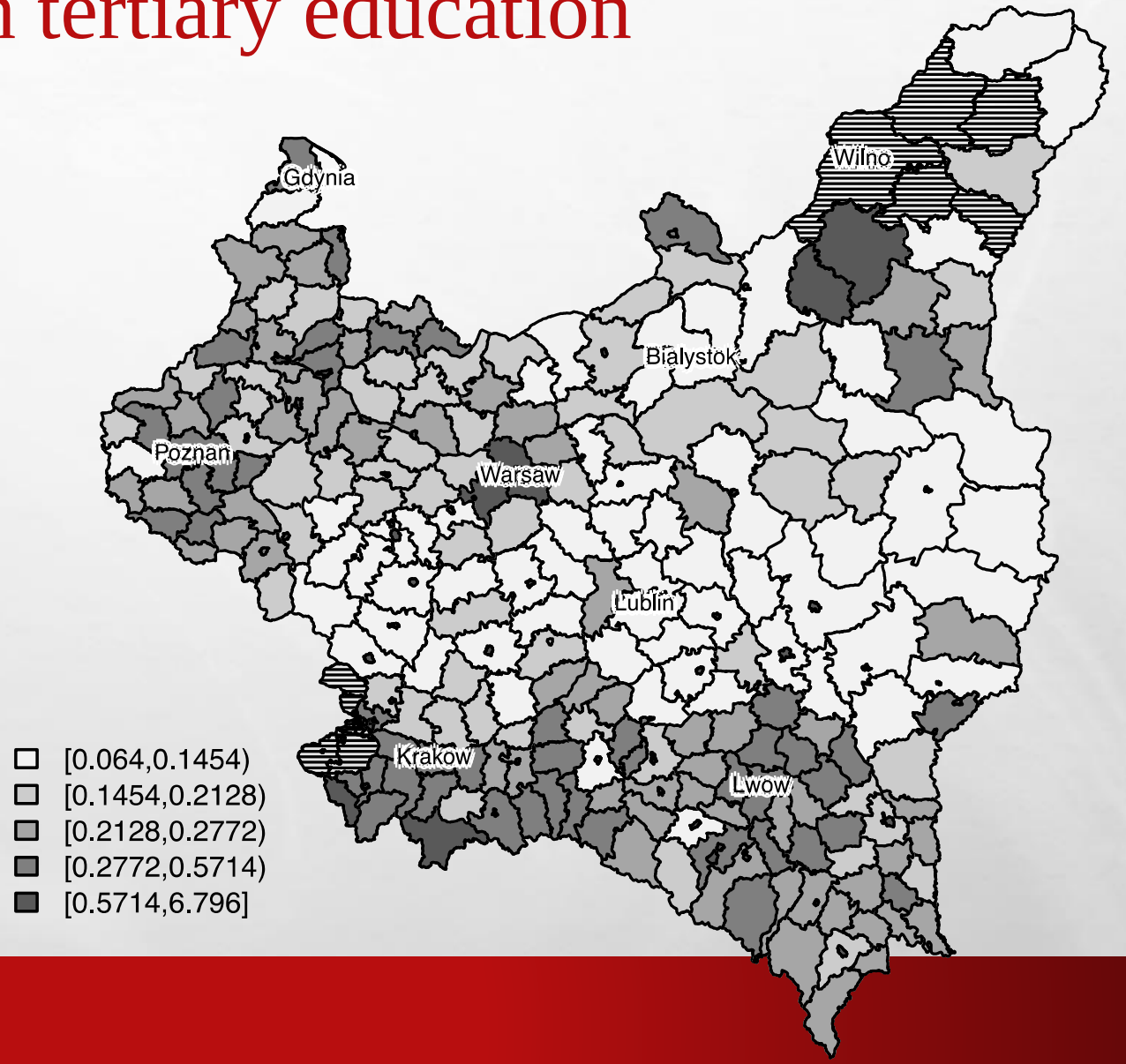
[%] (in reading and writing)

- People living in areas based on agriculture have the least literacy skills too
- Poznan, Gdynia and Silesia regions are the most primarily educated
- Central Poland is moderately educated

The share of people with tertiary education

[%] (data available only for 1921)

- Interestingly, Lvov region is dichotomous: one of the lowest share of literate people and one of the highest share of highly educated people
- Western and northern western areas plus central Poland highly educated
- People with tertiary education concentrated in cities and town over 20,000 citizens



The share of white collars in non-agricultural employment *[%]*

- Surprisingly, white collars are mostly present in areas with the highest share of agriculture in the economy…
- …probably because of the lowest share of manufacturing in which blue collars are essential
- However, western and northern part of Poland is also dense with white collars

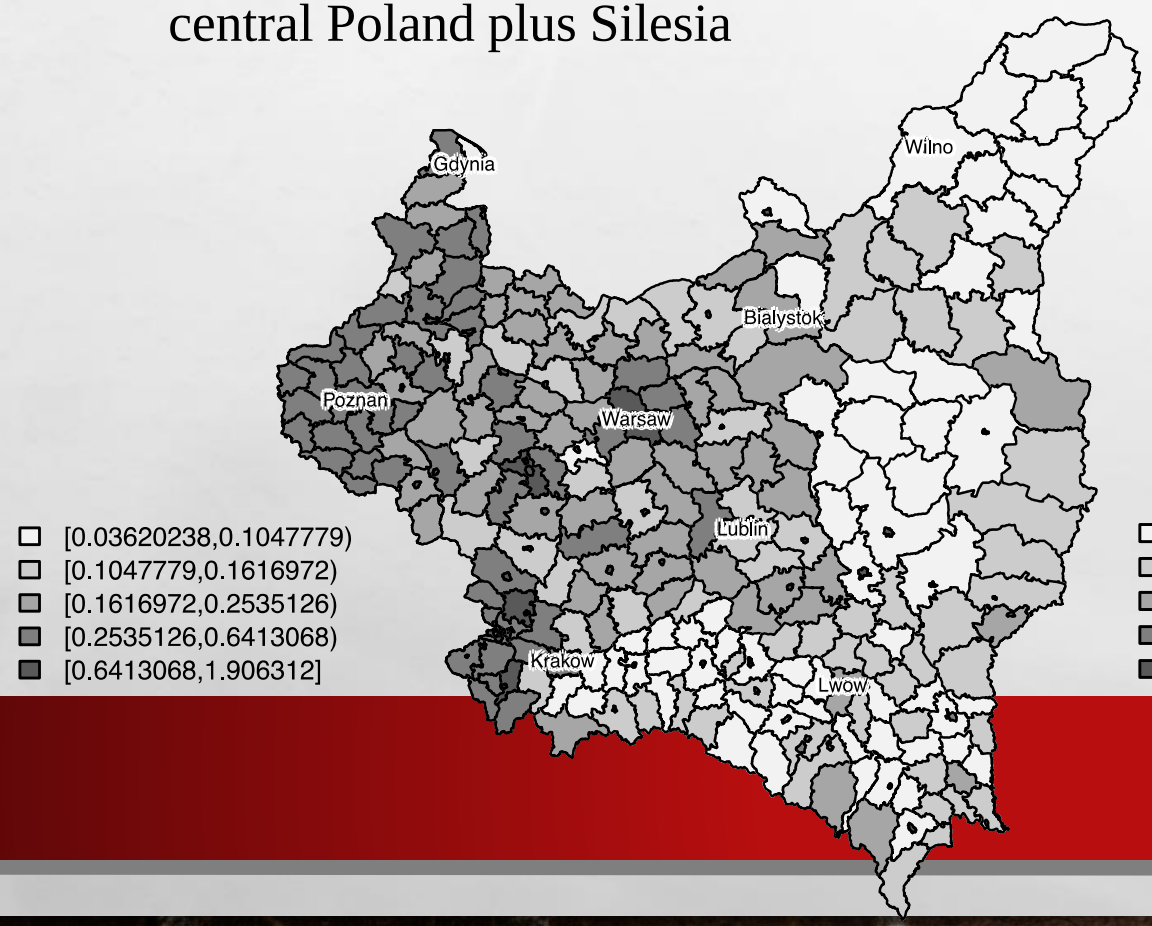
Related, semi-related and unrelated

variety of industries in 1931

Related variety of industries

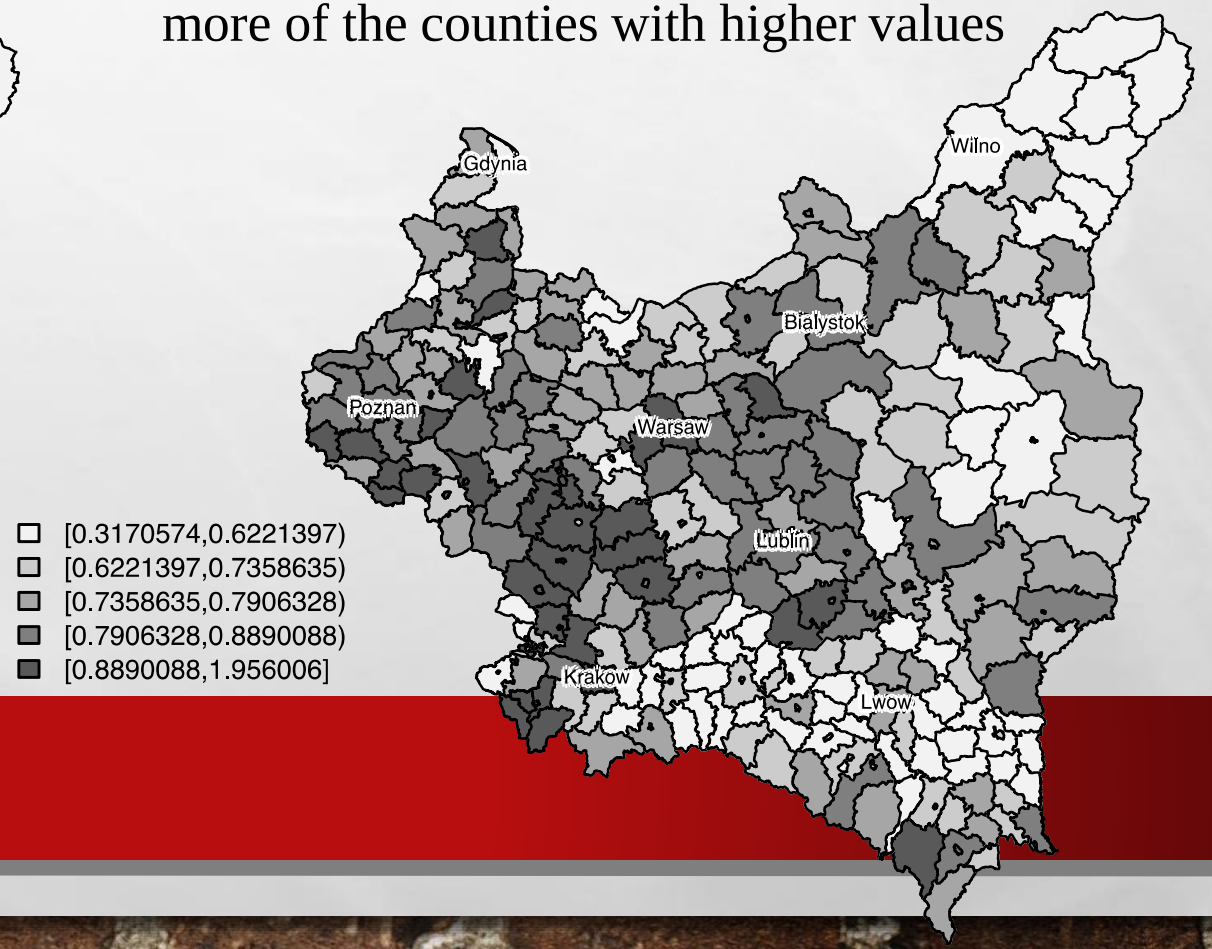
including agriculture

- The greatest number of industries with the most even distribution is in the west and central Poland plus Silesia



excluding agriculture

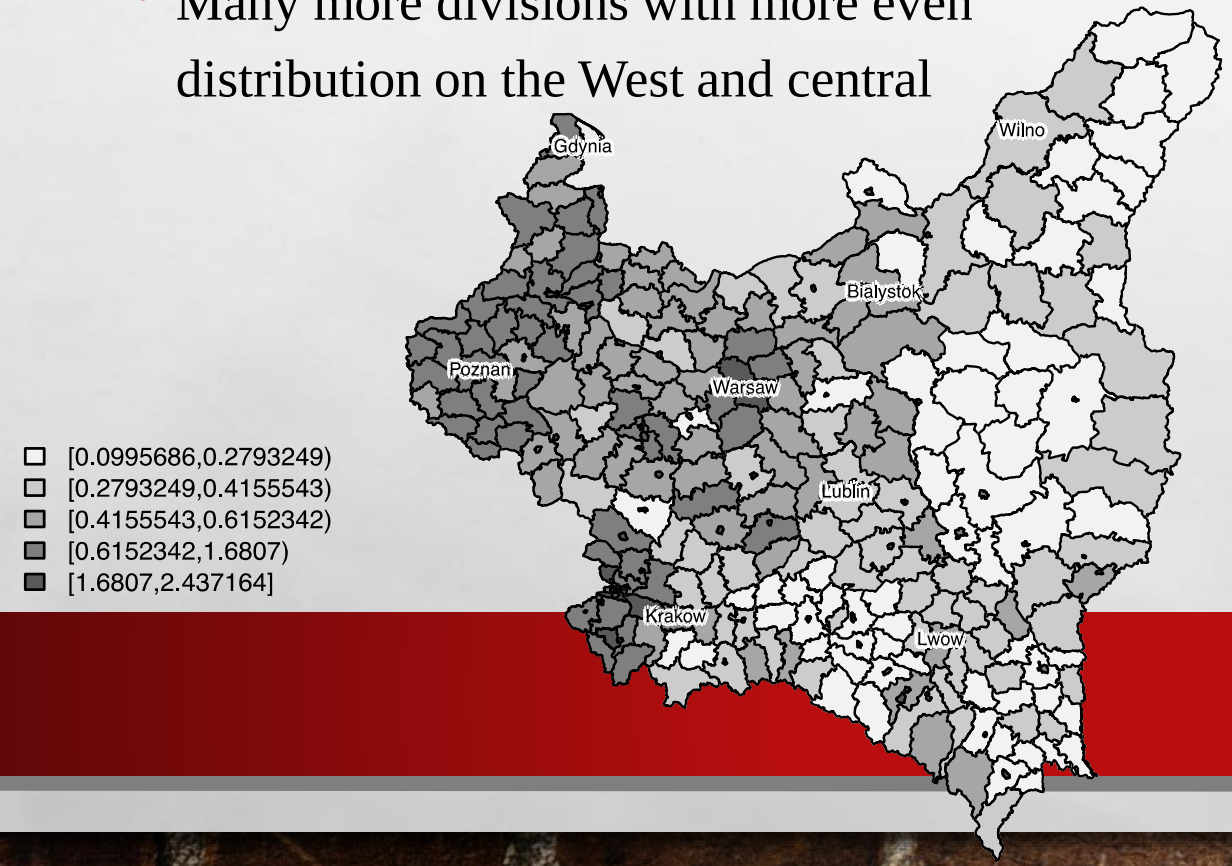
- Excluding agriculture magnifies the lower values of the indicator and also highlights more of the counties with higher values



Semi-related variety of the divisions of industries

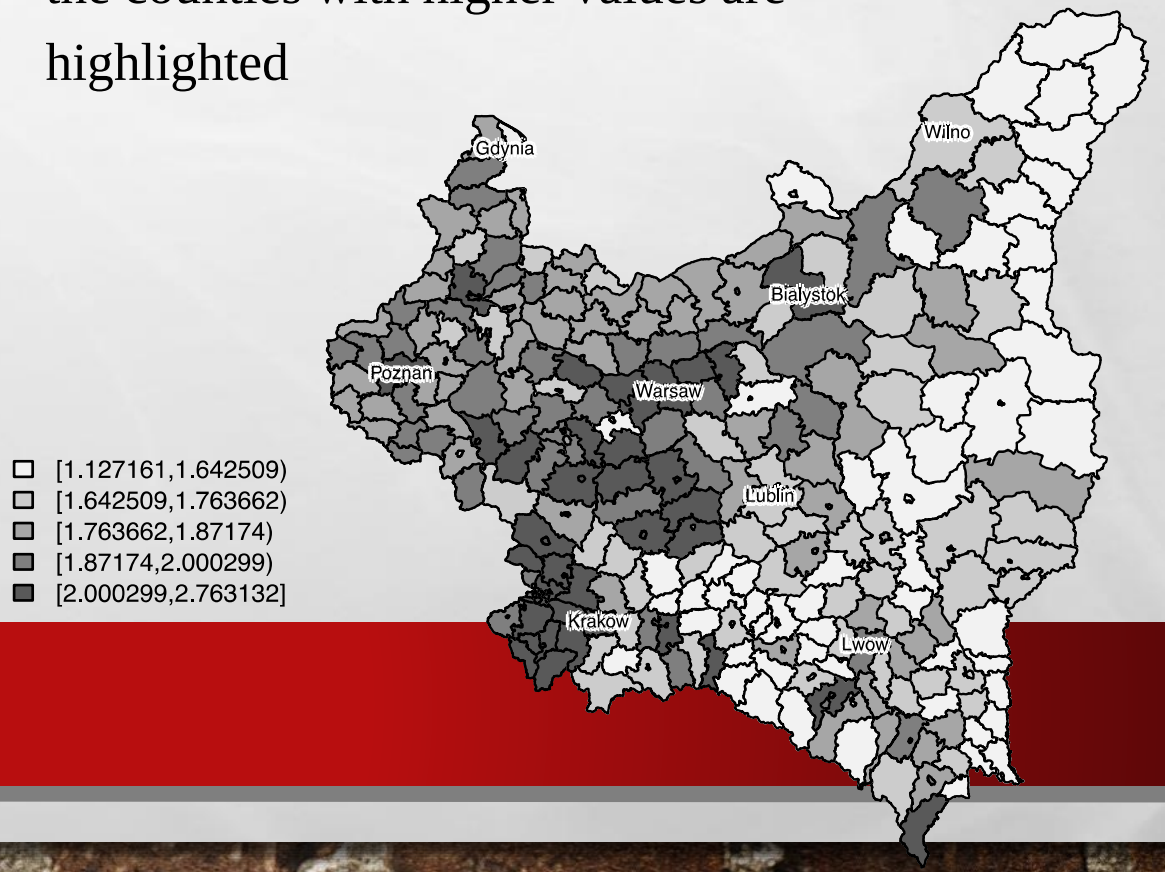
including agriculture

- Semi-related variety looks very similar to related variety distribution
- Many more divisions with more even distribution on the West and central



excluding agriculture

- Again, without agriculture lower values of the indicator are magnified and also more of the counties with higher values are highlighted



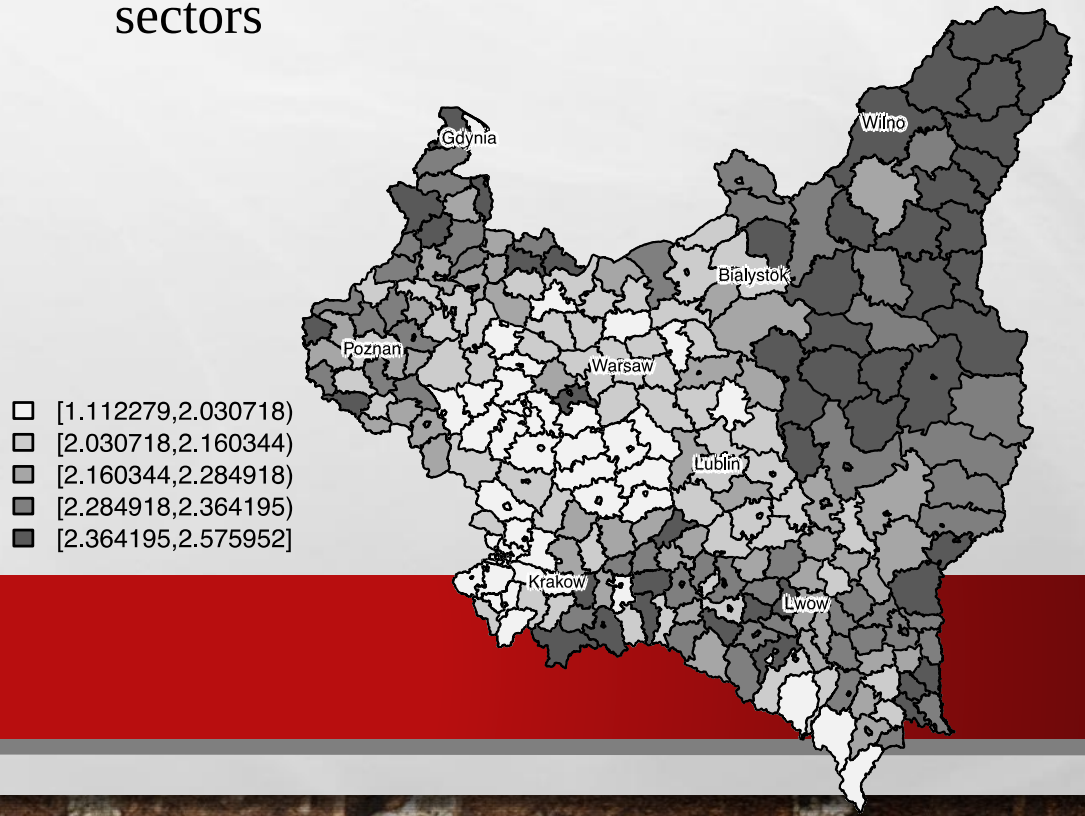
Unrelated variety of the industry sectors

including agriculture

- Areas based on agriculture show their specialization in this sector
- Western and central areas are move even and diversified

excluding agriculture

- Without agriculture western areas are still diversified with even distribution, while central areas show specialization in some sectors



Some initial regressions

in terms of 1931

Correlation between variables

	RV	SV	UV	RV_NONAGR	SV_NONAGR	UV_NONAGR	LITERACY	HIGH_ED	WHITE_COL	POP	AGR	POPCHNG	UNIV_DIST
RV		0.926***	0.732***	0.717***	0.442***	-0.353***	0.476***	0.600***	0.210***	0.553***	-0.900***	0.179***	-0.130**
SV			0.817***	0.501***	0.525***	-0.356***	0.533***	0.644***	0.226***	0.612***	-0.980***	0.160***	-0.181***
UV				0.399***	0.426***	-0.034	0.627***	0.650***	0.225***	0.369***	-0.839***	0.103*	-0.181***
RV_NONAGR					0.495***	-0.436***	0.305***	0.211***	-0.138**	0.219***	-0.434***	0.111*	-0.079
SV_NONAGR						-0.531***	0.399***	0.132**	-0.213***	0.215***	-0.413***	0.058	-0.274***
UV_NONAGR							-0.185***	0.172***	0.586***	-0.212***	0.325***	0.018	0.212***
LITERACY								0.244***	0.012	0.249***	-0.557***	0.024	-0.263***
HIGH_ED									0.547***	0.362***	-0.659***	0.021	-0.205***
WHITE_COL										0.226***	-0.230***	0.215***	0.108*
POP											-0.603***	0.079	-0.016
AGR												-0.153***	0.163***
POPCHNG													0.224***
UNIV_DIST													

Related variety in 1931 *(incl. agriculture)*

- Semi-related variety impact is robust
- Not robust interaction with unrelated variety
- No impact of white collars

Table 1: Regression results for the related variety of industries in 1931 (inc. agriculture)

	Dependent variable:					
	The related variety in 1931					
	(1)	(2)	(3)	(4)	(5)	(6)
log(SV)	1.065***		1.052***	1.046***	1.104***	1.177***
	(0.015)		(0.034)	(0.035)	(0.050)	(0.054)
log(UV)		2.178***	0.033	0.046	−0.024	−0.023
		(0.067)	(0.077)	(0.078)	(0.090)	(0.102)
log(WHITECOL)				−0.062	−0.039	0.003
				(0.051)	(0.053)	(0.065)
log(LITERACY)						−0.102
						(0.064)
log(HIGHER)						−0.039
						(0.027)
log(UNIVDIST + 1)						0.018
						(0.017)
log(POPUL)					−0.025	−0.032*
					(0.016)	(0.018)
Constant	−0.903***	−2.135***	−0.920***	−0.780***	−0.661***	−0.371
	(0.014)	(0.032)	(0.043)	(0.123)	(0.144)	(0.339)
Observations	310	310	310	310	310	293
R^2	0.944	0.773	0.944	0.944	0.945	0.949
Adjusted R^2	0.944	0.772	0.944	0.944	0.944	0.948
Note:						*p<0.1; **p<0.05; ***p<0.01

Related variety in 1931 *(excl. agriculture)*

- Semi-related variety impact is robust
- Unrelated variety impact killed by population
- **No impact** of white collars

Table 2: Regression results for the related variety of industries in 1931 (excl. agriculture)

	Dependent variable:					
	The related variety in 1931					
	(1)	(2)	(3)	(4)	(5)	(6)
log(SV_NONAGR)	1.040***		0.926***	0.926***	0.904***	0.744***
	(0.089)		(0.102)	(0.102)	(0.103)	(0.112)
log(UV_NONAGR)		−0.636***	−0.216**	−0.216*	−0.098	−0.361**
		(0.092)	(0.094)	(0.118)	(0.137)	(0.151)
log(WHITECOL)				−0.0001	−0.062	−0.065
				(0.065)	(0.075)	(0.080)
log(LITERACY)						0.122**
						(0.055)
log(HIGHER)						0.047**
						(0.023)
log(UNIVDIST + 1)						0.011
						(0.017)
log(POPUL)					0.019*	−0.010
					(0.011)	(0.016)
Constant	−0.900***	0.207***	−0.666***	−0.666***	−0.689***	−0.753**
	(0.055)	(0.072)	(0.115)	(0.150)	(0.150)	(0.325)
Observations	310	310	310	310	310	293
R^2	0.305	0.133	0.317	0.317	0.323	0.379
Adjusted R^2	0.303	0.130	0.312	0.310	0.314	0.364
Note:						*p<0.1; **p<0.05; ***p<0.01

Unrelated variety in 1931 *(incl. agriculture)*

- Related variety impact not robust
- Semi-related variety impact is robust
- Not robust impact of white collars
- Impact of **general knowledge** visible

Table 3: Regression results for the unrelated variety of industries in 1931 (inc. agriculture)

	Dependent variable:					
	The unrelated variety in 1931					
	(1)	(2)	(3)	(4)	(5)	(6)
log(RV)	0.355***		0.018	0.025	−0.010	−0.008
	(0.011)		(0.042)	(0.042)	(0.036)	(0.034)
log(SV)		0.399***	0.380***	0.373***	0.511***	0.430***
		(0.011)	(0.046)	(0.046)	(0.042)	(0.044)
log(WHITECOL)				0.094**	0.150***	0.047
				(0.037)	(0.033)	(0.038)
log(LITERACY)						0.190***
						(0.036)
log(HIGHER)						0.075***
						(0.015)
log(UNIVDIST + 1)						0.034***
						(0.009)
log(POPUL)					−0.088***	−0.088***
					(0.009)	(0.009)
Constant	0.828***	0.518***	0.534***	0.318***	0.634***	−0.026
	(0.019)	(0.010)	(0.039)	(0.094)	(0.088)	(0.197)
Observations	310	310	310	310	310	293
R^2	0.773	0.814	0.814	0.818	0.863	0.897
Adjusted R^2	0.772	0.814	0.813	0.816	0.861	0.894
Note:						*p<0.1; **p<0.05; ***p<0.01

Unrelated variety in 1931 *(excl. agriculture)*

- Related variety impact not robust (killed by population density)
- Semi-related variety impact is robust
- **Robust impact of white collars**
- Impact of **general knowledge** visible

Table 4: Regression results for the unrelated variety of industries in 1931 (excl. agriculture)

	Dependent variable:					
	The unrelated variety in 1931					
	(1)	(2)	(3)	(4)	(5)	(6)
log(RV_NONAGR)	-0.209^{***}		-0.078^{**}	-0.050^{*}	-0.017	-0.055^{**}
	(0.030)		(0.034)	(0.027)	(0.024)	(0.023)
log(SV_NONAGR)		-0.529^{***}	-0.448^{***}	-0.322^{***}	-0.210^{***}	-0.199^{***}
		(0.054)	(0.064)	(0.052)	(0.047)	(0.045)
log(WHITECOL)				0.325^{***}	0.380^{***}	0.325^{***}
				(0.025)	(0.022)	(0.025)
log(LITERACY)						0.059^{***}
						(0.021)
log(HIGHER)						0.029^{***}
						(0.009)
log(UNIVDIST + 1)						0.020^{***}
						(0.006)
log(POPUL)					-0.042^{***}	-0.050^{***}
					(0.004)	(0.005)
Constant	0.706^{***}	1.080^{***}	1.010^{***}	0.173^{**}	0.193^{***}	0.039
	(0.011)	(0.033)	(0.045)	(0.074)	(0.064)	(0.128)
Observations	310	310	310	310	310	293
R^2	0.133	0.240	0.253	0.517	0.642	0.665
Adjusted R^2	0.130	0.237	0.248	0.513	0.637	0.657
Note:						*p<0.1; **p<0.05; ***p<0.01

Thank you for your attention!

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