Sectoral structural change in employment in OECD countries

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Background

- **Sectoral structural change** is precondition and an important part of general economic development.
- General trends of sectoral development are well-known. **The three sector hypothesis** is one of the most well-established empirical generalizations in economics.

The three sector hypothesis

- According to that, two development stages occur after traditional agrarian economy:

1. **Industrialization**, in which employment in agriculture is replaced by an industrial one.
2. **Tertiarization**, when the share of manufacturing in employment begins to decrease along with the shrinking labour in agriculture on the account of the emergence of the service sector.

Research gap and aim

- There is a **research gap** in the literature of structural change and tertiarization in terms of describing and explaining regional peculiarities.
- It is still unanswered whether all countries follow the same pattern in tertiarization.
- So the **purpose** of this paper is to analyze the variation of the process of tertiarization of OECD countries and to propose a typology for description these variations.

Methodology

Multi-dimensional statistical analysis of sectoral employment-structure of OECD countries (31):

1. The cluster analysis is applied to explain the **grouping of countries** on the basis of the similarity of sectoral structure.
2. Discriminant analysis is applied to determine the **latent indicators** that distinguish the sectoral structure of the OECD countries.

Data: OECD STAN database 2000 and 2009

1. AGR Agriculture, hunting, forestry and fishing
2. MIN Mining and quarrying
3. MAN Manufacturing
4. ELE Electricity, gas and water supply
5. CON Construction
6. WHO Wholesale and retail trade, restaurants and hotels
7. TRA Transport, storage and communications
8. BUS Finance, insurance, real estate and business services
9. SOC Public administration and defense – public services

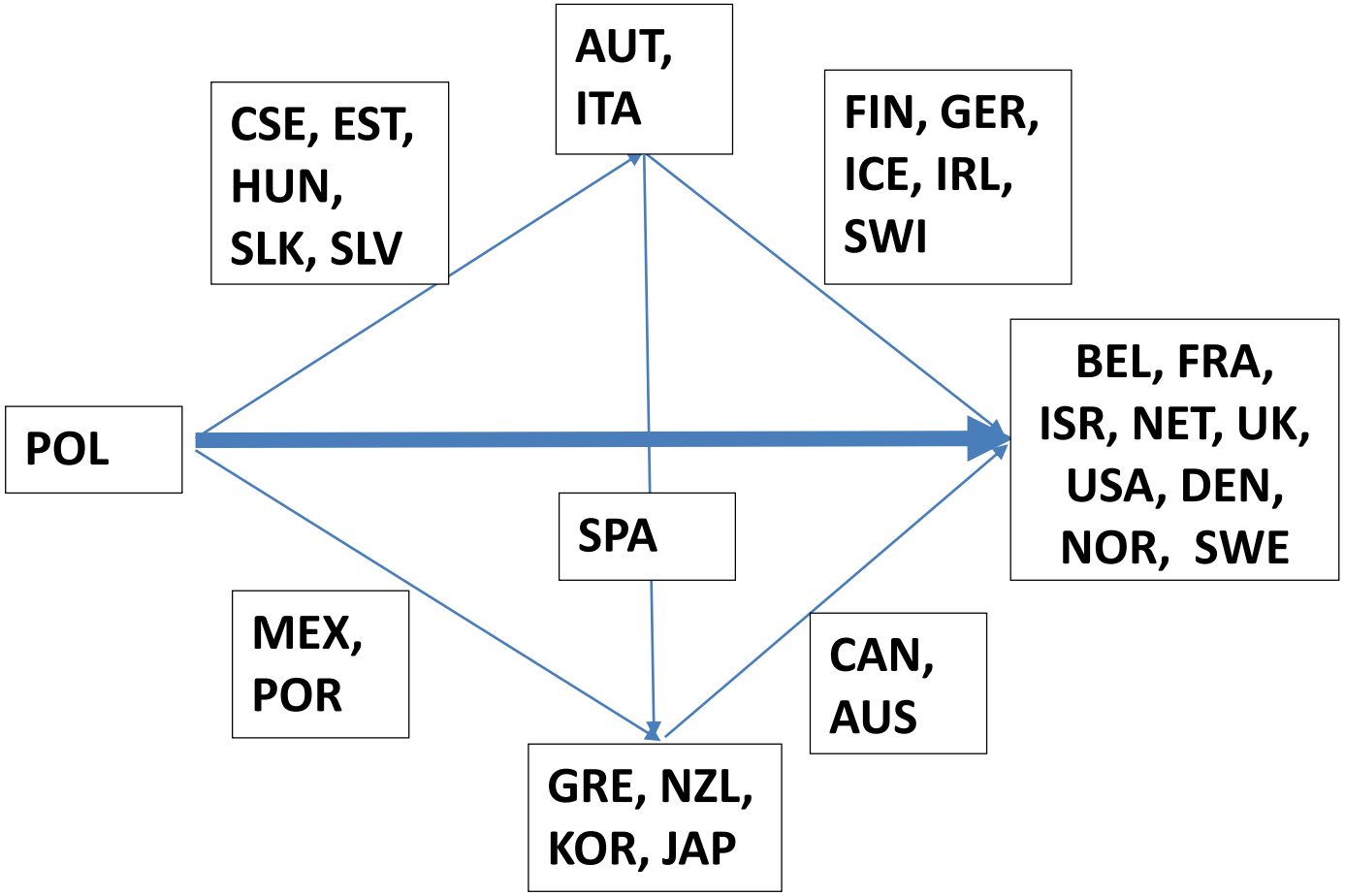
Four clusters

(the average sectoral shares of employment, %)

Movement of the countries from one cluster to another

2009 2000	1. Traditional economy	2. Industrial economy	3. Trading economy	4. Service economy
Traditional economy	POL	CZE, EST, HUN, SLK, SLV	MEX, POR	
Industrial economy		AUT, ITA	ESP	FIN, GER, ICE, IRL, SWI
Trading economy			GRE, NZL, KOR, JAP	CAN, AUS
Service economy				BEL, FRA, ISR, NET, UK, USA, DEN, NOR, SWE

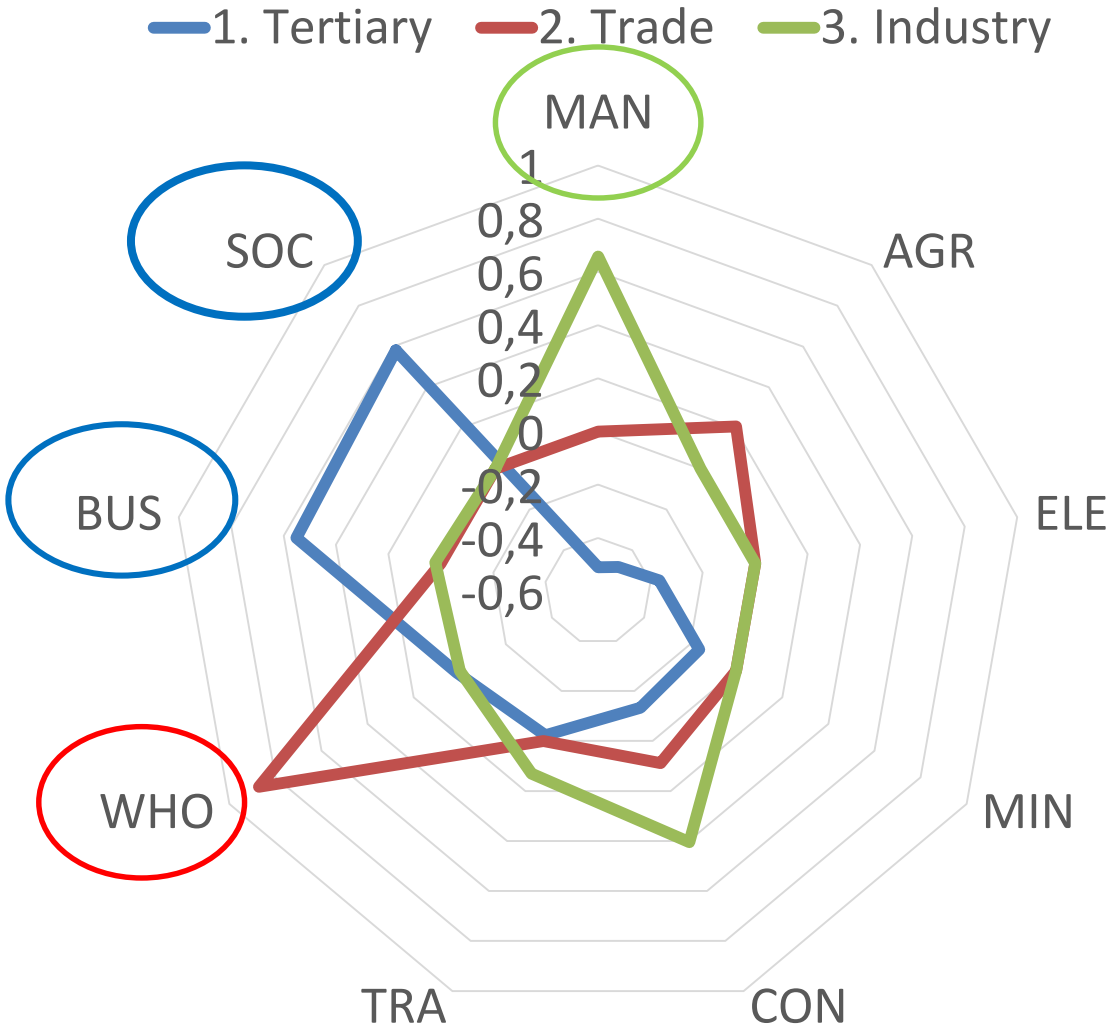
Movement of the countries from one cluster to another (2000-2009)



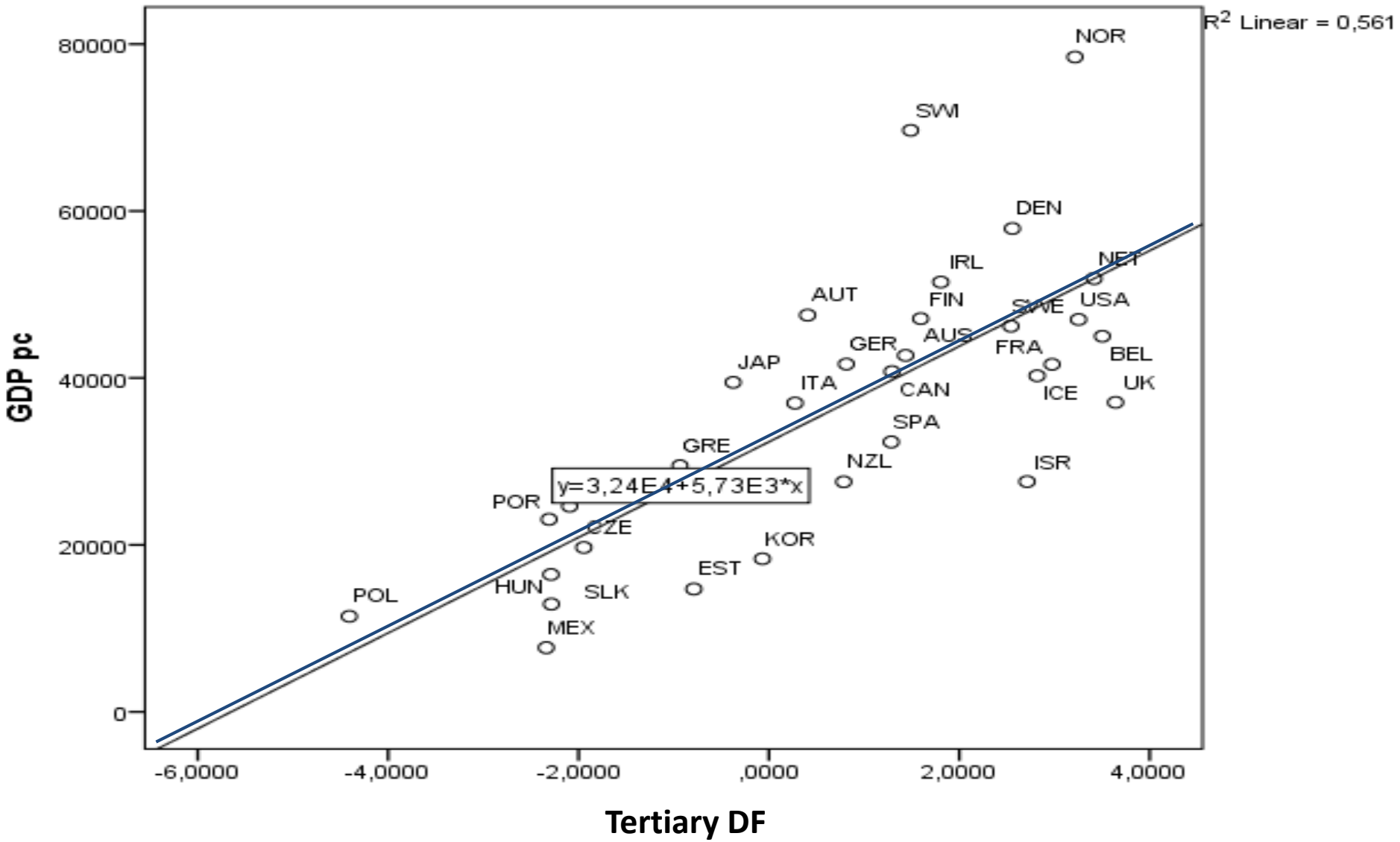
Discriminant analysis

- In order to generalize the structure of employment, we applied **discriminant analysis.**
- Discriminant analysis replaces the preliminary shares of economic sectors by their **linear combination** or **discriminant function (DF)** making the differentiation of countries into specific clusters **as clear as possible.**
- In the present work, we got **3 DFs**.

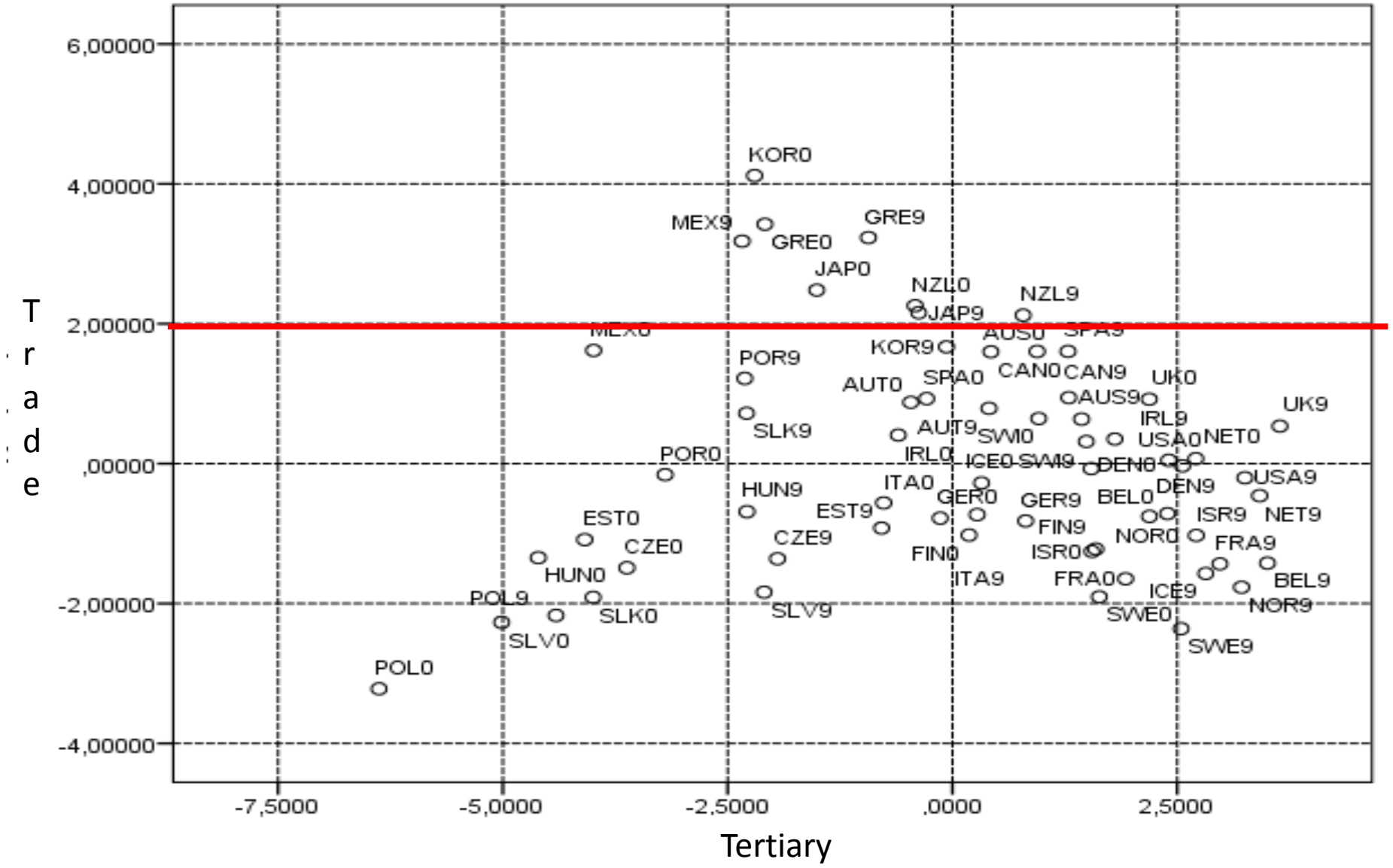
Correlations between DF and the sectoral employment shares



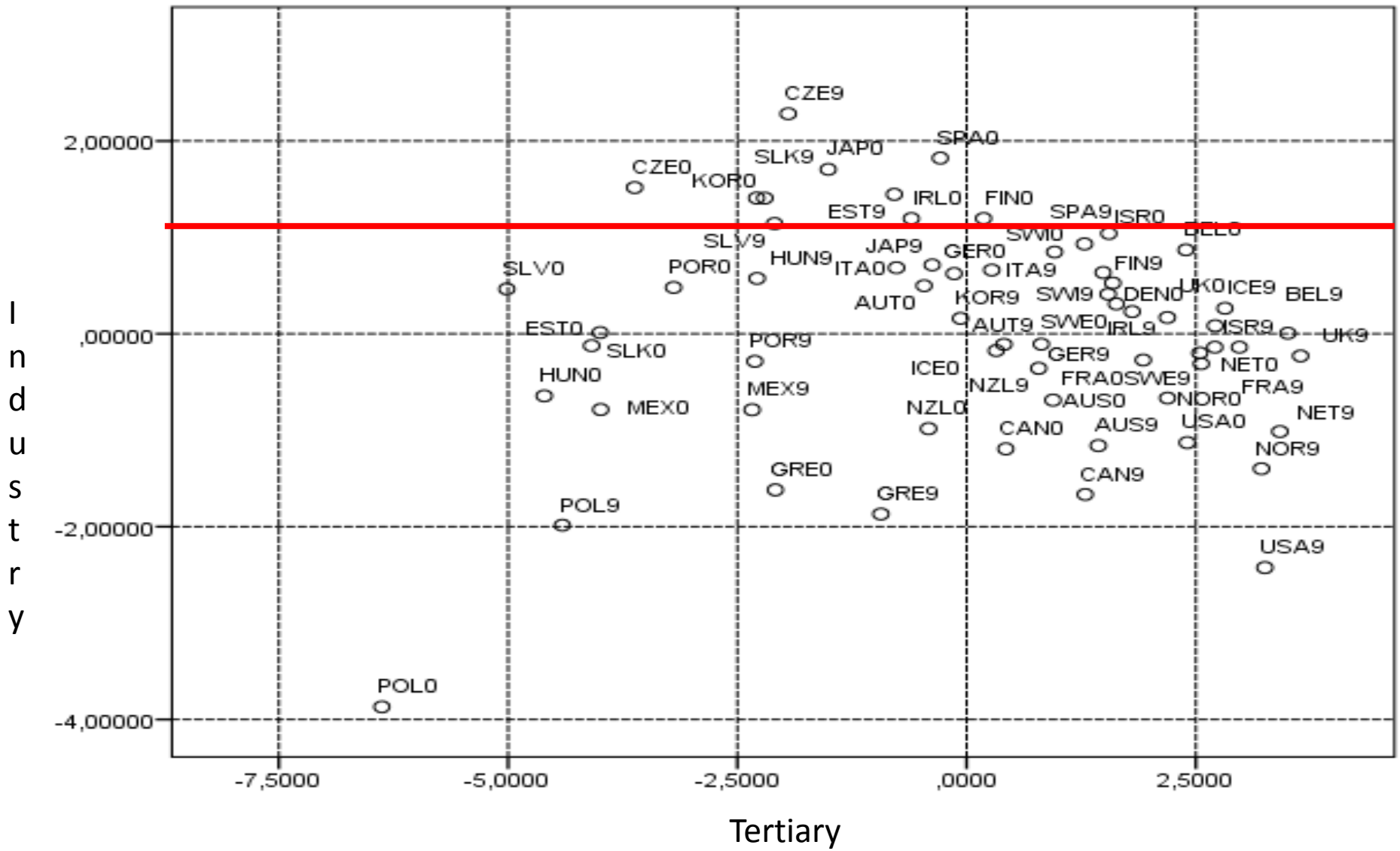
The correlation between tertiary DF and GDP *per capita*



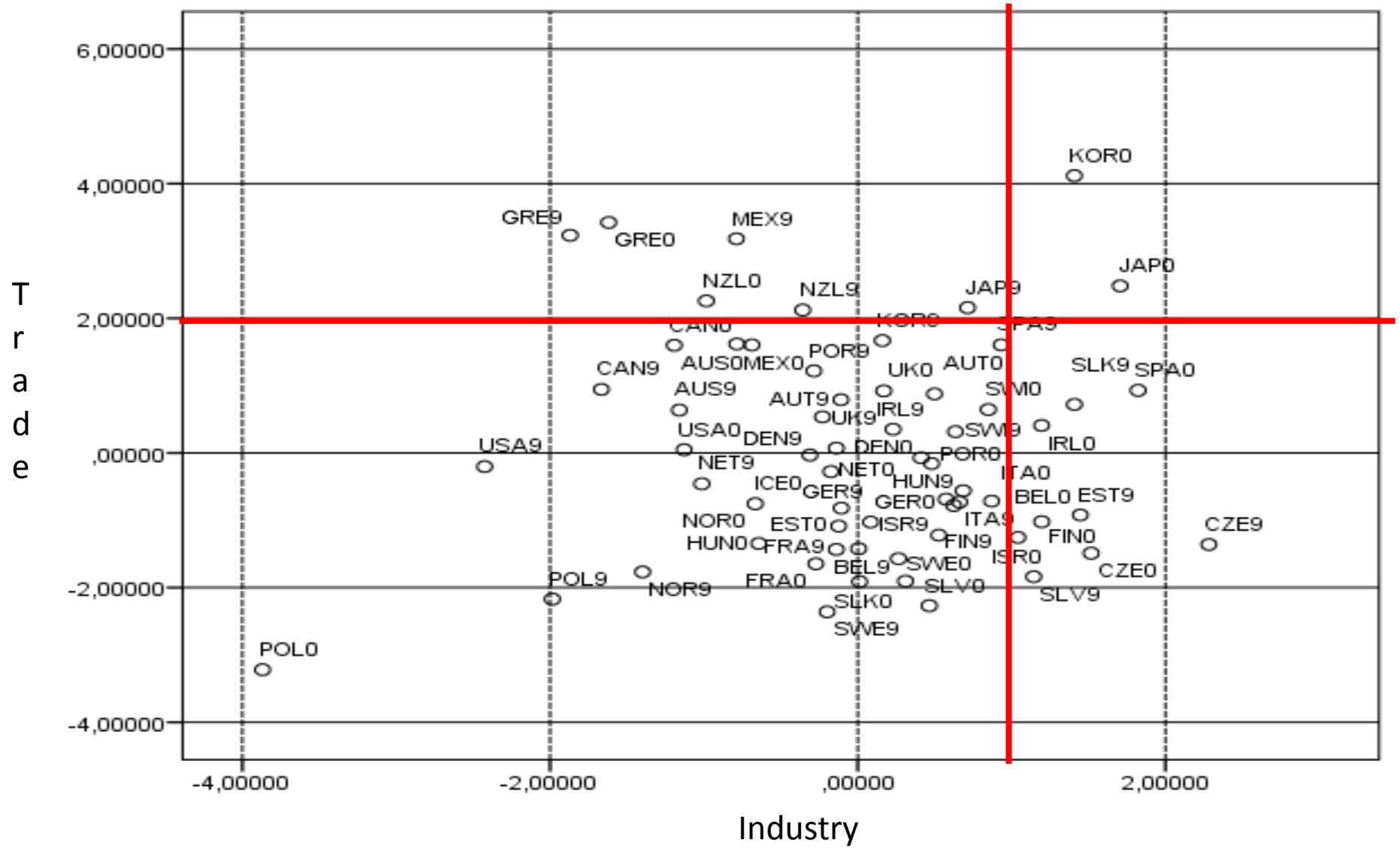
Location of countries: “trade” and “tertiary” DF plane



Location of countries: “tertiary” and “industry” DF plane



Location of countries: “industry” and “trade” DF plane



Conclusions 1

1. **Four clusters of countries** with similar employment structure were identified for 2000 and 2009.
2. Around half of the countries (16 out of 31) have remained in the same cluster, 9 of them in the modern service-economy cluster.
3. **The general shift** for the rest was **towards a service economy**, however specific trajectories of movement illustrate the role of path dependency in structural development.

Conclusions 2

1. There were found **three generalizing latent variables** behind the clusters. Discriminant analysis was used to measure the variables as DF.
2. The first and statistically most important „tertiary“ DF reflects **the level of modern tertiarization** and has a significant positive correlation with national wealth.
3. The standard deviation of the first DF decreased significantly over the period. Thus, **transnational discrepancies in tertiarization are generally decreasing** (►structural convergence)

Conclusions 3

1. The second DF distinguishes **trade oriented** and the third DF **industrial oriented** economies and both had a week negative correlation with GDP pC.
2. The convergence is not so obvious among the 2. and 3. DFs and the specificity of the countries is maintained.
3. **Specific and steady trajectories of structural change exist beside the main trend of tertiarization: path dependecy matters**

Thank you for your attention!