Analyses of the structural characteristics and potentials for trade – the case of Albania

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Tirane, November 2008

Outline of the Presentation

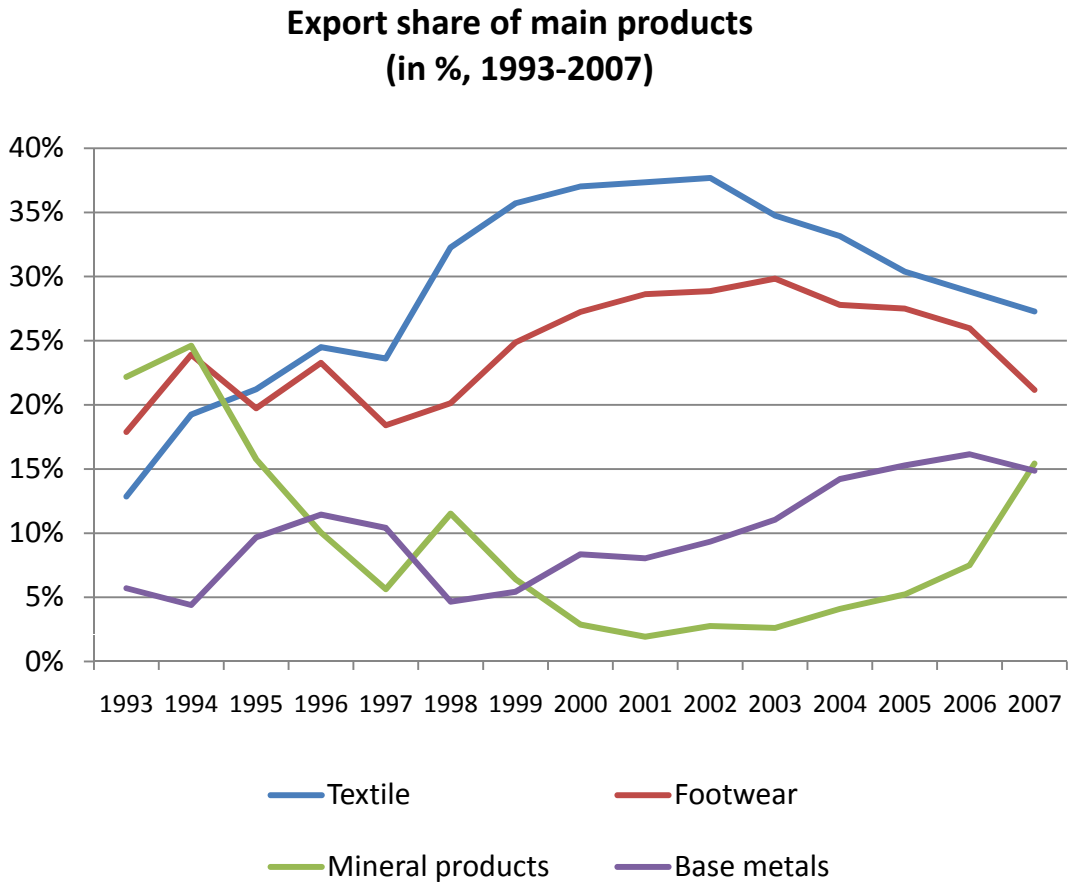
I. A very short note on trade dynamics

II. Intra Industry trade in Albanian Trade Flows

III. Potential Trade Flows – through a gravity modelling

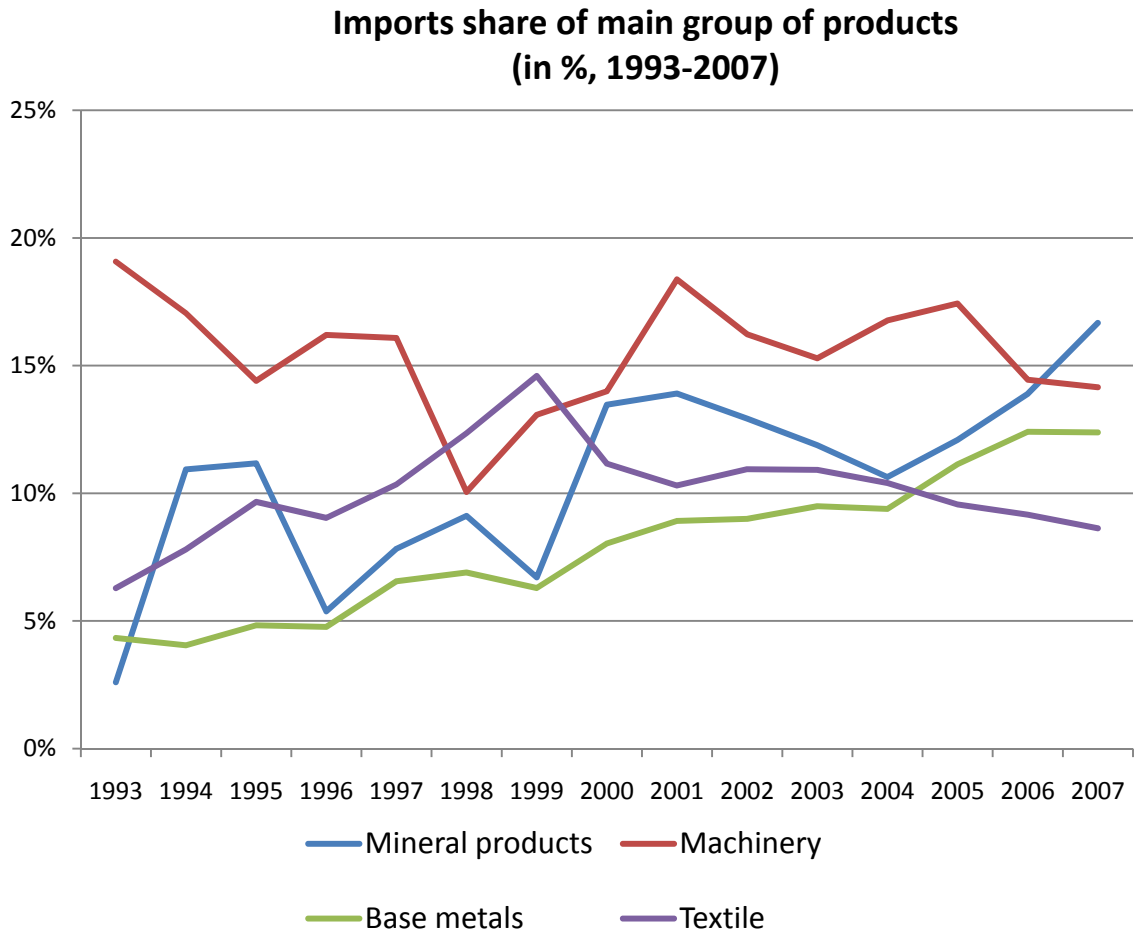
Exports

- Exports have been quite dynamic in time, but low valued
- Highly concentrated structure (4 group of products represents 80% of exports
- There are interesting dynamics within the export structure leaded by world market developments
- There are signs of export and imports of the same nature



Imports

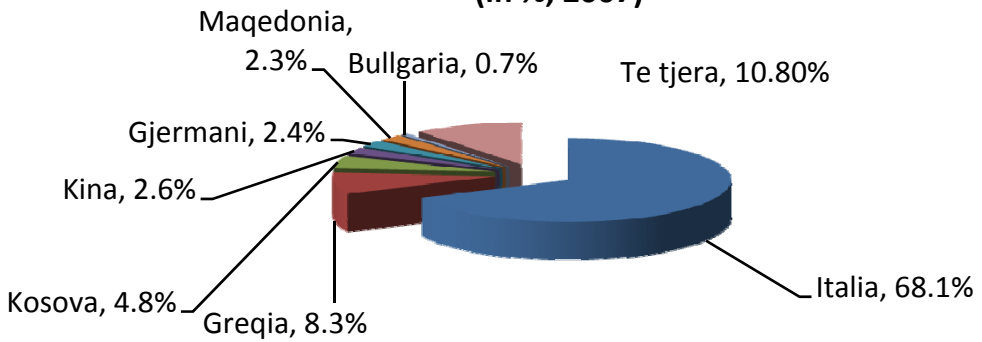
- Imports Structure is less concentrated
- Imports have shown to be less dynamic than exports but of a value that is quite higher than exports causing the permanent trade deficit
- Main categories of import are mineral products (oil products), machinery and equipments (capital investments and capital goods for families), metals as well as textile (inward processing industry)



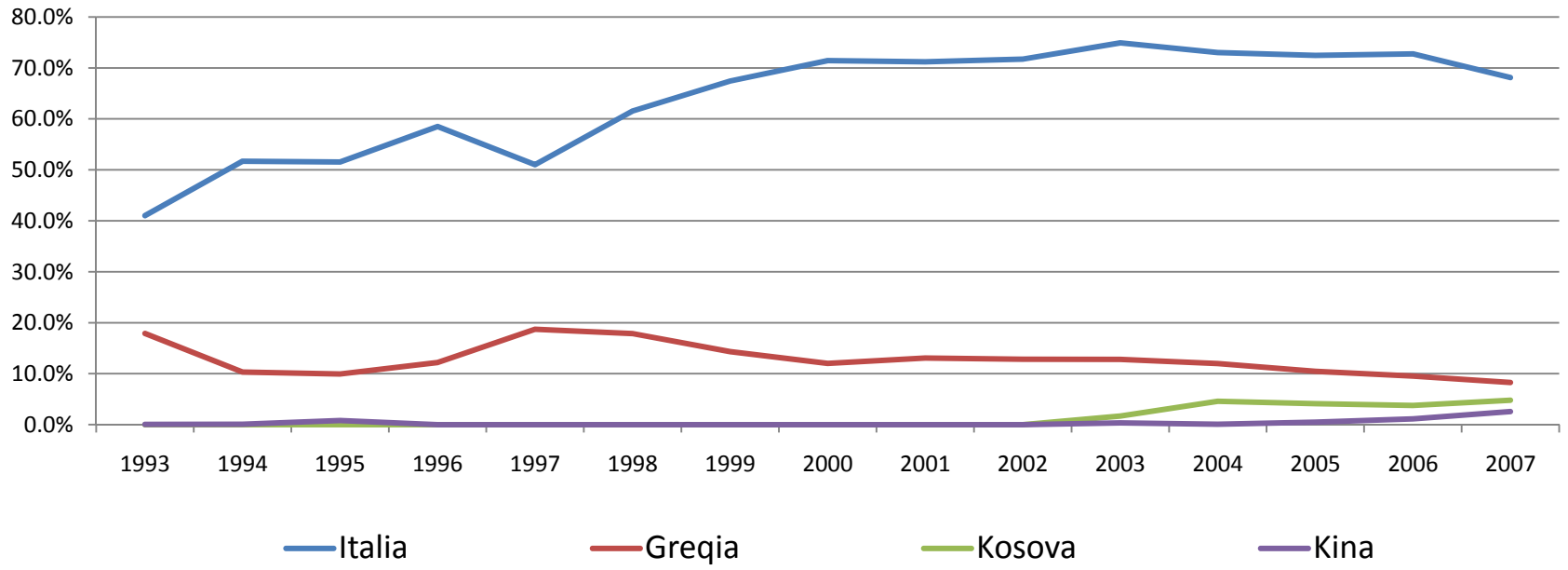
Exports Geography

- Concentrated Structure
- Main tarde partners are from EU trade block and region
- Evolution of trade shares in time shows for slow dynimics of export diversification

Distribution of Exports per trade partners (in %, 2007)

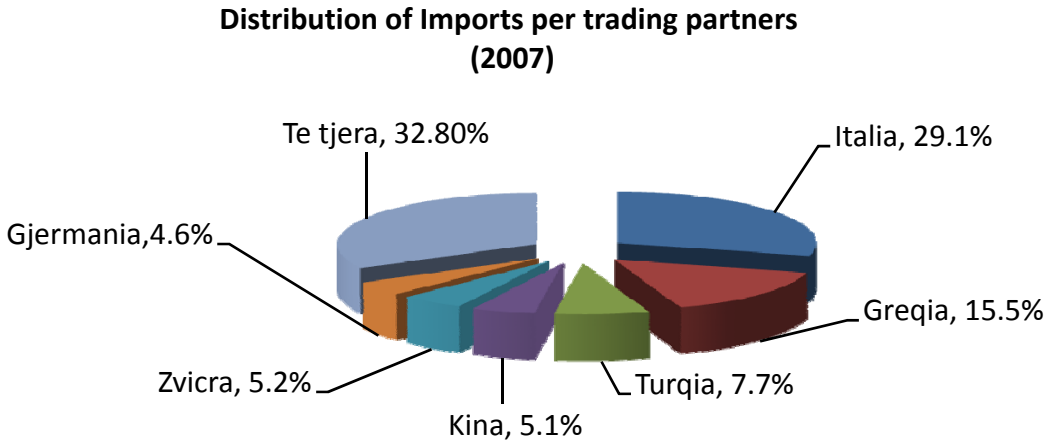


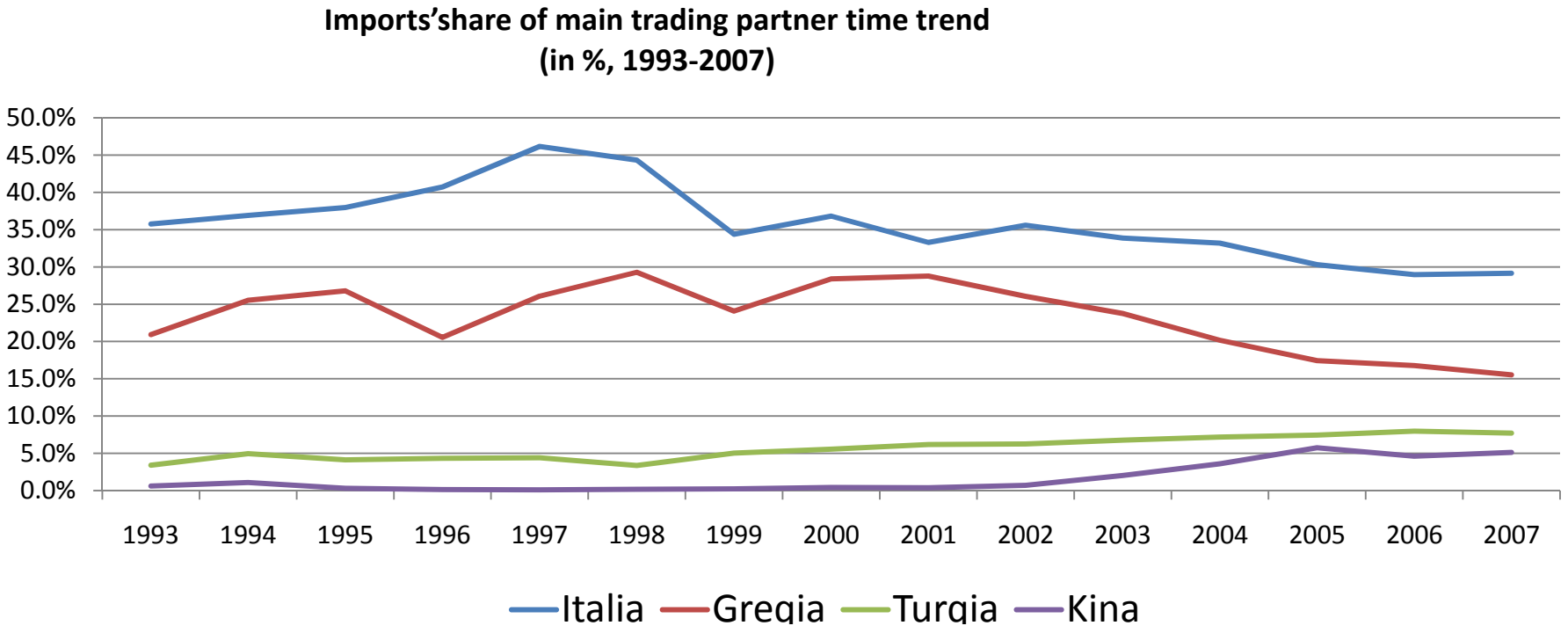
Dynamics of exports share with main trade partners (in %, 1993-2007)



Imports Geography

- Main partner countries remain Italy and Greece
- Some diversification of import structure has been manifested in imports
- If this is the geography of trade, what do trade potentials say?





Intra-Industry Trade – Some Theoretical Notes

- Trade in which a country exports and imports in the same industry, in contrast to inter-industry trade
  - An often encountered question in the literature "is this trade a real one or an artifact derived from statistical classification of trade" *(Finger (1975) , Greenaway and Milner (1983))*
- Increasing importance of intra-industry trade
  - HIIT: intra-industry trade in horizontally differentiated products (products differentiated by attributes)
  - VIIT: intra-industry trade in vertically differentiated products (products differentiated by quality – In case of Albania Inward Processing Trade)
- Trade theories explaining IIT flows
  - Supply side: economies of scale (Dixit and Stiglitz 1977; Krugman 1979; Lancaster 1980; Helpman 1981)
  - Demand side: love for variety (Dixit and Stiglitz 1977 , Anderson and van Wincoop 2004), Head 2003))

Intra-Industry Trade – Some Theoretical Notes

- IITs only as Trade flows between developed countries with similar economic structures and high income
- Eastern European countries trade with EU of high IIT content
  - Smooth transition hypothesis
- FDIs , economy oppeness and increasing income per capita - has made IITs important for developing and transition countries (also for trade among them)
- While accepted theoretically – there are still debates on the IITs measurment issues
  - What is the proper degree of data disagregaion to be used
  - Most common measures are at SITC classification, three digit disagregation
- No previous study for Albania, little reference for the region as well

HS Classification at 2-digit level of disaggregation

- **Aggregated index**
- **Index per Industry**
- **Index per different trading partners**

Measures of IITs

The intra-industry trade index by industry (Grubel - Loyd, 1975)
GL Index Values between 0 and 1 (1 total trade is IIT, 0 No IIT Trade)

$$GL_{ij} = 1 - \frac{\left| X_{ij} - M_{ij} \right|}{X_{ij} + M_{ij}}$$

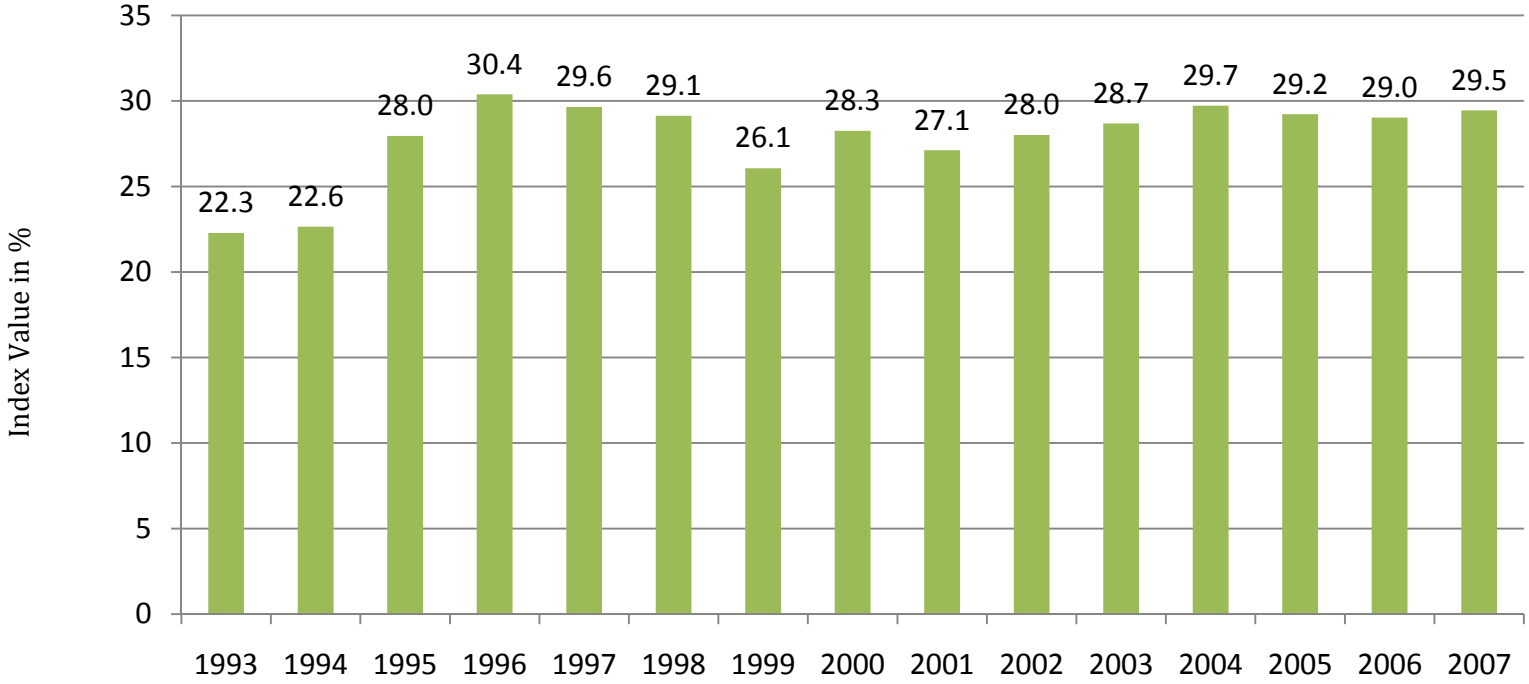
Aggregated intra-industry trade index (Grubel - Loyd, 1975)

$$GL_j = \frac{\sum_{i=1}^{n} \left[(X_{ij} + M_{ij}) - \left| X_{ij} - M_{ij} \right| \right]}{\sum_{i=1}^{n} (X_{ij} + M_{ij})} = \sum_{i=1}^{n} w_{ij} \left[1 - \frac{\left| X_{ij} - M_{ij} \right|}{X_{ij} + M_{ij}} \right]$$

The measure of Marginal IIT (Brülhart, 1994)

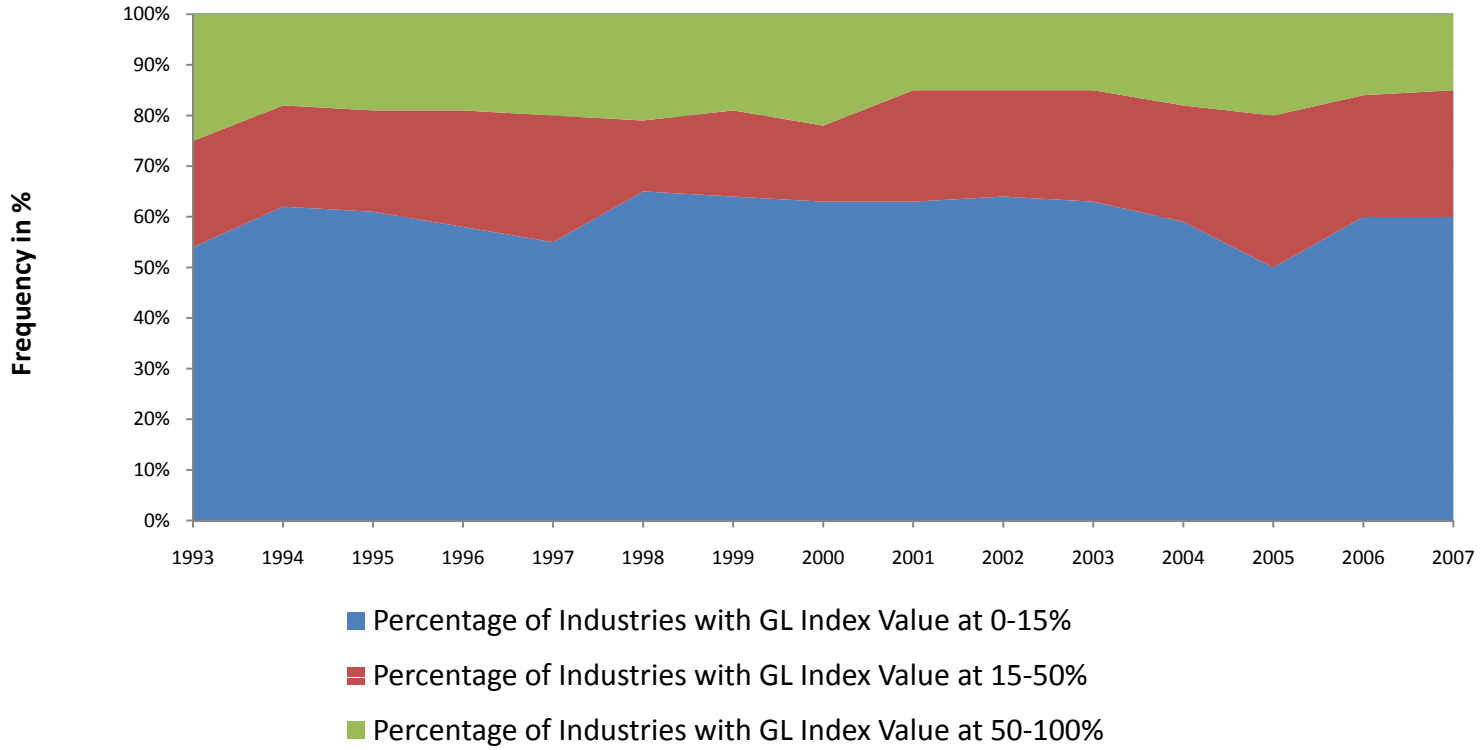
$$MIIT = 1 - \frac{\left[\left| (X_t - X_{t+n}) - (M_t - M_{t+n} \right| \right]}{\left| (X_t - X_{t+n}) \right| + \left| M_t - M_{t+n} \right|}$$

Aggregated Grubel-Loyd Index for Albania
(in %, 1993-2007)



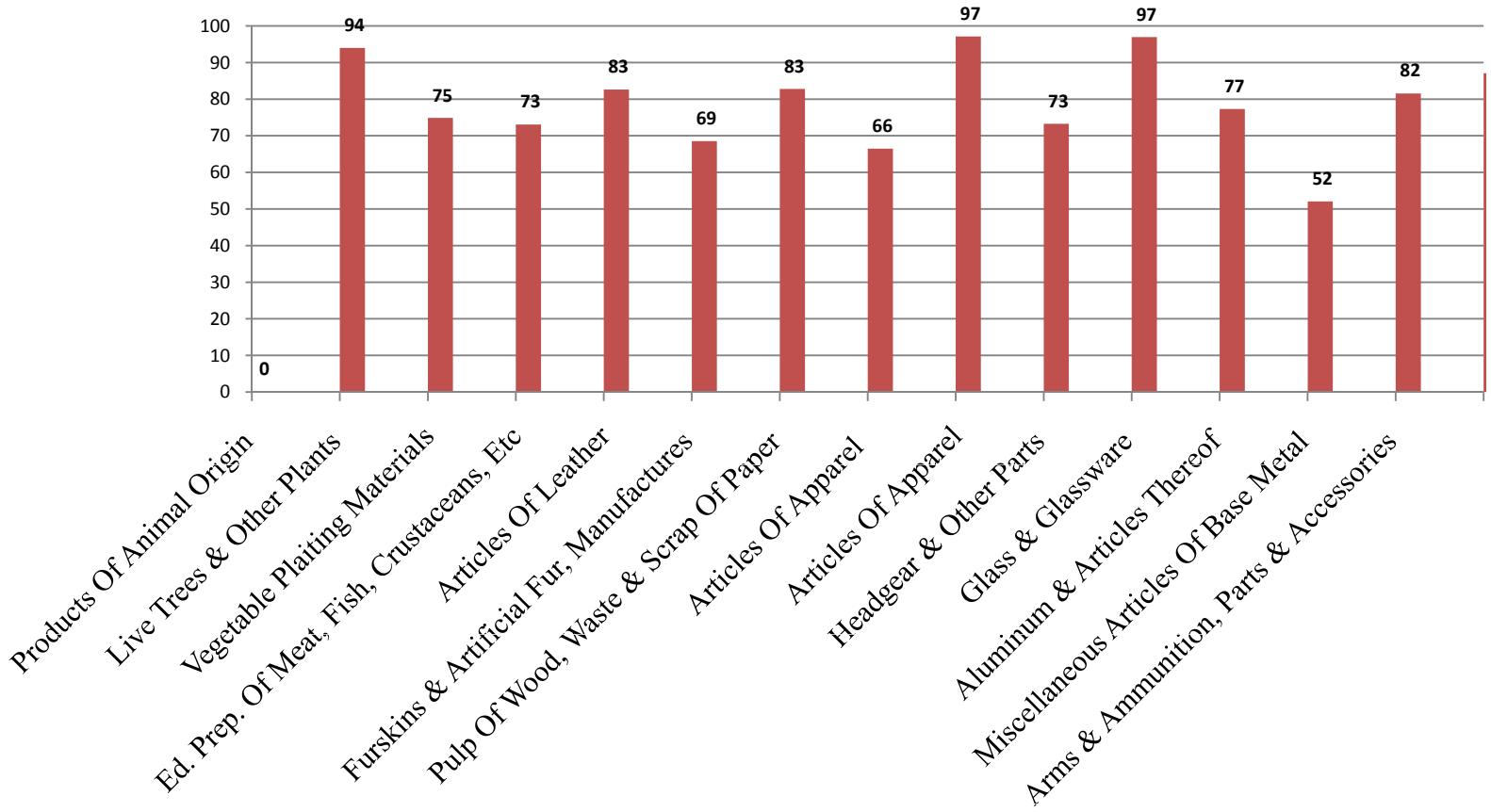
- IITs - low share relative to total trade
- Similar values are observed in the region (around 30 to 35%)
- The index is quite lower as compared to new EU member states (GL around 50%)
- Constancy in Time – no trend but rather a fluctuation around mean
- Most of Albania trade is of inter-industry type, which is based on the factor endowments and natural comparative advantages

Grubel-Loyd Index per Industry
(in %, 1993-2007)



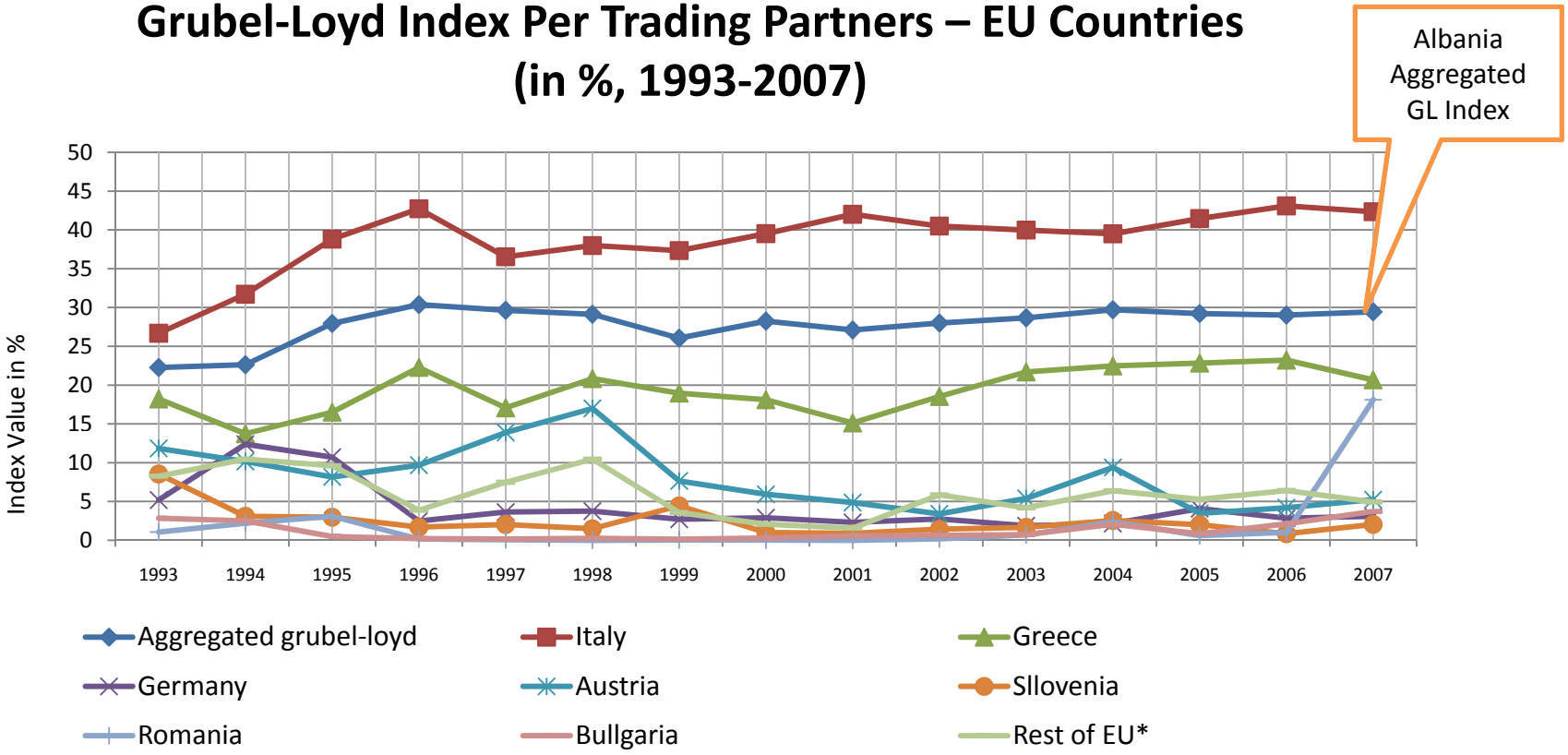
- 51% of Industries have an IIT share of lower than 15%
- The group of sectors having midium level of IITs manifests some positive trend
- Sectors having high IIT share on their total trade are at minority and a shrinking tendency of their share is observed (footwear sector IIT share declined from 90% in 1993 to 40% in 2007)

Grubel-Loyd Index per Industry
(in %, 1993-2007)



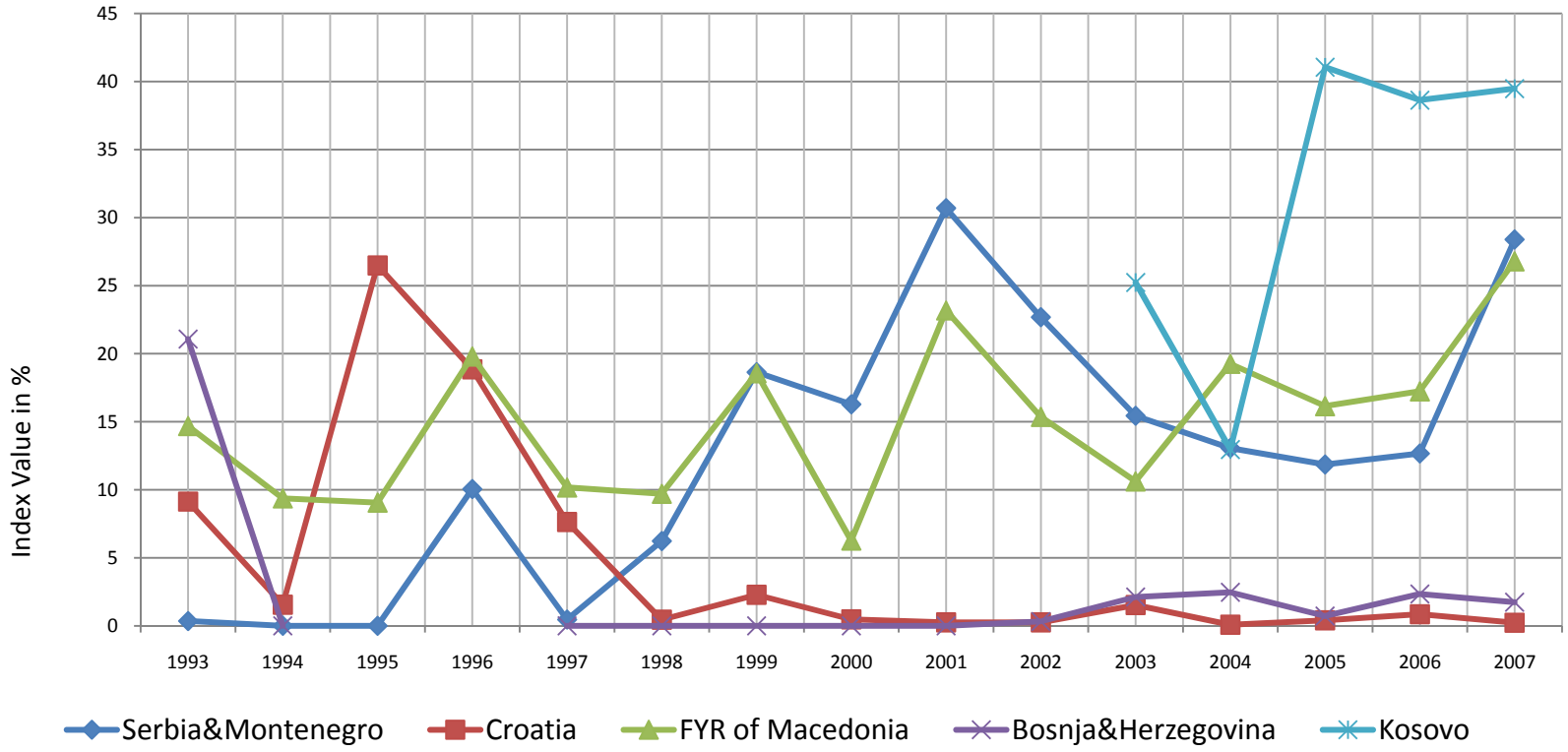
-Large IIT share among
  - -Traditional active processing industries of textile and footwear
  - -Prepared food items
  - -Paper products
  - -Mineral and metals

Grubel-Loyd Index Per Trading Partners – EU Countries (in %, 1993-2007)



- Low share of IIT in most of countries (lower than aggregated index)
- IIT share on trade is characterize by a slow positive trend – which might give hope for developing value chains – although slow
- There is overall a very slow dynamic of IITs, except Romania in 2006

Grubel-Loyd Index Per Trading Partners – Countries of the Region (in %, 1993-2007)



- Very low IIT share in trade with regional countries
- Positive dynamics in IIT exchange with Macedonia, Serbia and Montenegro
- There is a „lost“ chain of IIT exchange with Croatia
- High share of IITs with Kosovo

Some Concluding remarks

- Generally the IIT index for Albania is low
  - Most of IITs are related ot FDIs, and belong to active processing trade (Vertical Intra-industry trade), which reduces as more value is added to the product (footwear sector)
  - There is little intra-trade of horizontal nature – which would mean tarde flow differentiated by brand
  - There are signs of developing such HIIT flows within regional markets

III. Geography of Albania Trade Flows –a Gravity Modelling

- Model Description
- Model specification
- Data, variable definition and method of estimation
- Results of analyses
- Estimating Trade Potentials
- Some interesting facts from gravity modelling of trade flows

Model Description

- An econometric model based on the Newtonian gravity law
  - an empirical paradigm to explain factors affecting trade flows

- Firstly applied in 1962 by Tinbergen
  - Very successful in explaining trade flows, but no theoretical foundations

- Theoretical Foundations – provided from lately developments in International Trade Theory (Anderson and van Wincoop (2004), Head (2003))

$$Trade_{i,j} = \frac{Y_i Y_j}{Y_w}\left(\frac{T_{ij}}{P_i P_j}\right)^{1-\sigma}$$

Model specification

- First efforts to use gravity model for Albania Trade by ACIT 2003
- This second application of gravity (done by ACIT) introduces three new features
  - Specified based on the new trade theories $Trade_{t,j} = \frac{A}{Y_w} s_j Y_t Y_j \theta_{tj}^{1-\sigma} (1 + t_{tj}) [P_t^* P_j^*]^{\sigma-1}$
  - Introduces a more complete definition of trade resistance
  - Institution effect on trade is also embodied in the analyses

$$\ln Trade_{t,Albania} = \beta_0 + \beta_1 * \ln GDP_t + \beta_2 * \ln GDP_{Albania} + \beta_3 * \ln Distance_{t,Albania} + \beta_4 * CommonBorder + \beta_5 * RoadIndex + \beta_6 RER_{t,Albania} + \beta_7 * (Effective\ Applied\ Tariff\ Rate) + \beta_8 * GDPC\ Difference_{t,Albania} + \beta_8 * \{Governance\ Indicators\} + \beta_9 * Regional\ Trade\ Agreement\ Dummy + \beta_{10} * EU\ Countries + \varepsilon_{tt}$$

Data, variable definition and method of estimation

- Variables Definition

  - Real GDP in Mio USD and Albania Real GDP in Mio USD used in logarithmic format – an approximation of the economic mass

  - **Distance** Between capital cities wieghted by incountry distance and population distribution, expresed in km (Head and Mayer, 2002)

$$Distance_{ij} = \left\{ \left(\sum_{k \in i} \frac{POP_k}{POP_i} \right) \left(\sum_{l \in j} \frac{POP_l}{POP_j} \right) * D_{kl}^{\theta} \right\}^{\frac{1}{\theta}}$$

  - Density of Road – Paved roads in Km, divided by country surface in squared km (Canning dataset – World Stock of Infrustructure 1950- 2005)

  - Common bordrer – a dummy variable which takes value of 1 in case Albania shares a common border (water or land border with a trading partner) and zero otherwise

Data, variables definition and method of estimation

- Real Effective exchange rate

$$RER_{iAlbania} = \left(\frac{CPI_i}{CPI_{Albania}}\right)\left(\frac{Albanian\ Leke - USD\ Exchange\ Rate}{Country\ i\ Currency\ to\ USD\ Exchange\ Rate}\right)$$

- Effective Applied Tariff Rate (UNCTAD)

- Difference of capital intensity proxies by difference in GDP per capita

$$DPCI_{iAlbania} = \frac{\left|PCGDP_i - PCGDP_{Albania}\right|}{\left(PCGDP_i + PCI_{Albania}\right)/2}$$

- Difference of the size of the economy - degree of similarity of both economies

$$DGDP_{i-Albania} = \frac{\left|GDP_i - GDP_{Albania}\right|}{\left(GDP_i + GDP_{Albania}\right)/2}$$

- Governance Indicators
  - Political stability
  - Corruption
  - Government Effectiveness
  - Rule of Law

- Data Sources
  - ACIT Trade database - http://www.ftdb.acit-al.info/
  - IMF –IFS data – GDP, GDPC, GDP Deflator,Population, CPI, Exchange Rate
  - OECD – Exchange Rate for EU countries
  - CEPII Distance and country surface dataset (- CEPII, http://www.cepii.fr/distance/noticedist_en.pdf)
  - World Bank – Governance Indicators
  - Road Index (Canning Dataset)
  - UNCTAD database

- Panel Data Estimations
  - Time span 1993- 2007
  - 18 countries in the sample (EU, SEE and Turkey)
  - Panel EGLS - Cross-section random effects

Table 1. Trade Equation

Variables	Equation1	Equation2	Equation3	Equation4	Equation 5
Constant Term	-8,7**	-1,06	-0,88	-0,89	6,8**
	(-3,26)	(-0,36)	(-0,31)	(0,28)	(3,2)
Variables measuring "The economic mass"					
$Log(GDP)_i$	0,14*	0,51**	0,58**	0,72**	0,77**
	(1,66)	(5,38)	(4,962)	(5,046)	(8,072)
$Log(GDP)_{Albania}$	1,94	1,41**	1,24**	1,22**	1,23**
	(12,037)**	(7,69)	(6,23)	(5,434)	(6,21)
Variables measuring "trade resistance term"					
Log(Distance)	-0,88**	-2,02**	-2,07**	-2,73**	-2,02**
	(-2,305)	(-5,757)	(-5,47)	(-6,89)	(-5,144)
Road Index		0,47**	0,35*	0,585**	0,36**
		(2,707)	(1,89)	(3,35)	(3,104)
Effective Exchange Rate		-0,000109*		-0,000112*	-0,0000062*
		(-1,84)		(1,863)	(1,07)
Effective Applied Tariffs		-0,14**	-0,11**	-0,107*	-0,057*
		(-4,66)	(-3,59)	(-3,402)	(-1,95)
Common Border		0,34	0,38	0,74*	0,84**
		(0,88)	(0,9)	(1,835)	(3,762)
Variables measuring economic mass differences					
GDP Difference Term				-1,88*	-2,84**
				(-3,78)	(-7,38)
GDP per Capita Difference Term				1,13**	1,69**
				(4,43)	(7,13)
Governance indicators					
Political Stability					-0,19
					(-0,907)
Government Effectiveness					0,51**
					(1,677)
Curroption					1,75**
					(5,62)
Rule of Law					-1,306**
					(-3,22)
Regional Trade Agreement			**0,8****		
			(3,38)		
Trade Block of EU			**0,74***		
			(1,64)		
Statistical Properties					
R-squared	**0,34**	**0,397**	**0,42**	**0,456**	**0,632**
Adjusted R-Squared	**0,33**	**0,381**	**0,40**	**0,437**	**0,631**
F-Test of model significance	**45,72**	**24,21**	**20,47**	**23,809**	**33,287**
No of cross sections	**18**	**18**	**18**	**18**	**18**

Table 2. Export equation

Variables	Equation1	Equation2	Equation3	Equation4	Equation 5
Constant Term	(not significant)	6,02 (1,56)	7,11 (1,89)	7,24* (1,93)	12,408** (3,427)
Variables measuring "The economic mass"					
$Log(GDP)_i$	0,43** (3,71)	0,97** (7,69)	0,87** (5,72)	1,39** (7,426)	1,32** (7,47)
$Log(GDP)_{Albania}$	1,19** (5,34)	0,59** (2,32)	0,71** (2,60)	0,16 (0,54)	0,276 (0,93)
Variables measuring "trade resistance term"					
Log(Distance)	-1,95** (-3,88)	-3,34** (7,029)	-3,47** (-7,57)	-3,8** (7,33)	-4,84** (-9,14)
Road Index		0,49** (2,09)	0,45** (1,91)	0,64** (2,839)	0,53** (2,489)
Effective Exchange Rate		-0,000369** (-4,63)	-0,00035** (-4,368)	-0,00036** (-4,544)	-0,000262** (-3,15)
Effective Applied Tariffs		-0,12** (-2,97)	-0,12** (-2,904)	-0,07** (-1,82)	-0,04 (-1,015)
Common Border		0,31 (0,59)	0,18 (0,36)	0,91* (1,74)	0,53 (2,489)
Variables measuring economic mass differences					
GDP Difference Term				-1,16* (-1,789)	-1,88 (-2,706)
GDP per Capita Difference Term				1,64** (4,237)	1,705* (4,425)
Governance indicators					
Political Stability					0,59 (1,25)
Government Effectiveness					-0,434 (-1,235)
Curroption					1,2** (2,265)
Rule of Law					-0,72 (-1,15)
Regional Trade Agreement			-0,29 (-0,89)		
Trade Block of EU			0,56 (1,02)		
Statistical Properties					
R-squared	0,154	0,31	0,325	0,36	0,44
Adjusted R-Squared	0,145	0,29	0,301	0,34	0,41
F-Test of model significance	15,83	15,527	13,058	15,318	14,563
Number of Observations	253	253	253	253	253

Outcomes

- The economic mass effects positively trade flows,
  - a one percent increase in Albania GDP will be reflected in more than unity increase in trade flows but
    - this mostly effect imports, rather than exports
    - Albanian Exports are mostly demand driven - partners country GDP affect much strongly Albanian exports flows
- Distance between countries – negatively affects trade flows
  - The negative effect of transport cost is stronger on exports
- Density of Road - an approximation of infrustructure quality
  - Is highly significantly related to trade and exports
  - A 1% increase in road density would bring about 0,45% increase in trade
  - Road density has a stronger positive effect on exports than on trade flows (in total export+imports)

Outcomes……

- Effective Applied Tariffs
  - Negatively related to trade flows

- Real Effective Exchange Rate
  - a weak negative influence on trade flows, but stronger on exports

- Sharing a common border increases trade (exports as well)

- Regional Trade Agreement – Has created trade, but shows no significant effect on exports (not able to separate Kosovo has influenced significance of RTA on trade)

- There is a positive biasness toward EU trading partners

Outcomes…….

- Increasing similarity of economic mass measured by GDP difference, decreases trade flows (that is the case of lower commodity exchange with regional economies)

- Increasing Similarity in GDP per capita causes increase in trade flows (demand side effect and increase demand for variety). Convergence of regional economies might create some trade flows

- Institutional effect on trade flows
  - More significantly related to trade flows (exports+imports)
  - Trade flows increases with improvment in government effectiveness, controlling curroption increases trade
  - Political stability increases exports, while not significant on trade flows in total

Trade Potential/Export Potentials

Country	Actual Trade (Mio USD, 2007)	Estimated Potential Trade (Mio USD, 2007)	Ratio between potential and actual trade	
Austria	65.97	151.96	2.3	Undertrade
Belgium	18.94	89.47	4.72	Undertrade
Bosnja&Herzegovina	17.67	202.52	11.46	Undertrade
Bulgaria	94.69	196.22	2.07	Undertrade
Croatia	43.02	166.88	3.88	Undertrade
Czech Republic	32.85	113.58	3.46	Undertrade
Finland	11.09	60.71	5.48	Undertrade
France	43.02	122.19	2.84	Undertrade
Germany	217.67	135.89	0.62	Overtrade
Greece	741.62	720.87	0.97	Overtrade
Hungary	40.46	152.75	3.78	Undertrade
Italy	1,959.31	1,440.95	0.74	Overtrade
Macedonia	125.35	387.61	3.09	Undertrade
Poland	18.76	114.77	6.12	Undertrade
Romania	31.53	143.72	4.56	Undertrade
Serbia&Montenegro	169.58	273.87	1.62	Undertrade
Sllovenia	43.16	132.92	3.08	Undertrade
Spain	2.85	86.98	30.52	Undertrade
Turkey	346.7	311.68	0.9	Overtrade

Country	Albanian Exports in Mio USD	Potential Exports	Ratio between potential and actual exports	Potentials of exports growth
Austria	2.61	10.6	4.06	Undertrade
Belgium	0.44	3.39	7.70	Undertrade
Bosnja&Herzegovina	4.27	13.38	3.13	Undertrade
Bulgaria	7.57	13.97	1.85	Undertrade
Croatia	1.01	9.93	9.83	Undertrade
Czech Republic	0.22	5.05	22.95	Undertrade
Finland	0.19	1.33	7.00	Undertrade
France	6.73	8.22	1.22	Undertrade
Germany	26.33	10.81	0.41	Overtrade
Greece	88.7	36.92	0.42	Overtrade
Hungary	0.38	9.25	24.34	Undertrade
Italy	733.38	646.33	0.88	Overtrade
Macedonia	25.37	51.7	2.04	Undertrade
Poland	0.34	5.74	16.88	Undertrade
Romania	3.37	7.47	2.22	Undertrade
Serbia&Montenegro	25.77	28.34	1.10	Undertrade
Sllovenia	0.89	6.04	6.79	Undertrade
Spain	0.92	3.49	3.79	Undertrade
Turkey	23.68	4.51	0.19	Overtrade

Commenting Trade Potentials

- Potential Trade mean – what trade volume would be if there were no trade barriers
  - Trade Potentials - estimated for 2007 using gravity equation

- Outcomes comparing potentials of trade with actual trade
  - With 80% of trade partners actual trade of Albania is lower than ist potential trade
  - Trade levels with Regional economies is at around equilibrium levels of trade
  - We trade more with EU countries sharing a common border

    - *Albania has high potential to explore in exporting with other EU partners*
    - *Potential to export within region are lower than potential to imports*
    - *In future exports and imports might be more geographically diversified*