

# Prospects for Central Asia's Regional Trade: Product-Level Assessment

by Ziyodullo Parpiev

## Central Asia is:

- Landlocked and remote from major sea ports;
- High trade costs stemming not only from geographic factors, but also from high tariff and non-tariff barriers;
- Relatively well endowed with natural resources;
- Overall trade has rapidly increased since 2001;
- But share of intra-regional trade has fallen drastically
- Concentration of exports has been rising;

# High trade costs

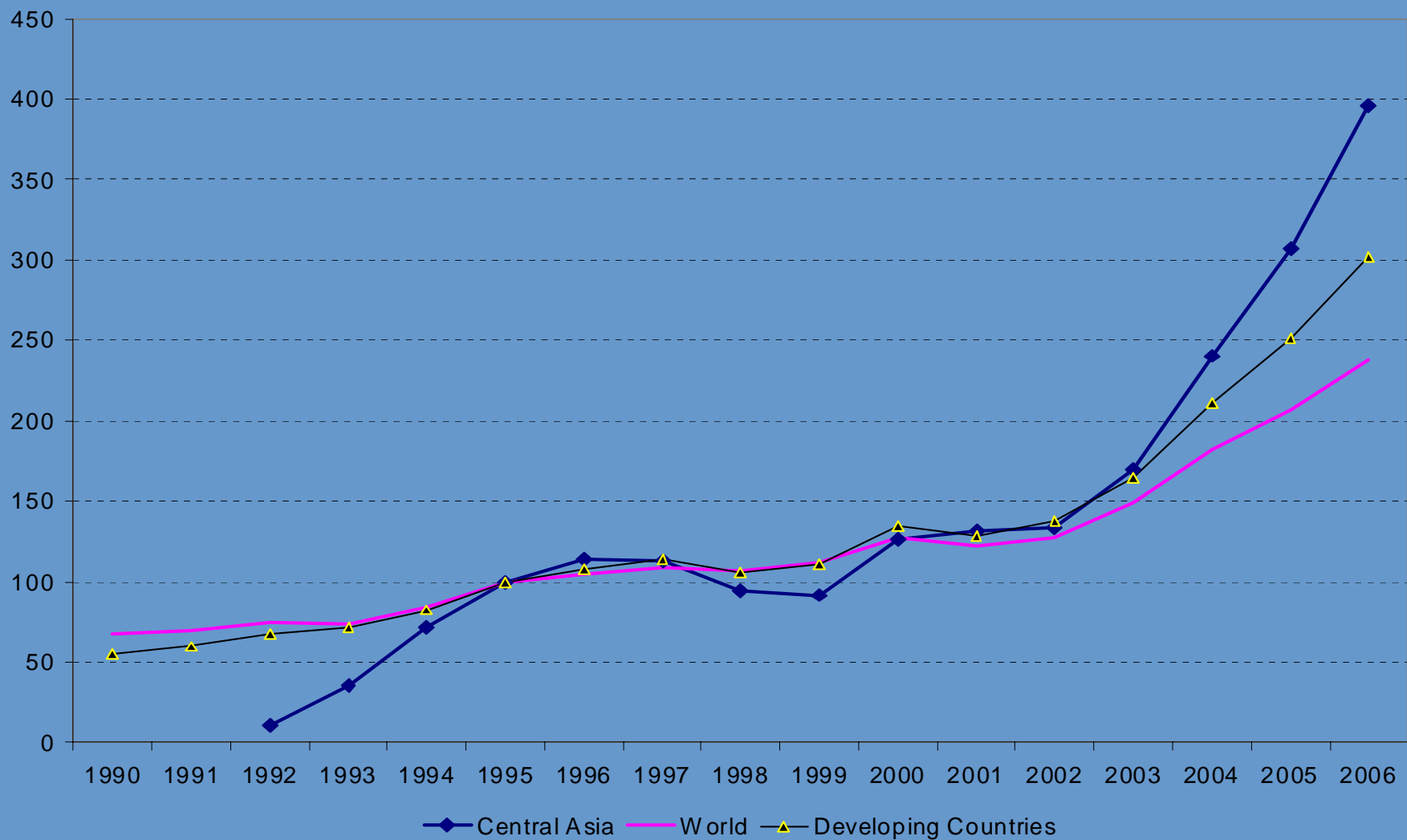
	<i>Area</i>	<i>Paved roads</i>	<i>Freight cost</i>	<i>Distance to sea</i>	<i>Tariffs</i>
	<i>square kilometers</i>	<i>% to total roads</i>	<i>cif/fob ratio</i>	<i>kilometers</i>	<i>Average tariff rate</i>
<b>Kazakhstan</b>	2,724,900	93.4	1.49	3750	7.4
<b>Kyrgyzstan</b>	199,900	91.1	1.74	3600	5.1
<b>Tajikistan</b>	142,550	82.7	1.86	3100	7.5
<b>Turkmenistan</b>	488,100	81.2	1.64	1700	
<b>Uzbekistan</b>	447,400	87.3	1.14	2950	14.5

# High concentration of exports

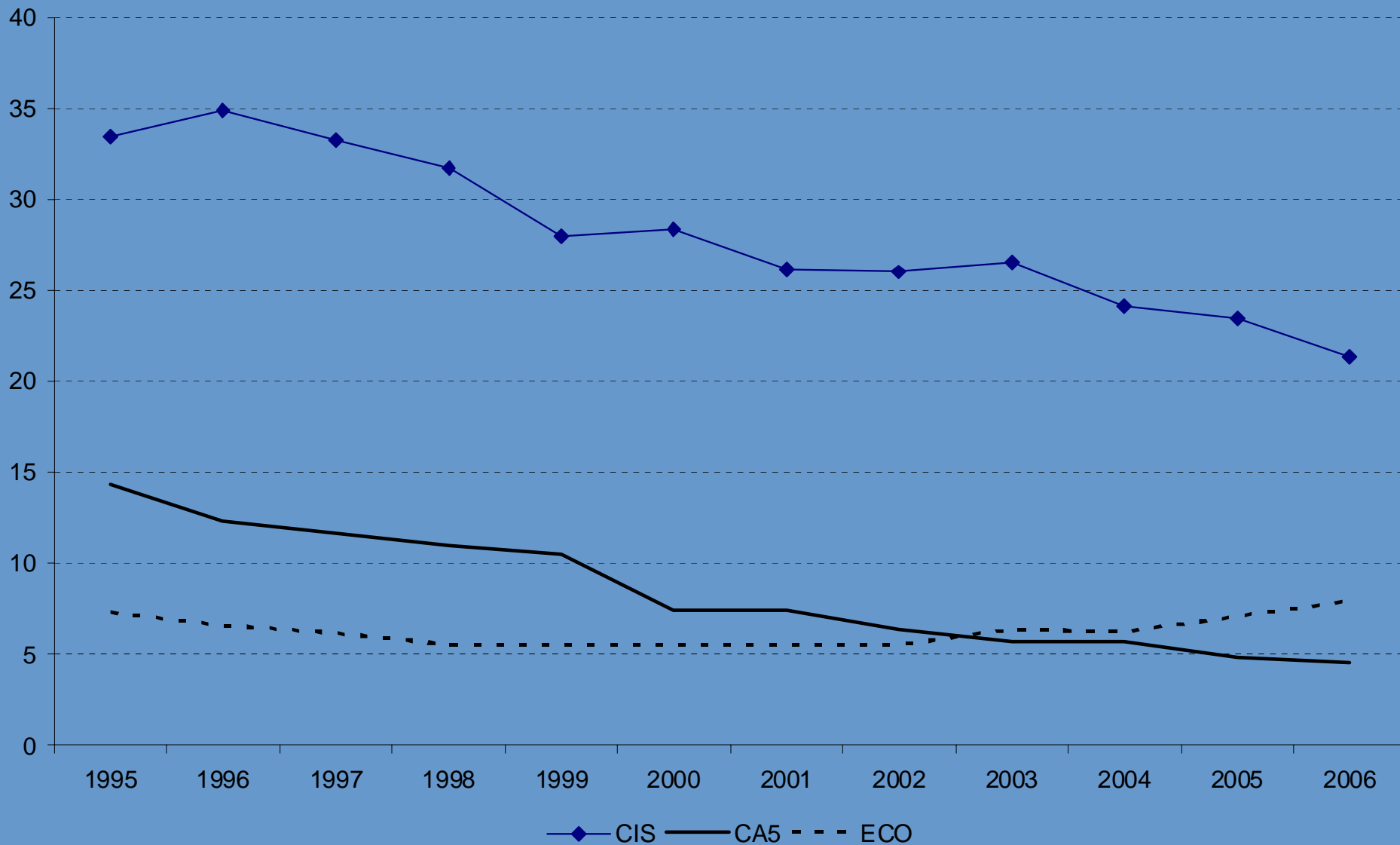
Exporter	Year	No of products exported	Share of 3 main products (%)	Concentration index
Kazakhstan	1996	885	45,3	0,310
	2003	702	80,5	0,524
Kyrgyzstan	1996	425	36,3	0,240
	2002	406	77,4	0,617
Tajikistan	1996	364	84,2	0,692
	2003	308	90,2	0,617
Turkmenistan	1996	261	75,3	0,459
	2003	220	69,5	0,436
Uzbekistan	1996	611	61,0	0,452
	2003	559	61,8	0,397

*Note: Calculated on 5 digit SITC data. Concentration index is Herfindahl-Hirschman index: high value (close to 1) indicates high concentration*

# Rapidly growing volumes of trade



# But decreasing volumes of intra-regional trade



**Table 3. Share of intra-regional trade in total trade, percent**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Kazakhstan	7.7	4.6	4.2	3.5	2.7	3.3	2.9	2.8	2.3	2.0
Kyrgyz Republic	41.0	32.4	25.6	22.4	27.0	27.0	24.8	23.8	19.9	15.8
Tajikistan	36.0	34.8	35.6	41.1	28.9	30.4	23.8	21.4	21.6	21.7
Turkmenistan	3.3	13.4	8.9	4.2	3.0	3.7	2.7	2.9	3.3	3.2
Uzbekistan	12.7	13.0	14.5	16.7	16.3	14.8	14.4	12.0	11.7	11.2
<b>Weighted average</b>	<b>12.3</b>	<b>11.7</b>	<b>11.0</b>	<b>10.5</b>	<b>7.4</b>	<b>7.4</b>	<b>6.3</b>	<b>5.7</b>	<b>4.9</b>	<b>4.3</b>

# Motivation

- International trade theory predicts that countries located in considerable distance from major world trade centers tend to trade more with each other (see, for instance, Frankel, 1998);
- One would expect that linguistically and culturally close Central Asian countries trade with each other more;
- However, the overall intra-regional trade fell from 12.3 percent in 1996 to 4.3 percent in 2005. This tendency is most prominent in Kazakhstan and Kyrgyzstan, two most liberalized countries of the region.



# Disaggregated data assessment

## Hypothesis

***Central Asian countries are  
'natural trade partners' to each  
other***

- Heckscher-Ohlin theory
- New trade theory

# Search for comparative advantages

- Comparative share of different trade commodities

$$Share_j^k = \frac{X_j^k}{X_j} \times 100$$

- Index of Trade Complementarity

$$ITC_{ij} = \sum_k \frac{Xshare_{iR}^k \times Mshare_{jR}^k}{Mshare_{RR-iR}^k}$$

- Net Exports

$$NX_i^k = X_i^k - M_i^k$$

# Comparative advantages

	Broad primary commodities		Low-skill manufactures		High-skill manufactures	
	Central Asia	Rest of the world	Central Asia	Rest of the world	Central Asia	Rest of the world
<i>Kazakhstan</i>						
1996	4.6	69.9	0.8	9.2	1.2	14.3
2000	2.4	79.6	0.2	14.5	0.2	3.2
2006	1.7	88.5	0.2	6.8	0.2	2.6
<i>Kyrgyzstan</i>						
1996	32.2	33.2	7.6	8.4	7.8	10.8
2000	18.5	64.1	2.8	3.5	5.1	6.0
2006	10.7	56.3	10.8	11.6	5.7	4.9
<i>Tajikistan</i>						
2000	14.7	74.0	0.2	3.7	1.4	6.1
2006 *	3.2	88.7	0.1	5.3	0.1	2.5
<i>Turkmenistan</i>						
1997	10.3	81.5	0.2	7.5	0.1	0.5
2000	2.4	89.2	0.1	7.4	0.1	0.9
2006 *	2.1	86.8	0.1	9.3	0.3	1.4
<i>Uzbekistan</i>						
2000	12.5	68.6	1.0	9.7	2.0	6.2
2006 *	4.4	59.5	2.0	18.3	1.3	14.4

Note: \* - only intra-regional trade with Kazakhstan and Kyrgyzstan

# Index of trade complementarity

	Importing country				
	KAZ	KYR	TAJ	TUR	UZB
<b>KAZ</b>		0.56	0.12	0.36	0.28
<b>KYR</b>	0.63		0.77	0.43	1.16
<b>TAJ</b>	0.28	0.17		0.01	1.59
<b>TUR</b>	0.36	1.90	0.74		0.08
<b>UZB</b>	0.26	0.42	0.71	0.31	
European Union	53.4		Andean Pact		7.4
NAFTA	56.3		South Asia		1.3
MERCOSUR	28.6		Central Asia		0.6

*Notes: The complementarity index for other regions - European Union  
NAFTA, MERCOSUR, Andean Pact, South Asia are taken from  
Yeats (1998) and Pitigala(2005)*

## Helpman (1987) test

$$IIT_{jk} = \alpha_0 + \alpha_1 \log \left| \frac{GDP^j}{N^j} - \frac{GDP^k}{N^k} \right| + \alpha_2 \min(\log GDP^j, \log GDP^k) + \alpha_3 \max(\log GDP^j, \log GDP^k) + \varepsilon$$

where

$IIT_{jk}$  is the Grubel-Lloyd index of intra-industry trade in total trade,

$\left| \frac{GDP^j}{N^j} - \frac{GDP^k}{N^k} \right|$  is the measure of the dissimilarity of per capita income,

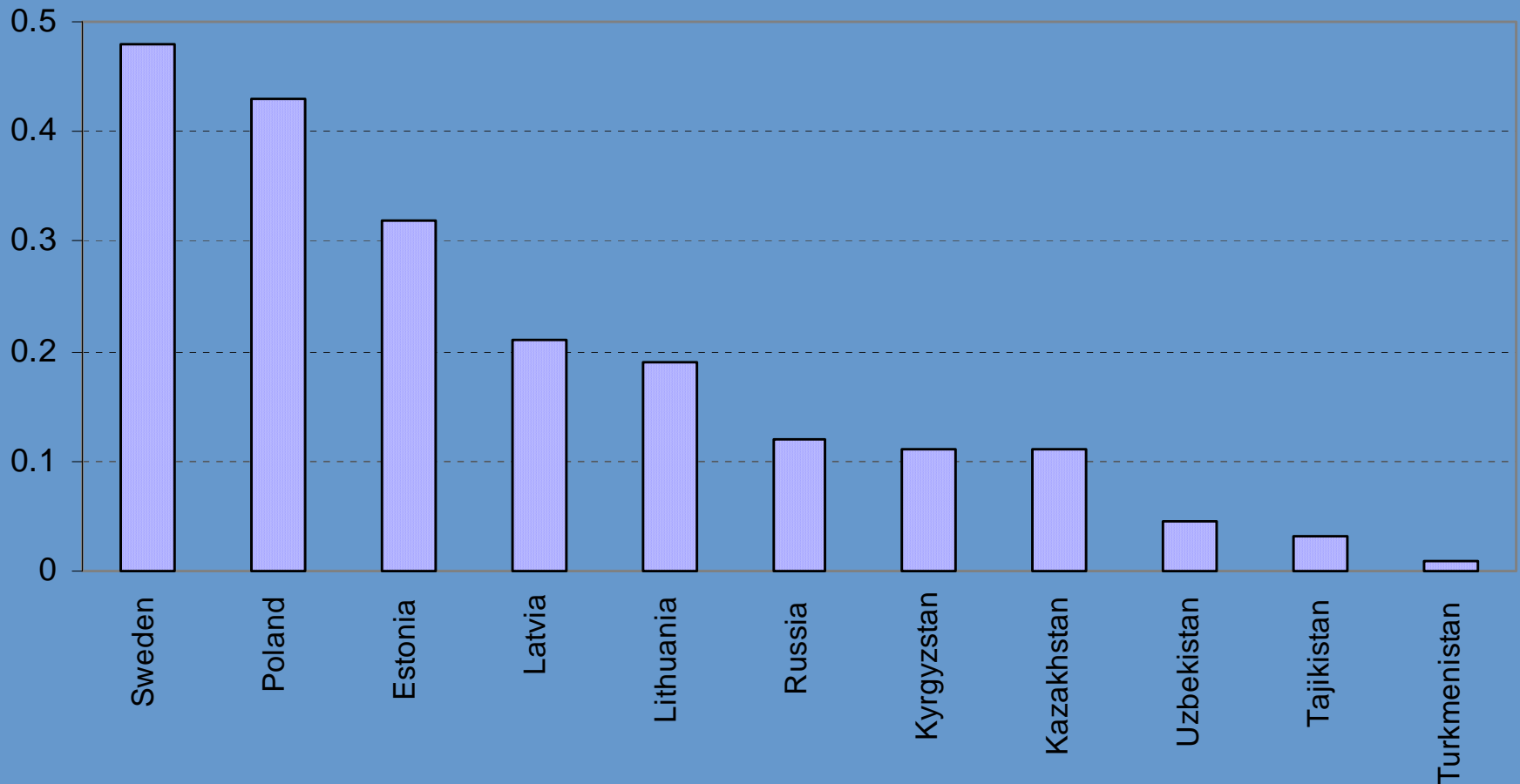
$\min(\log GDP^j, \log GDP^k)$  is the GDP of smaller country,

$\max(\log GDP^j, \log GDP^k)$  is the GDP of larger country.

## Grubel-Lloyd index (1975)

$$IIT^{jk} = 1 - \frac{\sum_g |M_g^{jk} - M_g^{kj}|}{\sum_g (M_g^{jk} + M_g^{kj})} \quad 0 \leq IIT^{jk} \leq 1$$

# Share of intra-industry trade



*Notes: Central Asian countries' regional Grubel-Lloyd index is calculated by the authors for 2006  
Figures for Baltic Sea regional Grubel-Lloyd index are taken from Widgren (2006)*

**Table 7. Helpman test  
(dependent variable – Grubel-Lloyd index)**

	All trade partners			Within Central Asia		
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Difference in per capita GDP</b>	-0.10** [0.04]	-0.02 [0.04]	-0.02 [0.04]	-0.54* [0.20]	-0.59** [0.14]	-0.12 [0.18]
<b>Smaller country's GDP</b>	-0.05 [0.04]	-0.03 [0.04]	-0.04 [0.04]	-0.16 [0.25]	0.30 [0.19]	-0.65** [0.22]
<b>Larger country's GDP</b>	-0.08* [0.04]	-0.03 [0.04]	-0.10** [0.04]	0.22 [0.28]	-0.19 [0.21]	-0.02 [0.23]
<b>Distance</b>		-0.53** [0.12]			-1.84** [0.26]	
<b>Common border</b>			1.54** [0.22]			2.75** [0.52]
<b>Constant</b>	-1.24 [1.06]	0.73 [1.15]	-1.55 [1.04]	-2.04 [6.42]	9.86* [4.86]	9.39 [5.61]
<b>Observations</b>	1073	1073	1073	55	55	55
<b>R-squared</b>	0.03	0.05	0.07	0.14	0.57	0.45

Standard errors in brackets

\* significant at 5%; \*\* significant at 1%

# Conclusion

- Helpman's test for intra-industry trade indicates that Central Asian trade is found to be mostly of inter-industry type, driven by natural resource endowments of these countries
- The fact that the factor endowment motive is the main factor for overall trade determination implies that it is extremely difficult to diversify export composition in Central Asia away from primary commodities.
- Intra-industry trade among Central Asian nations seems to have much higher potential. Since the region faces high trade costs on the way to world markets, integration of production and intra-industry trade might yield greater dividends for all countries in the region.

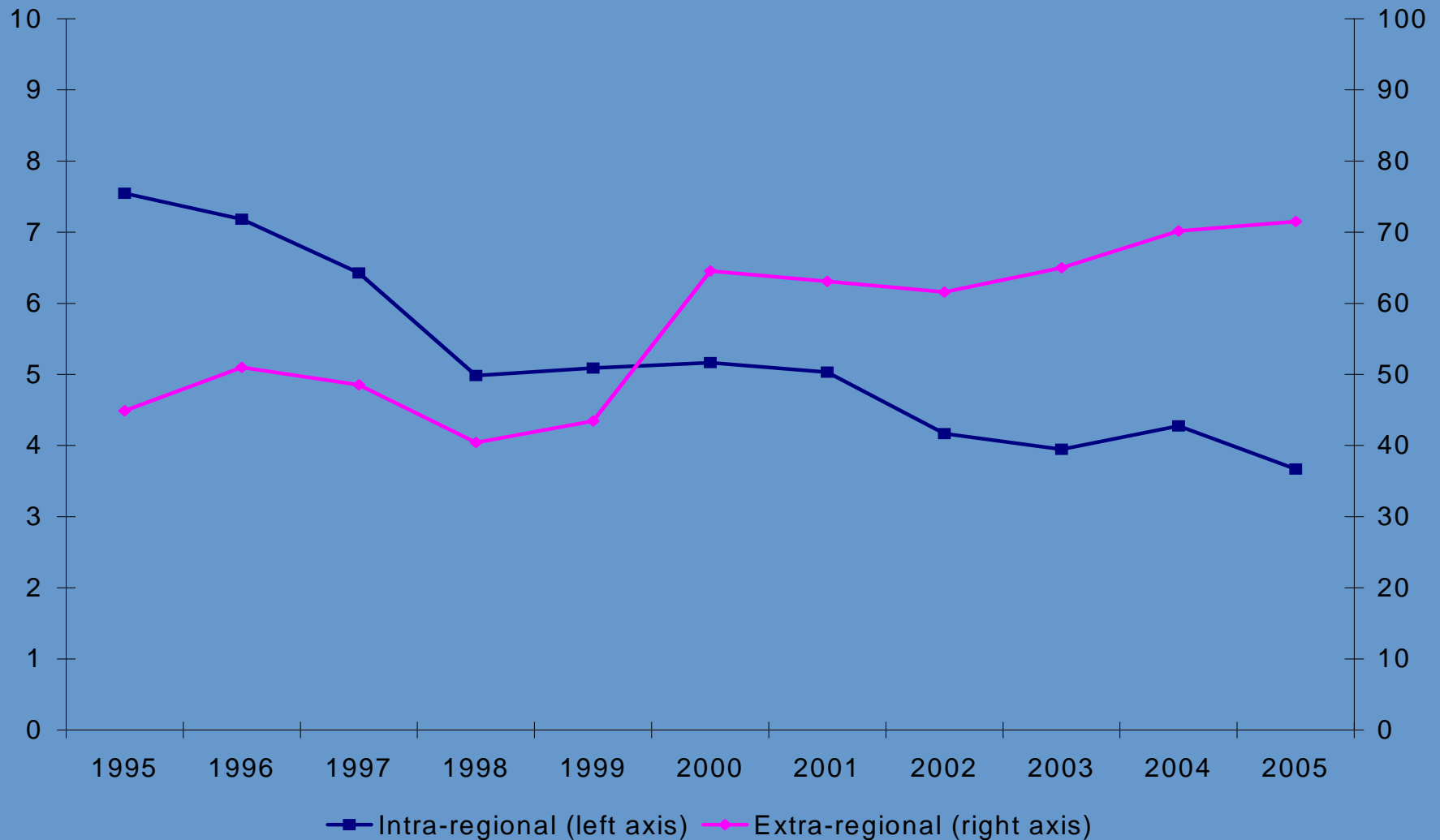


## Some policy remarks

- Promote intra-regional trade to be prepared for sudden international shocks related to volatility of primary commodities prices
- Support specific manufacturing goods in which countries have comparative advantages
- To overcome the curse of distance Central Asian countries need to develop new transport corridors

Thank You!

# Openness ratio $((X+M)/Y*100)$



# Divergence and concentration

	KAZ	KYR	TAJ	TUR	UZB
Divergence of exports <sup>1</sup>	99.9	97.8	86.7	99.6	77.4
Concentration of intra-regional exports <sup>2</sup>	36	46	4	3	10
Concentration of extra-regional exports <sup>2</sup>	10	16	3	2	11
Share of 3 main commodities in total exports	84	51	96	99	62

*Note:*

<sup>1</sup> - Share of intra-regional exports that match total exports

<sup>2</sup> - Number of products accounting for 75% of exports

# Net exports (comparative advantages)

Commodity	year	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
BPM	1996	-9	-5	-66	<b>76</b>	-13
BPM	2000	26	-19	-45	<b>52</b>	2
BPM	2006	27	-38	-66	<b>83</b>	-21
LSM	1996	35	<b>26</b>	-47	-84	-51
LSM	2000	3	<b>44</b>	-79	-78	32
LSM	2006	-34	<b>57</b>	-91	28	42
HSM	1996	8	<b>25</b>	16	-42	-26
HSM	2000	12	<b>44</b>	-47	-92	19
HSM	2006	-7	<b>29</b>	-93	29	34