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Export - Employment Relations in Transition Economies

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Transition economies have entered to the literature of economy with the collapse of the Eastern bloc and dissolution of the USSR's. For many years, these countries had been managed by the centrally planned economic system. In the central planned economic system, the government was main actor in all sectors of economies. These countries had been closed to foreign market when they recently have met exportation and started trade relation with the other countries. By shifting to the market economy, the public sector has given its duty to private sectors; in the early years of independency due to insufficient production process many problems such as unemployment and inflation emerged. The aim of this study is to investigate the influence of export on employment during the transition period. The paper has analyzed the long and short term relationships between exports and employment in twenty-two transition economies by using data covering the years 1993-2011. Estimation results of the study support the relationship between exports and employment in the context of transition economies. Based on the findings, there is a long run relationship between exports and employment. It has been found that employment has the explanatory power on export in the second model. In the second model where export is dependent variable, the long-term

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coefficient is more powerful and error correction coefficient is negative and significant in nine countries.

Keywords: Foreign trade; export; employment; transition economies.

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1. INTRODUCTION

Upon termination of the bipolar system, the world has witnessed rapid development at the end of the 1980s. At the beginning of the developments, collapses of the USSR and later many countries declaring their independence from USSR have become an actor in the both political and economic system. Those new actors have initiated a transformation towards a free market economy through giving up a centrally planned economic system which was once applied in USSR between 1917 -1990. The post-independence period has been known as market economy transition and has brought many challenges such as reducing the weight of the state in the economy, having no sufficient knowledge about the market system of decision makers in the economy, legal basis is related to centrally planned economy period, lack of the concept of private property, having no adequate knowledge about entrepreneurship and having no enough capital accumulation of society.

In the period of post-independence, that willpower of political authority in the country is to pass onto a market economy has been one of the key elements of these countries' dissociation of the transitional period in these countries. Whereas Baltic Countries make rapid reforms towards the completion of the transitional process, The Central Asian economies, especially Uzbekistan, Turkmenistan and Tajikistan have followed the process further behind. Transition to market economy is based on reducing the weight of the state in the economy, private property, intellectual property rights and encouraging the promotion of entrepreneurship, setting of prices in a free market circle and liberalization of foreign trade. According to 'Transition Report" [1] published by European Bank for Reconstruction and Development in 2012, the following table shows the situation in some sectors in terms of transition performance.

Considering EBRD's transition performance scores of 1-4, Baltic countries show the highest performance, whereas Central Asian Turkic Republics have the lowest performance. Although nearly 24 years have passed since Central Asia, Eastern Europe and the Caucasus economies gained their independence, it is seen that they haven't reached desired level in the fields such as private capital, financial market development, financial services and banking in order to acquire the functioning of market economies which are necessary and also needed to develop foreign trade. The development of industrial sector which provides employment has also been slow due to poor performance in the development of private equity, banking and financial markets.

The increase in foreign trade of these countries would also contribute to a market economy in the transitional period. In addition, the promotion of foreign investments would help the elimination of scarcity of investment resulting from a lack of knowledge transfer and private equity.

2. THEORETICAL FRAMEWORK AND LITERATURE SUMMARY

It is clearly seen that the theoretical framework of the relationship between foreign trade and employment significantly are formed by Hescksher-Ohlin theory. According to this theory, trade among countries under certain assumptions is determined by factor intensity among countries. Accordingly, while the countries where labor is abundant labor-intensive goods have been being produced and exported, the countries where capital is abundant capital-intensive goods have been being manufactured and exported, and thus the profit from foreign trade has been increasing. As for the effect of process on employment, increase on the use of labor in the countries where labor-intensive goods have been exporting, as for that the countries where capital-intensive goods have been being exported, increase on the use of capital has been emerged. Therefore according to the theory in question, it is possible to increase employment and exports [2].

Table 1. Transitional performance of countries

	Countries	Agricultural business	Industry	Urban transportation	Banking	Insurance and financial services	Private capital	Financial markets
East Europe-caucasus	Azerbaijan	2+	2	2	2	2	1	2-
	Belarus	2+	2	2	2	2	1	2+
	Georgia	3-	3-	2+	3-	2	1	2-
	Armenia	3-	3	2+	2+	2	1	2
	Moldova	3-	2-	3-	2+	2+	2-	2+
	Russia	3-	3-	3	3-	3-	2+	4-
	Ukraine	3-	2+	3	3-	3-	2+	4-
Central Asia	Kazakhstan	3-	2	2+	3-	2+	2-	3
	Kyrgyzstan	2+	2	2	2	2-	1	2-
	Mongolia	3-	2+	2	2+	2	2-	2+
	Tajikistan	2	2-	2	2	2-	1	1
	Turkmenistan	1	1	1	1	2-	1	1
	Uzbekistan	2	1	2	1	2	1	1
South-eastern Europe	Bulgaria	3	3	3+	3	3+	3+	3
	Romania	3	3+	3+	3	3+	3	3
	Macedonia	3-	3	3-	3-	3-	1	2-
Baltic	Latvia	3	4-	4-	3+	3+	3-	3
	Latonia	3	4-	4-	3+	3+	3-	3
	Poland	3+	4-	4-	4-	4-	3+	4
	Slovakia	3+	4+		4-	3+	2+	3
	Slovenia	4-	3+	3+	3	3	3-	3

Source: EBRD, 2012 transition report

A number of studies also having an explanation is as follows on the basis of Hescksher-Ohlin theory: since trade affects factor prices and demand factors the product prices change. Thus, while trade makes demand factors increase in profitable sectors, trade makes the demand decrease in unprofitable sectors. This decreases wages of unskilled workers because it increases the demand for skilled labor compared to the demand for unskilled labor. As a result trade causes a very small change in the prices and owing to this very small change in the wages of employees is largely not possible, so it has been stated that the effect of trade on employment is very little as well [3].

A number of empirical studies have discussed the effect of trade on employment. However, previous studies on trade and employment focused mainly on the effect of imports rather than exports [4]. In this study, there are at least three dimensions to be further investigated. Firstly, affects of export on employment, secondly effects of import on the labor market, thirdly effects of openness on employment. Results of earlier studies are different due to method, data and time periods that they used. Another factor may be concerned that employment can be measured not by the number of workers but by the working hours (i.e., the number of workers times average working hour [5]). Moreover the earlier studies focused on the effect on the industry's own employment and did not pay much attention to the effect on other industries' employment. As an example of work about the effect of trade on employment in the literature will be mentioned following lines.

Revenga, in his study, analyzed the effect of the increase in import competition on employment and wages in the U.S. manufacturing sector using OLS data between the years 1977-1987. He revealed that Estimation results of changes in import prices significantly affect employment and wages. The test results showed that the appreciation of the U.S. dollar between the years 1980-1985, which was the subject of the research in the sector caused to decrease 2% in wages and 4-7, 5% in employment. Wood [6] studied the effect on the labor market for North and South in the manufacturing industry. Unskilled labor in the southern part on the trade sourced employment provides more earnings, nevertheless the earnings in the northern part concentrated on skilled labor and there was a decline in the wages of unskilled labor. It was concluded that the best solution in the long term for the north was to increase the qualifications of employees by investing more in the education sector.

Baldvin [7], studied the effects on wages and employment of foreign investment and trade in OECD countries. In consequence, the changes in employment had much more importance than the concepts such as labor supply, technology and the increase in demand compared with the effect of the increase in trade. Harrison and Hanson [8] examined the effects of import on employment for Costa Rica, Peru Uruguay, Poland, Czechoslovakia and Romania. The result of their study found that effects are higher on employment in Latin Economies while it is lower for Transition Economies.

Milner and Wright [9], studied the response to trade liberalization of the labor market in industrialized country Mauritius. The responses of employment and wages in the short and long term were tested by supportive empirical studies using trade as a specific factor model. Employment and wages of importing and exporting sectors in Mauritius were tested by means of panel data pre and post liberalization in trade. Results of empirical analysis were supportive to theoretical assumptions of different effects across sectors. They found that, trade liberalization resulted in expanded labor demand in export industries. More surprisingly, labor demand appears to increase even in import-competing industries.

Pryor [10] in his study in USA, searched for the effects of trade on unskilled employment. In his study, he observed that there was a direct relationship with net export and training and Import competition and protection measures increased more investment and the effect level of labor skills. However, the findings of study showed that there was not much effect of foreign effect on unskilled workers' employment.

Greenaway, Hine and Wright [11] studied the effects of trade on employment in 167 manufacturing industrial firms in the UK example. Dynamic labor demand equation, inducing exports and imports of the years in 1979-1991 was examined with the panel data analysis. Based on the study results, the increase in exports and imports reduced the demand for labor. As the reason for the decline in labor demand, opening to foreign trade along with the increase in labor productivity brought about. Contrary to popular opinion, the effect of trade on

East Asia and Japan seemed less obvious than the import from European Union.

Ghose [12] examined this issue for East Asian countries. His study result indicated that trade liberalization accelerated manufacturing employment growth in both export-oriented and import-competing sectors for. Baldwin and Cain [13], Sakurai [14] found that the effect of trade on relative wages between productive and nonproductive workers was rather small in Japan. LeClair [15] examined the effect of U.S. exports on employment for different industries. The study results concluded that the exact gains in terms of total employment depend upon the labour-intensity of the products being exported. Foreign sales by the chemical and textile industries result in a far greater increase in employment than exports by the petroleum refining or steel industries.

Leichenko and Silva [16], searched for the industrial employment of foreign trade in rural areas and the effects on wages in the United States. By the outcome of the study, it was found that low export prices in both rural and urban areas increased employment and wages, and low import prices reduced employment in the rural areas, but increased employment in urban areas. In addition, the countries, to a large extent turned towards export due to low employment and wage both in urban and rural areas.

Davidson and Matusz [17], made an observation on 399 firms in the United in the years from 1974 to 1992. As a method, regression analysis was applied. They concluded that there was a strong negative relationship between labor losses with net exports, on the other hand as a weaker finding; the contribution of net exports to business is weak but positive. Dutt, Mitra and Ranjan [18], studied the relationship between trade and unemployment particularly on the basis of Hecks-Ohlin and Ricardo's theory of comparative advantages. The method of panel data analysis was applied. They ended up with the result of negative relationship between unemployment and openness with strong and valid evidences.

Ayaş and Çeştepe [19], studied the effects of changes in foreign trade on employment within the scope of manufacturing industry. 1998 and 2002 input-output tables were used as basis together with Factors of intensity and input-output models. It was seen that in the calculations of the effects of changes in foreign trade on employment differed in some sectors, while increasing employment in some sectors, reducing in some others. As a result, the net employment effect was found to be positive for the manufacturing industry. Polat and Uslu [20], did a research on the manufacturing sector by means of dynamic panel data in 95 manufacturing sectors in Turkey in 1992-2001. Trade data on employment in manufacturing industry revealed to be no significant effect. Cuyvers et al. [21] searched for the effect of internationalization on the demand for labor in firms of Belgium in 1997-2007. Analysis results showed that imports from low-income countries and the demand for unskilled workers was significantly narrowed, but that increased the demand for skilled workers; increased in exports; similarly; it increased the demand for workers with higher productivity, and reduced the demand for labor with less productivity. Feenstra and Hong [22] examined the effect of China's exports on employment. They concluded that exports have become increasingly important in stimulating employment in China but domestic demand led to three times more employment gains than did exports.

Gül and Kamacı [23] studied trade and unemployment relation selected developed and developing countries. Their research result concluded that there is causality from export and import to unemployment both developed and developing economies.

Yanıkkaya [24] also indicate that higher trade volumes have adverse effect on industrial employment in developed countries. Moreover, while they have positive effect on employment in industry and services in developing countries, trade barriers have adverse effect on employment growth in services for developed countries.

There is not a common consensus on the empirical findings that investigated relationship between trade volume and employment in the examined literature. The difference in the results of studies is due to method, data and time periods that they used. However it can be seen that generally export has a positive effect on employment in labor intensive sectors [23,9,10]. In the next part we will examine whether export has an influence on employment in aforementioned countries' economies. We expected that the export has positive influence on employment in transition countries whose economies mostly depend on labor intensive sector as discussed in literature part.

3. ECONOMETRIC MODEL AND RESULTS

Testing for unit roots has become a standard procedure in time series analyzes. For panel data, panel unit root tests have been proposed by Levin and Lin [25], Im, Pesaran and Shin [26], Harris and Tzavalis [27], Madala and Wu [28], Choi [29], Hadri [30], and Levin, Lin and Chu [31]

If two variables are potentially non-stationary variables, so the long term relationship can be investigated between these series. Especially two variables are both I(1), co-integration relationship exists between these series (see [32]).

To determine whether a co-integrating relationship exits, the recently developed methodology proposed by Pedroni [33] is employed. Basically, it employs four panel statistics and three group panel statistics to test the null hypothesis of no co-integration against the alternative hypothesis of co-integration. Having established that there is a linear combination that keeps the pooled variables in proportion to one another in the long run, it can be proceeded to generate individual long-run estimation. In view of the fact that the OLS estimator is a biased and inconsistent estimator when applied to co-integrated panels that are utilized the “group-mean” panel fully modified OLS estimator (FMOLS) developed by Pedroni [34,35].

Although FMOLS and DOLS estimation methods examine only long run parameters, the PMG and MG estimation methods calculate both long and short run parameters. MG estimation method proposed by Pesaran and Smith [36] derives the long run parameters for the panel from averages of the long run parameters of the ARDL models for individual unit.

Employment and export relations of 22 countries in this study, between the years of 1993 to 2011 will be examined by using employment rate and export data through panel data methods. Data set for econometric analysis were taken from World Bank Indicators (WDI) and E-views 8 and stata11 econometric package programs have been used. In panel data analysis, both horizontal section dimension (22 countries, Azerbaijan, Bulgaria, Belarus, Czech Republic, Georgia, Armenia, Kazakhstan, Kyrgyzstan, Lithuania, Latvia, Poland, Romania, Russia, Macedonia, Moldova, Mongolia, Slovakia, Slovenia, Uzbekistan, Tajikistan Turkmenistan and Ukraine) and time series dimension (1993-2009; 17 years) are in equation. Stationary of panel series have been investigated through applying Levin, Lin and Chu (LLC), Im, Peseran & Shin, ADF and PP Fisher unit root test in order to determine the statistics of the variables whether they contain unit root.

First, it is applied several panel unit root tests for employment rate and Export, the pooled panel unit root tests results are represented in Table 2. The lag orders are chosen by Akaike information criterion. Pooled unit root test results show that the unit root null hypothesis for panel data cannot be rejected in level for both series, According to the results of panel unit root tests EMP (employment) and EXP (export) variable are non-stationary at level. However null hypothesis is rejected for the first differences: both employment and export series are I(1) stationary.

Panel co-integration test has been conducted to measure the existence of long-term relationships between variables. Pedroni Panel Co-integration test results are given in Table 3. The lag orders are chosen according to the Akaike information criterion and the model does not include individual intercepts and trends. It cannot be rejected co-integration relationship between

Table 2. Panel data unit root test results

	Employment rate (EMP)		Export (EXP)	
	Level	**Difference**	**Level**	**Difference**
Levin, Lin & Chu stat	-1.00347	-11.517	2.129	-19.182
	(0.157)	(0.000)	(0.989)	(0.000)
Im, Pesaran & Shin	-1.17694	-8.616	-2.01760	-13.0706
W-stat	(0.119)	(0.000)	(0.678)	(0.000)
ADF-Fisher Chisquare	56.4722	148.891	20.844	352.672
	(0.098)	(0.000)	(0.997)	(0.000)
PP-Fisher Chisquare	51.6826	158.231	23.136	357.214
	(0.198)	(0.000)	(0.99)	(0.000)

unemployment rate and GDP for 22 Transition countries for both model 1 (dependent variable: employment rate) and model 2 (dependent variable: EXP) with most of co-integration test statistics. Pedroni co-integration test results reveal the existence of a long-term relationship between employment and exports.

The next step is to estimates short run and long run estimators models. The result are shown in Tables 4-5 for pooled, in Tables 6-7 for individual. PMGE, MGE and DFE methods are used to estimate both short run and long run coefficients. Moreover Hausman test is implied for testing the hypothesis that long run coefficients are the same for all of the countries, display that the null hypothesis could not be rejected for both models. Thus, the PMGE and DFE methods are valid; in other words, the long run coefficients are homogenous and do not change according to the country. The Akaike information criterion is chosen lag length for all estimation methods.

When analyzed in terms of countries, the error correction parameter is negative and significant in Romanian and Russian economies hence long-term relationship between employment and export for these countries is valid and 19% and 15% of deviations that occur in short-term will achieve balance respectively the following term according to PMGE results in model 1. The long run coefficient is significant and its value is the same for all countries.

The long run coefficient is significant and its value is 1.97 for all countries according to PMGE results for model 2. The error-correction parameters for PMGE, MGE and DFE are significant. Accordingly, there are long-term relationships between variables and 32% of the short-term deviations in this relationship will be corrected and will move closer to the long-term equilibrium in the next term. We can conclude that employment explains the export in the long term for these countries.

Table 3. Pedroni co-integration test

	EMP (Dependent variable)		**EXP (Dependent variable)**	
		weighted stat.		**Weighted stat.**
Panel v-Statistic	-3.324235	-3.518752	4.373980	2.764359
	(0.999)	(0.999)	(0.000)	(0.002)
Panel rho-Statistic	-2.407051	-1.380591	-2.817446	-1.982944
	(0.003)	(0.054)	(0.000)	(0.013)
Panel PP-Statistic	-3.354096	-1.995079	-3.563543	-2.942996
	(0.000)	(0.023)	(0.000)	(0.001)
Panel ADF-Statistic	-3.238554	-2.504452	-3.852777	-2.746698
	(0.000)	(0.0061)	(0.000)	(0.003)
Group rho-Statistic	0.116210		-0.120469	
	(0.414)		(0.319)	
Group PP-Statistic	-4.502827		-4.241304	
	(0.000)		(0.000)	
Group ADF-Statistic	-4.664242		-4.272803	
	(0.000)		(0.000)	

Table 4. Long term and short term relations test (Dependent variable is employment)

	PMGE	**MGE**	**DFE**
Long term coefficient	-1.45 (0.004)	1.77 (0.303)	0.10 (0.051)
Error correction coefficient	0.67 (0.626)	-0.25 (0.000)	-0.135 (0.00)
Short term coefficient	0.134 (0.266)	0.006 (0.668)	0.003 (0.702)
Hausman test	0.130		

Table 5. Long term and short term relations test (Dependent variable is export)

	PMGE	**MGE**	**DFE**
Long term coefficient	-1.975 (0.00)	1.972 (0.327)	-.2127 (0.666)
Error correction coefficient	-.31683 (0.000)	-.463981(0.000)	-.327869 (0.000)
Short term coefficient	1.855 (0.007)	1.099(0.030)	0.718 (0.023)
Hausman test	0.090		

Table 6. Individual long and short run estimation (Dependent variable: (Δexp_{it}))

		Armenia	Azarbaijan	Belarus	Bulgaria	Check	Georgia	Kazahstan	kyrgyzstan	latvia	Lithuania	makedonia	moldivia	MNG	Romanial	Russia	Polond	Slovakia	Slovenia	Tajikstan	Turkmeistan	Ukrain	uzbekstan
Long run coeff. (θ_i)	PMGE	-1.97*	-1.97*	-1.97*	-1.97*	1.97*	-1.97*	-1.97*	-1.97*	-1.97*	-1.97*	-1.97*	-1.97*	-1.97*	-.197*	-1.97*	-1.97*	-.197*	-1.97*	-1.97*	-.197*	-1.97*	-1.97*
	MGE	-4.53	14.15	0.34	1.15	-4.5*	-3.35	0.9	6.36	-0.6	-9.06*	-1.19	0.67	6.8*	-0.42	-1.68	-4.13*	-9.13	2.05	35	10.59	-2.68*	6.01
Error corr. coeff. (φ_i)	PMGE	-0.35*	-0.16	-0.49	-0.24	-0.34	-0.49*	-0.47	-0.06	-0.56*	-0.55*	-0.52*	-0.03	-0.35	-0.05	-0.47*	-0.12*	-0.18	0.08	-0.17	-0.46*	-0.68*	-0.26
	MGE	-0.27	-0.32*	-0.58	-0.80*	-0.75*	-0.49*	-0.5*	-0.16	-0.74*	-0.37*	-0.61	-0.57	-0.54*	-0.41*	-0.5	-0.08*	-0.15	-0.14	-0.44	-0.45	-0.75*	-0.49*
Short run coefficients																							
emp	PMGE	-0.28	-0.07	6.78	1.42	1.55	0.73	0.68	0.12	0.67	1.39	2.55	0.61	0.06	-0.02	2.31*	0.63	0.85	0.009	14.32	4.32	1.77	0.36
	MGE	-0.54	-2.35	8.58	0.31	4.03*	1.09	0.33	-0.48	0.33	2.38*	2.7	-0.2	-1.98	-0.22	2.97	0.47*	1.03	0	3.28	2.57	2.1	-1.57

Table 7. Individual long and short run estimation (dependent variable: (Δemp_{it}))

		Armenia	Azerbaijan	Belarus	Bulgaria	Czech	Georgia	Kazahstan	Kyrgyzstan	Latvia	Lithuania	Macedonia	Moldova	Mongolia	Romania	Russia	Poland	Slovakia	Slovenia	Tajikstan	Turkmeistan	Ukraine	Uzbekstan
Long Run Coeff. (θ_i)	PMGE	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*	-1.45*
	MGE	0.21	0.05	-0.19	0.29	-0.41	-0.04	0.76	0.07	-0.06	-0.04	0.33	1.57	0.05	-1.27*	-1.03	37.87	0.09	0.12*	0.01	-0.04	0.03	0.12
Error Corr. Coeff. (φ_i)	PMGE	0.03	0	-0.01	-0.01	0.02	0	0.03	0	0.07	0.01	0.08*	0	0	-0.19*	0.15*	0.08*	0.03	-0.01	0	0	0.02	0.05
	MGE	-0.21*	-0.23	-0.1*	-0.2	0.16	-0.37	-0.08	-0.52*	-0.4*	-0.72*	-0.15	0.004	-0.87*	-0.21	0.22	-0.02	-0.32	-0.81*	-0.3	-0.14	-0.14	0.12
Short run coefficients																							
exp	PMGE	-0.06*	0	0.03*	0.06	-0.03	0	-0.03	0	0.06	0.06	-0.07*	0.03	-0.01	0.15	0.13*	-0.02	-0.02	0.01	0	0	-0.01	0.04
	MGE	-0.09*	-0.02	0.02*	0.02	-0.04	0.001	-0.04	-0.01	-0.01	-0.03	-0.09*	0.03	0.002	0.15	0.16	-0.07	-0.04	-0.09*	0.01	0.009	0	

The error correction coefficients of second model, and speeds of reaching equilibrium are greater than Model 1. The error correction coefficient is negative and significant in the economies of Azerbaijan, Georgia, Lithuania, Latvia, Macedonia, Russia, Poland, Turkmenistan and Ukraine. The country whose short-term deviations of variables reach equilibrium the most quickly is Ukraine with the percentage 68%, and Lithuania, Latvia, Macedonia, follow it respectively, 56%, 55%, 52%.

4. CONCLUSION

This study analyzed the long and short term of the relationship between exports and employment in twenty-two transition economies using data covering the years 1993-2011. Estimation results of the relationship between exports and employment supports in the context of transition economies. Based on the findings, there is a long run relationship between exports and employment, but long-term coefficient is weak. Besides the low coefficient, PMGE results for the units forming the employment effect of exports in Macedonia, Romania, Russia, and Poland's economies make sense in the long term, but for short term relations, it make sense in Armenia, Belarus, Macedonia and Russia. These results show that there are raw materials and primary goods in export items and this could be interpreted they have no substantial contribution to employment growth.

It has been found that employment has the explanatory power in the second model. In this model, the long-term coefficient is more powerful and error correction coefficient is negative and significant in nine countries. But for short run relations, it doesn't make sense except for Russia. In addition, the employment growth has higher explanatory power for export growth in terms of this model.

In conclusion, in addition to reveal the existence of the relationship between export and employment in particularly transitional economies, estimation results validate that the effect of employment growth is much more effective in explaining the export growth for many counties. That result can be read that these countries have comparative advantages in labor intensive sectors. By using this advantage transition countries can solve their two important problems which are unemployment and lack of foreign currency.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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