

Evaluation of International Competitiveness Using the Revealed Comparative Advantage Indices: The Case of the Baltic States

Dr. Vaida Pilinkienė

Professor, Department of Economics, Kaunas University of Technology
Email: vaida.pilinkiene@ktu.lt

Doi:10.5901/mjss.2014.v5n13p353

Abstract

As an international trade becomes crucial in the growing economies, the research measuring the international trade with competitiveness are quite limited, especially for the Baltic States. The main aim of the article is to evaluate the international competitiveness using the revealed comparative advantage indices in the Baltic States: Lithuania, Latvia, and Estonia. Three different revealed comparative advantage indices were used for analysis of import and export figures for several industry sectors of the Baltic States over the period of 1998-2012. The analysis showed that the Baltic States may lose their competitiveness due to the globalization effects and increasing competition from other emerging economies. However, the enhancement of the international competitiveness of Lithuania, Latvia, and Estonia depends on their ability to implement the reforms in the public sector; to improve the business and investment conditions; to increase the flexibility and efficiency in the labour market.

Keywords: international competitiveness, comparative advantage, the Baltic States.

1. Introduction

The export competitiveness problems are usually dealing with the scientific or country-specific examples. In order to make export successfully the manufacturers have to offer such products and services, which are competitive, i.e. country's export must be competitive.

There are many export enhancing policies and measures to evaluate their effectiveness, as well as a variety of ways to measure the export competitiveness (Cho, 1998; Proudman & Redding, 2000). Export results, their changes are best revealed by the ability of local companies to compete in the open world market as well as local conditions created for export expansion also contribute to that. Various authors (Krugman, 1994; Elenurm, 2007; Seyoum, 2007; Bruneckiene & Paltanaviciene, 2012, Hiziroglu *et al.*, 2013) provide different methods how to assess export competitiveness of a country (region). In order to achieve the goal some indices representing export competitiveness are examined and compared. Not only factor determining competitiveness, but also environment influencing it is under investigation from the quantitative and qualitative perspectives. Different areas of competitiveness – economic, financial, social, political, and institutional – are integrated and later explored as one system (Pillania, 2009; World Economic Forum; 2013; IMD, 2013). Nevertheless, these methods are more applicable to evaluate conditions under which it is detected whether the company is able to export successfully.

However, the scientific analysis of the export competitiveness is limited by the lack of uniform concept of competitiveness, unclear academic opinion in terms of the country international competitiveness and exports, the abundance of the determinants of export development, the impact of export development complexity. In this situation it is extremely important to find the methodology how to evaluate the international competitiveness.

The main objective of this article is to evaluate the international competitiveness using the revealed comparative advantage indices in the Baltic States: Lithuania, Latvia, and Estonia.

2. Theoretical Background

Many recent studies proved that the power of country's export competitiveness mainly depends on how the countries are able to use the effects of the trade specialization in their economies. The economic studies on trade specialization of Bernstein & Weinstein (1998), Deardorff (1980), Fitzgerald & Hallak (2004) as cited in Kilduff & Chi (2007) draws on the Ricardian comparative advantage theory and the Heckscher-Ohlin theory of factor proportions to demonstrate that both factor productivity and relative factor endowments are important determinants of specialization. However, it is accepted that these theories are not a complete explanation of specialization patterns. Rather, differences arise from the influence

of a complex countries combination of economic, technological, social, and political factors, including country-specific idiosyncrasies and data accuracy problems (Fitzgerald & Hallak, 2004; Porter, 1990).

The revealed comparative advantage (RCA) index provides quite obvious picture of trade specialization. The concept of RCA was introduced by Liesner (1958), but refined and developed by Balassa and known as the 'Balassa index' (Balassa, 1965). He explored the possibility of relying on various theoretical explanations of international trade to determine the patterns of comparative advantage. The popularity of the RCA index is its relative simplicity, its ability to utilize comparable data sets, such as SITC-based trade data for the analysis, and its dependability as an indicator of actual changes in underlying real comparative advantages (Laurson, 1998). RCA is a measure of international competitiveness and has gained general acceptance in the literature (Vollrath, 1991; Lim, 1997; Li & Bender, 2002; Ferto & Hubbard, 2003; Utkulu & Seymen, 2004; Saboniene, 2009; Bernatonyte & Normantiene, 2009; Jayawickrama & Thangavelu, 2010; Hiziroglu *et al.*, 2013).

Balassa's (1965) original RCA index, which has subsequently been modified into a plethora of measures or indices, is the ratio of a country's exports of a product to its total exports, relative to the ratio of world exports of that product to total world exports. Comparative advantage is revealed if $RCA_{ij} > 1$, and country i has a comparative advantage of product j on the world market. However, the RCA index meets some criticism in economic literature. According to Yeats (1985), the RCA index only shows whether a country has comparative advantage in a commodity only at one point in time and they are neither cardinal nor ordinal measures. Studies of De Benedictis and Tamberi (2004) proved, that the RCA indices are asymmetric: when a country has a revealed comparative advantage, $RCA > 1$ but there is no upper bound; but conversely, when a country has a revealed comparative disadvantage, RCA has an upper bound of unity.

Despite these criticisms, a number of studies (Utkulu & Seymen, 2004; Kilduff & Chi, 2007; Kuldilok *et al.*, 2013) argue that the RCA indices are a useful measure of comparative advantage which can highlight specialization patterns. Moreover, government intervention and competitiveness tend to be inversely related, and products which reveal a comparative advantage could become more competitive if markets were more open (Vollrath, 1991).

3. Research Methodology

Given the paper objectives and specifics of the research, the methodology is based on the use of three types of comparative advantage indices.

- The RCA (*revealed comparative advantage*) index calculates the comparative advantage based on export figures:

$$RCA_{ij} = (X_{ij} / X_{it}) / (X_{wj} / X_{wt})$$

Where X_{ij} represents country i export of product j ; X_{it} represent country i total export; X_{wj} represents the export of product j ; and X_{wt} represents the total export of the world.

$RCA > 1$ indicates country i has a comparative advantage in production of j ; the greater the index, the stronger the advantage. $RCA < 1$ indicates that country i has a comparative disadvantage in production of j ; the smaller the index, the greater the disadvantage.

- The RMA (*relative import advantage*) index calculates through interpreting and formulating the RCA index with corresponding import M values:

$$RMA_{ij} = (M_{ij} / M_{it}) / (M_{wj} / M_{wt})$$

Where M_{ij} represents country i import of product j ; M_{it} represent country i total import; M_{wj} represents the import of product j ; and M_{wt} represents the total import of the world.

The Relative Import Advantage Index is very similar to the RCA. The differences are that it considers imports, represented by M , and that the interpretation is reversed from that of the RCA. A value of unity is a sign of competitive disadvantage, and values below that is an indication of competitive advantages.

- The RTA (*relative trade advantage*) index which includes the subtraction of the relative export (RCA) and import (RMA) advantage indexes:

$$RTA_{ij} = RCA_{ij} - RMA_{ij}$$

The positive value of the RTA indicates comparative trade advantages, while negative value indicates comparative trade disadvantages. If $RTA > 0$, then a comparative advantage is revealed, i.e. a sector in which the country is relatively more competitive in terms of trade. The RTA measures a country's exports and imports of a commodity relative to its total exports and imports (Bernatonyte & Normantiene, 2009).

The analysis is based on the annual time series data of Lithuania, Latvia, and Estonia in the period of 1998-2012.

This period was selected as being long enough to permit longer-term trends to be identified, and based on the availability of a complete data set for commodity groups selected. Global and domestic statistical data (export/import values, etc.) were obtained from the World Trade Organization statistics (www.wto.org). Four types of commodity groups: Manufactures, Chemicals, Textiles and Clothing were selected for the research. Those commodity groups represent the main industries in the Baltic States and also correspond to the SITC (Standard International Trade Classification).

4. Results

The empirical research findings disclosed that the RCA index only slightly changed in the manufactures and chemicals industries from 1998 to 2012 (Table 1). During this period the RCA index was quite steady in all the Baltic countries and its value was lower than 1. It means the countries did not have a comparative advantage in the manufactures and chemicals industries except for Estonia where its RCA index exceeded the value of 1 starting from 2007 and this reflects slightly small comparative advantage in the manufactures industries.

The evident comparative advantage was clearly detected in the textiles and clothing industries where the value of the RCA index exceeded 1 assuring the comparative advantage in export of this commodity group. It is clear that the diminishing comparative advantage of 2005-2007 was caused by the end of the „Multi Fibre Agreement“ that governed the world trade in textiles and garments, imposing quotas on the amount developing countries could export to developed countries. This especially landed on Estonia where its textiles and clothing industries have changed their competitiveness status from being disadvantageous to advantageous in comparison to Latvia and Lithuania.

Table 1. The Revealed Comparative Advantage Index (RCA) in Lithuania, Latvia, and Estonia during the period of 1998-2012

Lithuania								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	0.82	0.88	0.75	0.73	0.83	0.84	0.81	0.80
Chemicals	0.74	0.73	0.65	0.50	0.48	0.50	0.56	0.63
Textiles	1.64	1.79	1.28	1.18	1.25	1.28	1.32	1.29
Clothing	2.17	2.91	2.88	2.61	2.39	2.21	2.04	1.65
Commodity group	Year							
	2006	2007	2008	2009	2010	2011	2012	
Manufactures	0.85	0.95	0.87	0.84	0.84	0.86	0.86	
Chemicals	0.65	0.90	1.00	1.06	1.04	1.11	1.15	
Textiles	1.25	1.24	1.02	1.19	1.17	1.05	1.05	
Clothing	1.43	1.23	1.12	1.41	1.33	1.19	1.07	
Latvia								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	0.77	0.75	0.76	0.80	0.79	0.81	0.80	0.82
Chemicals	0.66	0.65	0.70	0.67	0.58	0.58	0.57	0.60
Textiles	2.80	2.43	2.34	2.48	2.42	2.37	2.25	2.09
Clothing	2.79	3.18	3.06	2.95	2.65	2.73	2.47	2.05
Commodity group	Year							
	2006	2007	2008	2009	2010	2011	2012	
Manufactures	0.92	0.93	1.01	0.95	0.93	0.97	0.93	
Chemicals	0.77	0.80	0.88	0.79	0.76	0.76	0.70	
Textiles	2.26	2.06	1.69	1.35	1.40	1.24	1.17	
Clothing	1.83	1.51	1.52	1.28	1.20	1.27	1.28	
Estonia								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	0.87	0.88	0.89	0.89	0.83	0.86	1.07	1.08
Chemicals	0.81	0.71	0.36	0.39	0.37	0.42	0.49	0.49
Textiles	1.84	1.74	1.75	1.78	1.70	1.70	1.80	1.38
Clothing	1.85	2.08	1.72	1.69	1.79	1.60	1.71	1.45

Commodity group	Year						
	2006	2007	2008	2009	2010	2011	2012
Manufactures	0.99	1.01	1.06	0.97	0.99	1.04	1.07
Chemicals	0.49	0.53	0.61	0.56	0.50	0.52	0.59
Textiles	1.04	1.02	0.96	0.80	0.62	0.51	0.51
Clothing	1.14	1.16	1.12	0.99	0.95	0.86	0.83

Results of the RMA index showed that during the period of 1998-2012 in Lithuania and Estonia the import of clothing commodities was not competitive, but its competitiveness tends to increase, i.e., the RMA index of clothing tends to be closer to value 1 (table 2). Other industries (textile, manufactures, chemicals) are more disadvantageous during this period in Lithuania and Estonia. The local chemicals and manufactures industries have an obvious competitive advantage in comparison with imports in Latvia. The rising import pressure from the low-cost countries such as China, India, Pakistan tends to change the business models in the Baltic States – manufacturers tend to use the integrated business model from raw material extraction to final product in any industries.

Table 2. The Relative Import Advantage Index (RMA) in Lithuania, Latvia, and Estonia during the period of 1998-2012

Lithuania								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	0.93	0.90	0.79	0.83	0.91	0.92	0.94	0.90
Chemicals	1.27	1.38	1.23	1.16	1.08	1.06	1.09	1.06
Textiles	2.30	2.89	2.63	2.50	2.37	2.33	2.27	1.88
Clothing	0.41	0.52	0.50	0.48	0.40	0.44	0.49	0.48
Commodity group	Year							
	2006	2007	2008	2009	2010	2011	2012	
Manufactures	0.94	1.02	0.88	0.80	0.77	0.79	0.78	
Chemicals	1.11	1.19	1.09	1.29	1.22	1.17	1.23	
Textiles	1.64	1.50	1.15	1.29	1.25	1.08	1.09	
Clothing	0.55	0.66	0.77	0.86	0.74	0.66	0.56	
Latvia								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	0.44	0.44	0.44	0.46	0.44	0.44	0.45	0.48
Chemicals	0.38	0.38	0.40	0.37	0.32	0.32	0.32	0.35
Textiles	1.58	1.40	1.35	1.40	1.34	1.29	1.25	1.21
Clothing	1.59	1.85	1.81	1.69	1.52	1.55	1.42	1.25
Commodity group	Year							
	2006	2007	2008	2009	2010	2011	2012	
Manufactures	0.48	0.50	0.63	0.73	0.74	0.76	0.74	
Chemicals	0.41	0.42	0.54	0.62	0.61	0.60	0.57	
Textiles	1.17	1.08	1.03	1.02	1.09	0.95	0.92	
Clothing	0.96	0.80	0.94	0.98	0.95	0.99	1.01	
Estonia								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	0.95	0.99	0.94	0.91	0.89	0.90	1.09	1.11
Chemicals	1.00	1.19	0.79	0.76	0.75	0.72	0.87	0.87
Textiles	1.45	1.67	1.49	1.57	1.66	1.54	1.77	1.42
Clothing	0.69	0.74	0.60	0.62	0.62	0.55	0.72	0.80
Commodity group	Year							
	2006	2007	2008	2009	2010	2011	2012	
Manufactures	1.05	1.04	1.07	0.94	1.00	1.05	1.12	
Chemicals	0.87	0.86	0.99	1.06	0.98	0.92	1.03	
Textiles	1.20	1.17	1.34	1.25	1.28	1.10	1.04	
Clothing	0.77	0.90	1.11	1.06	1.01	0.83	0.79	

Talking about the RTA index, it is obvious, that Latvia has the comparative trade advantages in all analysed commodity group as the RTA index is positive (table 3). Lithuania is competitive only in the clothing sector and it also has changed its competitiveness status from being disadvantageous to advantageous in the manufactures sector in the year of 2009. The competitiveness of Estonia tends to decrease in all sectors during the period of 1998-2012 except for the manufactures sector with the competitive advantage fluctuation around zero.

Table 3. The Relative Trade Advantage Index (RTA) in Lithuania, Latvia, and Estonia during the period of 1998-2012

Lithuania								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	-0.11	-0.03	-0.04	-0.10	-0.08	-0.08	-0.13	-0.10
Chemicals	-0.52	-0.65	-0.58	-0.66	-0.60	-0.56	-0.53	-0.43
Textiles	-0.67	-1.10	-1.34	-1.31	-1.12	-1.05	-0.96	-0.59
Clothing	1.76	2.39	2.38	2.13	1.99	1.77	1.55	1.17
Commodity group	Year							
	2006	2007	2008	2009	2010	2011	2012	
Manufactures	-0.09	-0.06	-0.01	0.04	0.07	0.07	0.07	
Chemicals	-0.46	-0.29	-0.09	-0.23	-0.18	-0.06	-0.08	
Textiles	-0.39	-0.26	-0.13	-0.10	-0.07	-0.03	-0.05	
Clothing	0.88	0.57	0.35	0.56	0.60	0.53	0.51	
Latvia								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	0.33	0.31	0.32	0.34	0.34	0.36	0.35	0.34
Chemicals	0.28	0.27	0.30	0.29	0.26	0.26	0.25	0.25
Textiles	1.22	1.03	1.00	1.08	1.08	1.09	1.00	0.88
Clothing	1.21	1.33	1.25	1.26	1.13	1.19	1.05	0.80
Commodity group	Year							
	2006	2007	2008	2009	2010	2011	2012	
Manufactures	0.43	0.44	0.38	0.22	0.19	0.21	0.19	
Chemicals	0.37	0.37	0.33	0.17	0.15	0.16	0.13	
Textiles	1.09	0.98	0.66	0.33	0.31	0.29	0.26	
Clothing	0.87	0.71	0.58	0.30	0.25	0.28	0.27	
Estonia								
Commodity group	Year							
	1998	1999	2000	2001	2002	2003	2004	2005
Manufactures	-0.08	-0.11	-0.05	-0.02	-0.06	-0.04	-0.02	-0.02
Chemicals	-0.19	-0.48	-0.43	-0.37	-0.38	-0.30	-0.38	-0.38
Textiles	0.39	0.06	0.26	0.21	0.04	0.16	0.03	-0.04
Clothing	1.16	1.34	1.12	1.07	1.16	1.05	0.99	0.65
Commodity group	Year							
	2006	2007	2008	2009	2010	2011	2012	
Manufactures	-0.06	-0.04	-0.01	0.03	-0.01	-0.01	-0.05	
Chemicals	-0.38	-0.33	-0.39	-0.50	-0.48	-0.39	-0.44	
Textiles	-0.16	-0.15	-0.37	-0.46	-0.65	-0.60	-0.53	
Clothing	0.37	0.25	0.01	-0.07	-0.06	0.04	0.04	

Comparing the RCA, RMA, and RTA indices it is disclosed that changes in competitiveness of the Baltic States during the period of 1998-2012 were determined by the NATO joining and by the consequences of the 2008-2010 world economic crisis. On the one hand, the EU borders have been opened and the competitiveness pressure lays upon producers and exporters from the Baltic states; on the other hand, the economic crises reduced aggregate demand and consumption challenging to search for new export markets reducing simultaneously consumption of the imported goods because of the lowering earnings. Nevertheless, economies of the Baltic States recover quickly after the economic crisis. Moreover, the Baltic countries have improved their competitiveness and it was mainly influenced by various factors facilitating business activities such as registering property, starting business, getting credit etc. For example, Lithuania is in the first place

according to the competitiveness growth in the EU in 2012. The main disadvantages of the international competitiveness of Lithuania, Latvia, and Estonia are quite weak reforms in the public sector; unstable legal environment for the business and investment; low flexibility and efficiency in the labour market.

5. Discussion and Conclusions

Most studies evaluating the export competitiveness are limited by the lack of uniform concept of competitiveness, unclear academic opinion in terms of the country international competitiveness and exports, the abundance of the determinants of export development, the impact of export development complexity.

Despite some limitation in cardinal measures or asymmetry, the revealed comparative advantage (RCA) index is widely used in many studies due to its relative simplicity, ability to utilize comparable data sets and dependence on actual changes in underlying real comparative advantages.

Comparing three types of the comparative advantage indices (RCA, RTA, and RMA) in the Baltic states during the period of 1998-2012 reveals that changes in competitiveness of the countries are determined by both external factors such as entering the EU, the world economic crisis and internal factors such as changes in consumption as well as changes in economic and legal environment. The textiles and clothing industries with the relatively high competitive position are superior compared to other industries in Latvia and Lithuania while there is no clear competitive advantage to be distinguished among Estonian industries.

The rising import pressure from low-cost countries, basically changing business models in the Baltic States - manufacturers tend to use the integrated business model from raw material extraction to final product.

Enhancement of the international competitiveness of the Baltic States depends on their ability to implement the reforms in the public sector; to improve the business and investment conditions; to increase the flexibility and efficiency in the labour market.

References

- Balassa, B. (1965). Trade Liberalization and Revealed Comparative Advantage. *The Manchester School of Economic and Social Studies*, 119, 93-123.
- Bernatonyte, D. & Normantiene, A. (2009). Estimation of Trade Specialization: the Case of the Baltic States. *Inzinerine Ekonomika-Engineering Economics*, 62(2), 7-17.
- Bernstein, J.R. & Weinstein, D.E. (1998). Do endowments predict the location of production? Evidence from national and international data. *NBER Working Paper Series*, 6815 (December), National Bureau of Economic Research, Cambridge, MA.
- Bruneckiene, J. & Paltanaviciene, D. (2012). Measurement of Export Competitiveness of the Baltic States by Composite Index. *Inzinerine Ekonomika-Engineering Economics*, 23(1), 50-62.
- Cho, D.-S. (1998). From national competitiveness to bloc and global competitiveness. *Competitiveness Review: An International Business Journal*, 8, 11-23.
- De Benedictis, L., Tamberi, M. (2004). Overall specialization empirics: techniques and applications. *Open Economies Review*, 15, 323-46.
- Deardorff, A. (1980). The general validity of the Heckscher-Ohlin theorem. *American Economic Review*, 72(4), 683-94.
- Elenurm, T. (2007). International competitiveness and organizational change drivers anticipated by Estonian managers in the context of European integration. *Baltic Journal of Management*, 2(3), 305-318.
- Ferto, I. & Hubbard, L. (2003). Revealed comparative advantage and the competitiveness in Hungarian Agri-Food sectors. *World Economy*, 26(2), 247-59.
- Fitzgerald, D. & Hallak, J.C. (2004). Specialization, factor accumulation and development. *Journal of International Economics*, 64(2), 277-302.
- Hiziroglu, M., Hiziroglu, A. & Kokcam, A.H. (2013). An investigation on competitiveness in services: Turkey versus European Union. *Journal of Economic Studies*, 40(6), 775-793.
- IMD (2013). *World Competitiveness Yearbook 2012*. Geneva: IMD.
- Jayawickrama, A. & Thangavelu, S.M. (2010). Trade linkages between China, India and Singapore: Changing comparative advantage of industrial products. *Journal of Economic Studies*, 37(3), 248-266.
- Kilduff, P. & Chi, T. (2007). Analysis of comparative advantage in the textile complex. A study of Eastern European and former Soviet Union nations. *Journal of Fashion Marketing and Management*, 11(1), 82-105.
- Krugman, P. (1981). Intraindustry Specialization and the Gains from Trade. *Journal of Political Economy*, 89 (5), 959-974.
- Krugman, P. (1994). Competitiveness: A Dangerous Obsession, *Foreign Affairs*, 73(2), 28-44.
- Kuldilok, K.S., Dawson, P.J. & Lingard, J. (2013). The export competitiveness of the tuna industry in Thailand. *British Food Journal*, 115(3), 328-341.
- Laursen, K. (1998). Revealed comparative advantage and the alternatives as measures of international specialisation", *DRUID Working*

- Paper (98-30), Danish Research Unit for Industrial Dynamics, Aalborg.
- Li, K.W. & Bender, S. (2002). The gain and loss in export advantage among world regions. *Discussion Paper* (853), Economic Growth Center, Yale University.
- Liesner, H.H. (1958). The European Common Market and British Industry. *Economic Journal*, 68, 302-316.
- Lim, K.T. (1997). Analysis of North Korea's foreign trade by revealed comparative advantage. *Journal of Economic Development*, 22, 97-117.
- Porter, M.E. (1990). *The Competitive Advantage of Nations*. New York: Free Press.
- Proudman, J. & Redding, S. (2000). Evolving pattern of international trade. *Review of International Economics*, 8, 373-396.
- Rajesh K. Pillania, (2009). Competitiveness and emerging markets. *Business Strategy Series*, 10(2), 90-95.
- Saboniene, A. (2009). Lithuanian Export Competitiveness: comparison with other Baltic States. *Inzinerine Ekonomika-Engineering Economics*, 62 (2), 49-57.
- Seyoum, B. (2007). Revealed comparative advantage and competitiveness in services: a study with special emphasis on developing countries. *Journal of Economic Studies*, 34(5), 376-88.
- Utkulu, U. & Seymen, D. (2004). Revealed comparative advantage and competitiveness: Evidence for Turkey vis-à-vis the EU 15. *The European Study Group 6th Annual Conference*, Nottingham.
- Vollrath, T.L. (1991). A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. *Review of World Economics*, 127, 265-80.
- World Economic Forum (2013). *Global Competitiveness Report 2012*, New York: Oxford University Press.
- Yeats, A.J. (1985). On the appropriate interpretation of the revealed comparative advantage index: implications of a methodology based on industry sector analysis. *Weltwirtschaftliches*, 121, 61-73.