INDUSTRIALIZATION LEVEL AND EXPORT PERFORMANCE

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Abstract. Sustainable development requires Latvian manufacturing industry to maintain and improve sustainable competitive advantages and innovations. This paper analyzes the elements of a structure for achieving sustainability, because achieving sustainable development is a significant factor for national strategy. The hypothesis is that export volatility is affected by the level of industrialization and the level of product cycle for exporting product. The volatility of export growth for products is much higher for the developing than for the industrial countries. This paper is analytical study of different aspects of export for manufacturing industry in Latvia, some research has found evidence that diversification encourages competition and the introduction of new technology. Results of the study could suggest that diversification may proceed along two basic patterns, and that, for developing countries, different effects on overall volatility could be associated with each pattern.

Keywords: sustainable development, export, production branch, industry development, economic growth, strategic theory of the company.

Introduction

Industrial development and technology level has had an important role in the economic growth of developed countries. The main emphasis is on describing their growth processes and strategies are discussed. We need to analyze the role of industrial development, the contribution of a range of policies affecting growth performance, and the impact of growth on country income dynamics. This paper is based on hypothesis that export instability is related to the degree of industrial development of the exporting country due to product cycle theory of comparative advantage, and uses empirical support for this hypothesis (Mullor-Sebastian, 1988). This paper analyses government diversification policies effect on export instability. The aim of this paper is to analyze the implications of the empirical findings of the presented studies, to present the results of further work undertaken more recently, and to discuss their policy implications.

The current understanding of economic growth for country usually is based on the neoclassical growth model developed by Solow (1956). In the Solow model, capital accumulation is a major factor contributing to economic growth. This means that productivity growth (measured as an increase in output per worker) is result from increases in the amount of capital per worker, or capital accumulation (Fagerberg, 1994). The rate of technological process is assumed to be constant and not affected by economic incentives. Several studies have found that capital and labor actually explain only a fraction of output growth and that allowing for the quality of the labor force (human capital) only partially reduces the unexplained growth – or Solow residual. Endogenous growth theory, initiated by Romer (1986, 1990) and Lucas (1988), focuses on explaining the Solow residual. Technological change becomes endogenous to the model and is a result of the choices of economic agents (Veloso and Soto 2001).

Technological progress is stimulated through R&D activities. Unlike other production inputs, innovative ideas and knowledge can increase the productivity of existing knowledge. Because of this, the marginal productivity of capital does not decline with increasing GDP per capita, and incomes does not appear to be similar across countries. Technological change and innovations are essential sources of structural change in case of production branch. In Schumpeter's view, innovations lead to "creative destruction", a process whereby sectors and firms associated with old technologies decline and new sectors and firms emerge and grow. More productive and profitable sectors and companies substitute less productive and less profitable ones and aggregate productivity in the economy increases. Technological change nowadays is the center of modern economic growth. Based on the observation that, beginning with the Industrial Revolution, technological change took place mainly in the manufacturing sector, authors like Kaldor (1970) and Cornwall (1977) have argued that the expansion of production sector is a driving force for economic growth.

Moreover, Cornwall (1977) saw technological change in certain manufacturing sectors as a driving force for productivity growth in several other sectors. Syrquin (1986) observes that, when overall growth accelerates, manufacturing typically leads the way and grows faster than other sectors. At low income levels, the share of manufacturing in GDP is, however, low and its immediate contribution to aggregate growth also insignificant.

In developed countries, research and development (R&D) activities are the main reason for technological change. One of the forces that affect structural change is international and local demand. At low income levels, individuals spend a significant part of their income on basic products (e.g. food). (see Fig. 1).
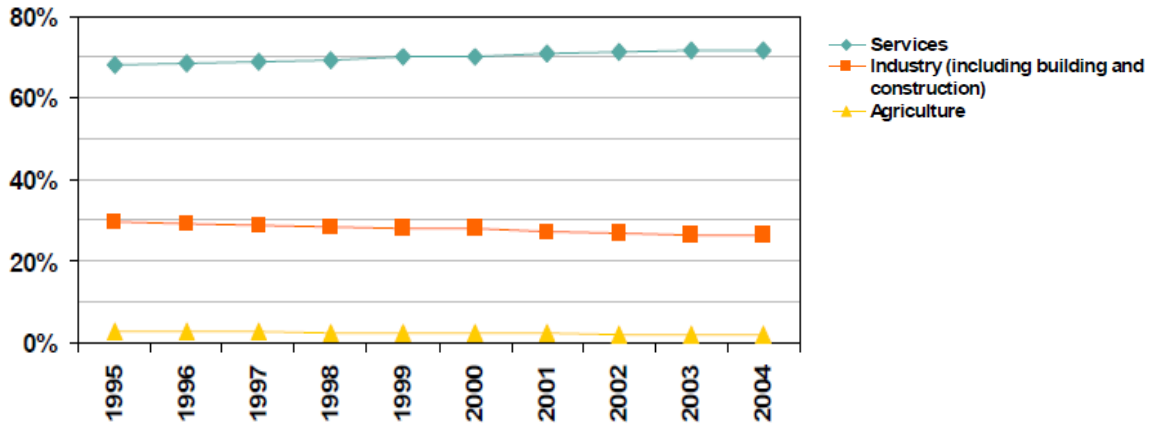
Figure 1. Share of services, industry and agriculture in GDP, EU25 (1995–2004)

Source: Ameco database (2006)

Changes in demand will also change sectors employment and output shares and impact the economy's labour productivity. Furthermore, international trade has an impact on countries' specialization and on the rate of industrialization (structural change within industries). Countries tend to specialize in the production for which they have a comparative advantage and import products which are relatively expensive to produce domestically. Trade openness is also likely to bring foreign investment into the country. It is also likely to increase productivity as domestic companies are facing external competition. However, the composition of foreign trade matters as well as the openness of trade (e.g. Amable, 2000). Moreover, specialization in itself does not necessarily lead to higher growth rates. This is most evident in the case of developing countries dependent on exports of primary products.

Methodology

The theory attempts to explain the instability of exports from developing countries in terms of the role of residual suppliers played by developing countries. The aim of paper is to observe new categories of products to a country's basket of exports, because it is the most prevalent meaning in the literature. For Central and Eastern European countries, there are only several studies that examine the effect of exports on economic growth by using the latest time series techniques.

The main idea is a hypothesis that the export instability of products is inversely related to the level of industrialization of the exporting country, but that no such relationship exists for products in mature stage of their life cycle (mature products). Growth products are in the early stages of their life cycles, and their characteristics include the following: the technology used in

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their manufacture is relatively complex and changes frequently, product differentiation is high and protected by patents, and their markets usually are oligopolistic. Opposite features characterize mature products. The explanation suggested above for the relationship between export instability and industrialization was that developing countries may be expected to play a role of residual or alternate suppliers of growth products on world markets due to their late entry into the world markets for growth products. It is difficult for developing countries to spend on research and on product development and make loyalty of consumers to products manufactured. This takes into account both demand factors, such as consumers preferences and the business cycle, and supply factors, such as the lack of human skills in developing countries. Because developing countries are likely to be residual suppliers of growth products, they probably absorb a relatively large share of demand fluctuations during the business cycle, being able to expand their exports of these products during the upcoming phase of the business cycle, when industries are working close to capacity in industrialized countries, but experiencing a decline in sales (or in the growth rate of sales) during the downturn phase. At that phase the established and mature suppliers from industrialized countries can satisfy a larger proportion of world demand. Therefore, the export instability of growth products can be expected to be higher for developing than for industrialized countries, as in case of Latvia.

As fiscal policy in Latvia in the years after EU accession was procyclical, the necessary reserves were not created. Consequently, the fall in tax revenues due to the recession, the government's need to lead out the largest domestically owned bank, forced Latvia to turn to the IMF and the EC for financing its expanding budget deficit. Unfortunately, too often the most attention is given to specific consolidation numbers, not to the specific result. The most important goal for the government is to return to a situation in which government revenues compensate expenditures.

Last year, Latvia's economy stabilized after its deep recession 21.4 per cent GDP decline during 2008-2009. In 2010, GDP fell by a further 0.3 per cent but returned to growth in year-on-year terms during the third quarter. In the fourth quarter, growth had reached 3.6 per cent. The recovery is mainly export driven. Exports continue to perform well, supported by renewed competitiveness and good sales in old as well as new markets. On the other hand, domestic demand is improving only slowly.

In March 2011 Latvian industrial output increased by 1.4% compared with February. Manufacturing showed the increase of 3.7% achieved in manufacture of computers and electronic equipment, metal products, wood and wood products, pharmaceutical and chemical products, which in March reported growth by more than 6%. Industrial growth in Latvia mostly depends on exports, including the increase of prices for the exported products. The price growth indicated over the last year in a number of production industries has allowed raising the profits without increasing output.

For example, in 2011 Quarter 1, excluding the impact of pricing – in constant prices, exports grew by 21.1%, and imports – by 23.9%. However, the price increase strategy cannot be exploited permanently and will have to be replaced with rising of competitiveness by increasing the production capacity and boosting of productiveness. Latvia meanwhile is following the path of increasing the quantity of existing goods and raising the prices.

In March exports of goods made another record exceeding the mark of 500 million. Compared with March 2010, exports have risen by 38.5% to 502.9 million Lats. Even faster growth of 39% has been registered in imports. Consequently, in March foreign trade balance deteriorated and a deficit of 122.3 million Ls appeared. Significant growth was observed in manufacture of metal where exports rose by 72.6% compared with March 2010. As in Latvia's exports mostly the goods with low added value are dominating.

The reason is growing imports, driven by manufacturing and a weak recovery in domestic demand. The main driving forces of exports still are wood and wood products, metals and metal products, agricultural and food products.
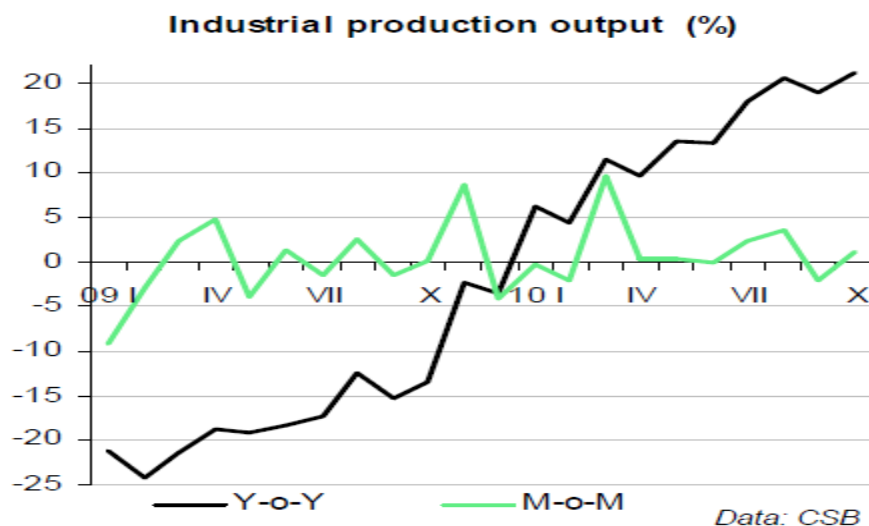
Figure 2. Industrial production output of Latvian Goods, %

Source: CSB

Therefore, if developing countries diversify by exporting more growth products, they are likely to add to their export basket products whose instability is high and strongly related to the business cycle; thus, total export instability may increase because the fluctuations of the additional exports would be high and would not tend to cancel each other out. These may be the reasons why diversification policies have often resulted in higher export instability in developing countries.
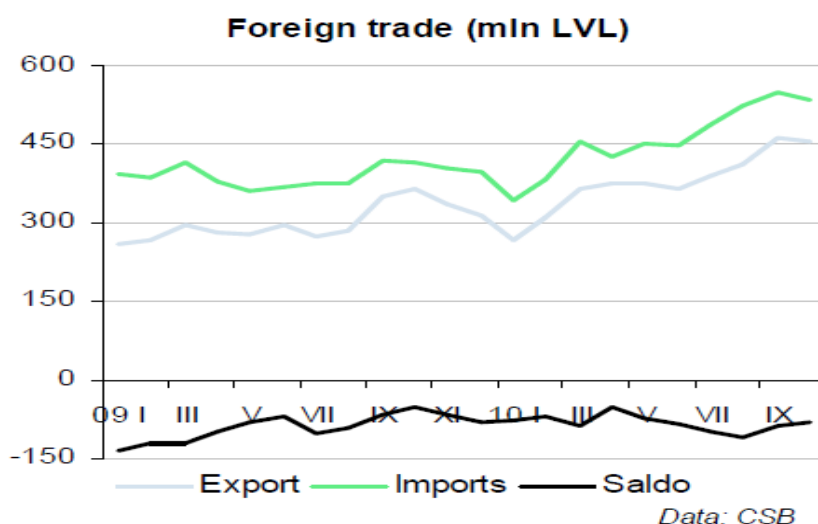
Figure 3. Foreign Trade of Latvian Goods, mln Ls

Source: CSB

There are two methods to test it directly by observing how growth and mature exports from developing and from industrialized countries differs in relation to the business cycle. But it is difficult to identify the relevant markets for each exporting country and the appropriate cyclical variable. It is needed to support the hypothesis that the instability of growth products were higher for developing than for industrialized countries, and the instability of mature products were not substantially different for developing and for industrialized countries, there is an inverse relationship between instability and the level of industrialization for exports of growth products, but not for exports of mature products. This would indicate that growth exports from developing countries, but not from industrialized countries, have a strong cyclical component, and that mature exports from both developing and industrialized countries have either a weak or no cyclical component.

Second method was chosen to conduct the empirical tests. The hypothesis proposed was tested using trade data for two groups of products exported by developing and industrialized countries during the period of 2005-2010.

The empirical results provided strong support for the hypothesis; by various types of machinery exports from developing and industrialized countries. It is possible to identify the existence of a highly significant relationship between export instability and economic development for growth products.

Empirical findings prove that the export instability of a particular product is not necessarily the same for every exporting country. Thus, factors such as competition from other suppliers, the development of technology in industrialized countries' have been responsible for export fluctuations (Love, 1983). The differences in the degree of export instability of products followed a clear and

consistent pattern: the instability of growth products was much higher for the developing than for the industrialized

Table. 1. Percentage of firms that exports by industry

PERCENTAGE OF FIRMS THAT EXPORTS BY INDUSTRY				
SIZE	1	2	3	TOTAL
number employees →	1-24	25-99	100+	ALL
Textiles	7%	22%	46%	30%
Leather	10%	57%	75%	46%
Garments	11%	39%	80%	55%
Agroindustry	23%	27%	56%	38%
Food	7%	24%	43%	26%
Beverages	6%	14%	11%	10%
Metals and machinery	7%	26%	47%	28%
Electronics	15%	16%	62%	43%
Chemicals and pharmaceutics	10%	20%	33%	22%
Construction	7%	7%	10%	8%
Wood and furniture	4%	26%	62%	26%
Non-metallic and plastic materials	9%	21%	43%	24%
Paper	5%	10%	31%	18%
Sport goods	45%	100%	100%	63%
IT services	8%	11%	7%	9%
Other manufacturing	10%	24%	34%	26%
Accounting and finance	0%	0%	0%	0%
Advertising and marketing	0%	0%	0%	0%
Other services	0%	0%	0%	0%
Retail and wholesale trade	0%	100%		8%
Transport	0%	0%		0%
Mining and quarrying	50%	0%	83%	55%
Auto and auto components	17%	19%	21%	20%
Other transport equipment	40%	56%	63%	55%
ALL sectors	8%	25%	51%	31%

Export instability of growth products for the developing as for the industrialized countries less. In contrast, the instability of mature products was very similar for both categories of countries: The results provide further support for the hypothesis that there is an inverse relationship between export instability and the level of industrialization of the exporting country for growth products.

Model and Results

In the paper empirical analysis was made considering using the common approach of testing the hypothesis of non-causality as a test of linear restrictions on the coefficients of a finite dynamic model, which can be a vector autoregressive in the level data (VARL), a vector autoregressive in differentiated data (DVAR) or a vector error correction model. The model type is given by the number of cointegrating vectors. Before applying the causality tests, we must determine if cointegration exists. Johansen and Juselius' (1990) multivariate cointegration model is based on error correction representation given by the following equation:

$$\nabla Y = \alpha Z_{t-1} + \sum_{i=1}^{l-1} \beta_i \, \nabla Z_{t-1} + A_t \; [1]$$

Where: Zt is a 3X1 vector of three non-stationary variables, ∇ is backward differentiation operator, α and βi represent the coefficient matrices.

The equation (1) describes the representation of type vector error correction model (p-1) of the stochastic system. The stationarity of ∇Zt is verified by the requiring that the roots of the equation lie outside the unit circle and A_t is a 3X1 vector of independent and identically distributed errors. The rank of the matrix α contains information about the long-run relationship.

Using the latest econometric time series techniques, there is possible to detect a causal relationship between exports and economic growth for all Central and Eastern European countries in bivariate and trivariate systems.

Empirical evidence from Granger causality tests using VARL, DVAR or VECM models could indicate a feedback effect between exports and GDP.

Lack or inconsistency of policies as macroeconomic and political stability, adequate infrastructure and highly trained labour force can explain the lack of support for the export-led hypothesis in many of CEE countries. Strong policies that promote exports are more than desired.

Conclusion

As the results of the research we have several main policy implications for government. This section discusses them, because in the post-recession period Latvian government policy has shown solid interest in the export-led growth through various export promotions policies.

The first conclusion is that export diversification does not necessarily reduce overall export instability because the instability may be high and strongly related to the business cycle, so that fluctuations in the exports of different products would not tend to cancel each other out. Diversification does not lead to a decrease in traditional exports. Producing for export allows achieving greater economies of scale than it would if it produced exclusively for its domestic market. This is especially important for small developing countries that have very narrow domestic markets as Latvia, and encourages competition and the introduction of new technology.

There are appears to be an inverse relationship between export instability and the level of industrialization for export products. The volatility of export growth for products is much higher for the developing than for the industrial countries. Total export volatility may increase as a result of diversification because the fluctuations would be high.

In Latvian industrial low value added branches are dominated. Second conclusion would consist of exporting additional growth products. Because of the characteristics associated with the

growth products, they are usually of high value added, so the instability exports correlated with the business cycle of the products produced for export. That means, that the increase in the quantity of products exported may result in greater instability. In this case, the most likely outcome of diversification will lead to increase in overall instability.

Latvian manufacturers have succeeded in maintaining or increasing export. However, specialization in sectors with low value added and a declining share in total global trade has resulted in a decline in total export share, pointing to a structural competitiveness problem. Government policy which stimulates exporting mature products, usually innovative ones, will lead to lesser instability. In this case, diversification could result in lower overall export instability.

In case diversifying their exports into manufactures developing counties can expect the instability of the new exports, instability will be higher the more sophisticated products are used. Countries which have a relatively weak industrial sector and little experience selling manufactures abroad will has less stable or in other words them export will be volatile.

Volatility during the early years of diversification for developing countries may still be relatively high for the additional popular products, until the exporting country strengthens its position on world markets. Therefore, unreasonable diversification could lead to a decline in overall export instability, to no change, or to a small increase.

So as business cycle affects demand for certain products more than for others, this conclusion must be taken under consideration when choosing export development policies.

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