

The Transition in Goods Export Structure in the Northeast Region of Vietnam

Nong Ngoc Hung

Huazhong Agriculture University, China

Thai Nguyen University of Economics and Business Administration, Vietnam

Li Chang Jian¹ Tran Van Quyet² Tran Quang Huy² Dinh Hong Linh²

1.Huazhong Agriculture University, China

2.Thai Nguyen University of Economics and Business Administration, Vietnam

Abstract

The period 2005-2015 is an important stage in the preparation process of bringing Vietnam to basically become an industrialized country by 2020. The economic development of the Northeast with an open and export-oriented economy requires an important role of export activities in the region's socio-economic development. Although it is affected by the global economic crisis, the export value of the region has increased significantly, the structure of exports over the years has positively changed. In more detailed, the rate of raw goods slightly reduced. However, the restructuring of the region's exports has not made a breakthrough and failed to create a suitable structure of export products and made full use of the region's advantages and potentials. The slow change of exports structure will lead to resource depletion, ecological imbalance, and poor economic efficiency.

Keywords: Structure restructuring, Import and export, Northeast of Vietnam, PRODY, export commodities.

1. Introduction

Restructuring the economy of Vietnam in general and the Northeast of Vietnam, in particular, is a significantly strategic task in the current period and a vision to 2020.

Resolution of 11th National Congress of the Communist Party of Vietnam (CPV) has considered restructuring Vietnam's economy is an important task both in the immediate and long term, making Vietnam basically become an industrial country towards modernization in 2020. Restructuring the economy, focusing on restructuring the manufacturing sectors and services in line with the region; promoting corporate restructuring and adjusting market strategy; increasing domestic value, added value and competitiveness of products, businesses and the entire economy; developing the knowledge economy; associating economic development with environmental protection, developing a green economy. Provinces in the Northeast of Vietnam have great potential and advantages for economic and social development and economic restructuring in a synchronized way, with the strength of the industry, agriculture and forestry synthesis, eco-tourist services..., and specialty products, with huge export value. However, the current economic structure of the region is still not consistent and not commensurate with the potential of the key economic region in the Northeast Vietnam. Restructuring this regional economy is essential in the current context and vision to 2030 [2],[9],[11].

2. Research Objectives

The main objective of this study was to recommending new policies to the government and regional authorities to successfully implement structuring major export commodities in specific conditions until 2020, vision to 2030.

3. Literatures review

The essence of the restructuring of export goods is a country, a region, a locality determines high structure export so that it can get the most beneficial for the country, region or locality and determining the proportion of commodities, commodity groups, specifically in the export structure of policies implemented to achieve the identified structures. The shift in the structure of exports is shown on both sides of the structure that is the number and quality. Thus, the restructuring of exports needs to determine both the quantity and quality of the structure of exports, according to which:

(i) The number of the export structure: It is possible to understand the amount of the export structure is the export value of each type of goods on the structure and thereby we can get the total value of the export structure. Or the amount of the export structure is measured by the actual number of goods exported in the structure. This number is calculated in units of each commodity.

(ii) The quality of structure of export: Mayer and Wood (2001) evaluated the quality of the export basket of a country is determined by the proportion of exports of goods with high labor content and items with total capital-intensive goods exported by the country. In particular, the present capital-intensive goods are defined as goods with high added value such as electronics, machinery, pharmaceuticals ... The countries which have high capital

tends to produce processing products for export and vice versa will favor the production of new products or semi-processed crude for export [22]. Thus, a good quality structure of goods is a structure with the share of these items has high levels of processing or value rising to dominate the overall structure of such exports.

A different way of assessment of quality of exports is raised in the study by Weiss and Jinkang Zhang (2005) and Hausmann et al (2005). The authors construct a quantitative measure of the quality of structure of export that represents the index of export income (level income of export) SanjayaLall for John Weiss and Jinkang Zhang (2005) SE index and Hausmann, Hwang, Rodrik (2005) is the EXPY index [5], [6], [10], [15]. According to a measurement of Sanjaya et al (2005) the complex index of exports is calculated as follows [10]:

$$US_k = \sum Y_i * XK_{ij} / X_{ki} \quad (1)$$

In which:

- Y_i : per capita income of the j exporter
- XK_{ij} : exports of commodity j
- XK_i : export product i of a set of countries
- US_k : average earnings index of export products i

$$SE = \frac{US_k - US_{\min}}{US_{\max} - US_{\min}} * 100 \quad (\%) \quad (2)$$

In which:

- SE: the complexity of the products exported
- US_{\min} : minimum average income
- US_{\max} : maximum average income

Complex index of export products (SE) will have a value from 0% to 100%. The index says incomes of export (level income of export). This index reflects the relationship between the average income value of goods exported of minimum and maximum exporter of goods. If this index shows increasing average incomes from the export of greater exports and vice versa if the smaller the index represents the average income of the lower exports. The index is zero (0%) represents the average earnings from exports equal to the minimum average income while an index is equal to 1 (or 100%), ie the average income level of goods is equal to the maximum export income (exports which best value and quality).

We can see that when we use index US_k and SE, we can evaluate and classify the quality of export products quickly and easily. Export ratio XK_{ij} / X_{ki} shows the role of the product i in the basket of export goods in set of countries exporting products i . However, we still do not see the role of product i in total exports of a country j and the total exports of the group of countries.

A later study by the authors Hausmann, Hwang, Rodrik (2005) had continued to study the structure of exports and determine the quality of export structure by constructing an index called income level of a country's exports. Firstly, the authors offer PRODY index is used to calculate each product exports that shows the relationship between the average income of the export share of a certain category of goods or index measuring the level of complexity of a product of a country and continued to study the construction of indicators of quality of exporting country j called EXPY $_j$ [5]. According to a measurement of Hausmann et al (2005) the complexity index of exports is calculated as follows:

$$PRODY_k = \sum \frac{x_{jk} / X_j}{\sum x_{jk} / X_j} * Y_j \quad (3)$$

In which:

- PRODY $_k$: quality index of export product k
- x_{jk} / X_j : the proportion of exports of domestic products k j in total exports of country j (shown the role or importance of product k in total exports of country j)
- $\sum (x_{jk} / X_j)$: is the total percentage of export products k of set of countries exporting product j (shown the role of product k in total export of country j in comparison with all other countries exporting product k together)
- Y_j : per capita income of country j .

Next, the study build quality indicator of domestic exports of country j index called EXPY $_j$.

$$EXPY_j = \sum \frac{x_{jk}}{X_j} * PRODY_k \quad (4)$$

The change in the number of the structure of export is shown in the number that is the increase in export value, while in the structure of the quality of the goods also tend to increase over the year. The change in the number of an export structure is a necessary condition but not sufficient for growth in terms of number of products structure must be maintained in a sustainable way in the long run and have the ability to limit the

adverse effects to the interests of exporters due to the export fluctuation on the world market. Therefore, beside increasing the number of export structure we should have modified the quality of the export structure in order to achieve real effectiveness of export.

Restructuring in terms of quality is expressed through two assessments: (i) the change in the proportion of goods with high-tech level commodities besides normally produced commodities in the total production structure [22]; (ii) the quality of the items shown by the proportion of the goods by the per capita income have also increased, and the quality evaluation index of export commodity structure is PRODY and EXPY [5] will increase over the years.

Restructuring in terms of the structure of exports is expressed towards improving the quality of export structure or within each small structure of exports and is often understood as raising the proportion of the groups with high-tech level of processing, high levels of intelligence or bring high added value and reduce the proportion of the product only at the stage of production, processing, also known as new products or primary raw products. Restructuring exports is also interpreted as a shift from exports of products using labor-intensive to capital-intensive products such as electronics, machinery, technology software products.

Thus, the quality of exported goods depends on technological content, or the degree of product processing and processing content of the product depends on the product manufacturing technology and we can also say that advanced manufacturing technology create high-quality products or complex products.

Restructuring of exports is the increase in the proportion of the group identified in the structure. According to the above analysis of PRODY index this indicator increased over time reflects various increases in the quality of goods or export goods and the increase in value of the index due to two factors which are the proportion of exports and per capita GDP of a given country. In particular, the proportion of exports of a commodity group is determined by the value of exports of this commodity group in total export value and export value of products exported will be determined as follows [6]:

$$Tg_i = S_i \times P_i \quad (5)$$

In which: Tg_i is the export value of group of exporting goods i ; S_i is the amount of exports of goods i and P_i is the export unit price (excluding value added tax) of the i commodity groups.

Thus, the origin of the change of the index EXPY or PRODY is attributable to one of the elements is the GDP or the amount or export unit price changed.

4. Study design

With the goal of the study is to provide a solution to restructure the major export products of Northeast provinces in Vietnam which gradually directs to enhance the value of goods, the study uses both qualitative and quantitative research methods. The qualitative research is the managers' assessment on exports of goods in the region and quantitative research focuses on descriptive analysis, comparison and measurement of factors affecting the exports structure of the Northeast. Specifically, this study provides the quantification of the relationship of factors affecting the restructure of major export products of Vietnam Northeast by the index; the independent and dependent variables, the correlation model and regression analysis. Therefore, the forecast model of the structure of major export products in the region by 2020, with a vision to 2030 and the qualitative conclusions for the related issues.

5. Population and Sample

The Northeast area of Vietnam has 9 provinces, including: Phu Tho, Ha Giang, Tuyen Quang, Cao Bang, Bac Kan, Thai Nguyen, Lang Son, Bac Giang and Quang Ninh. This paper selected all provinces to collect data [9],[11]. Hence, the paper uses secondary data sources to assess the status of therestructuring of the exports of the Northeast provinces in Vietnam. This data is contained in the final report, statistical yearbook of Vietnam and the provinces in the region.

6. Methods of Data analysis

The study will use the EXPY and PRODY indexes by Hausmann, R., Hwang, J., Rodrik, D (2005). Because this index reflects more comprehensively than the ESI index and especially aims to perform the quality rating of exports and build a formula to calculate the complexity of exports for each region as follows [5]:

$$PRODY_{kv} = \sum R_{kt} * Y_{tk} \quad (6)$$

$$PRODY_{nk} = \sum R_{nk} * Y_{tk} \quad (7)$$

$$PRODY_{sk} = \sum R_{sk} * Y_{tk} \quad (8)$$

* In the formula (6):

- $PRODY_{kv}$: indicator of the quality of export products of the region k .

- Y_{tk} : GDP per capita (at current prices) in the province exporting the product k
- R_{kt} : PRODY coefficient and is defined as follows:

$$R_{kt} = \frac{XK_{kt} / \sum XK_t}{\sum K_{kt} / \sum XK_t} \quad (9)$$

- XK_{kt} is the exports of the product k of the province t (t includes 09 provinces in the Northeast)
- $\sum XK_t$: the province t 's total exports
- $\sum XK_{kt} / \sum XK_t$: Total export of the product k / the province t 's total exports

In sum, we can see that the formula (6) helps calculate the average quality of an export product in the export basket consisting of 09 Northeast provinces or the average quality of an export product of the region. The index shows the role of the product k in the export structure of the province as well as in the export structure of the whole region. This will more accurately reflect the real quality of the region's export products to thereby make more reasonable comments and suggestion.

* In the formula (7):

- $PRODY_{nk}$: the indicator of quality of the products group k , classified by the foreign trade standards SITC (REV 3)

- R_{nk} : the PRODY coefficient of product groups classified by the province t 's foreign trade standards ($k = 1$ to 8, corresponding to SITC¹0, SITC1, ... SITC 8 and t is the province from 01 to 09 in the Northeast) [8],[4].

- Y_{tk} : GDP per capita (at current prices) in the province t exporting product group k based on SITC foreign trade standards (REV 3)

* In the formula (8):

- $PRODY_{sk}$: the indicator of the quality of the product group k classified by the standard VSIC 93

- R_{sk} : the PRODY coefficient of product group classified by the standard VSIC 93

- Y_{tk} : GDP per capita (at current prices) in the province t exporting the product group k classified by the standard VSIC 93.

The calculation of the quality of the export products by $PRODY_{kv}$ will show the quality of each item and the changes of this quality over the years. Meanwhile, the results from the calculation by $PRODY_{nk}$ will show the quality or change in the quality of major export products based on the foreign trade standard. That is the classification of export products based on the level of processing from raw to refined products, and $PRODY_{sk}$ shows the sectors' contribution in the quality of the export. Next, the quality index of regional exports is calculated as follows:

$$EXPY_{mh} = \sum \frac{XK_{vk}}{XK_v} * PRODY_{kv} \quad (10)$$

$$EXPY_{sh} = \sum \frac{XK_{vk}}{XK_v} * PRODY_{nk} \quad (11)$$

$$EXPY_{vh} = \sum \frac{XK_{vk}}{XK_v} * PRODY_{sk} \quad (12)$$

- $EXPY_{mh}$, $EXPY_{sh}$ and $EXPY_{vh}$: quality indicators of regional export structure (corresponding to the case of major export products, these products are classified according to SITC3 and VSIC 93)

- XK_{vk} : Export of the product k (corresponding to the three cases, including the major export products, the products classified by SITC 3 and VSIC² 93)

- XK_v : The total export of the region

7. Research results and Conclusion

7.1. Structuring exports by value of the Northeast Vietnam

The structure of exports of the northeast Vietnam, including raw commodities such as rice, coal and other commodities with high levels of processing, such as electronics, computers and accessories. However, in the proportion of exports of raw materials, coal accounts for the highest proportion, with an average of 55% [21]. The second place is textiles, with 18.8%, followed by computers and accessories, with more than 10%, electronic goods with 9.34% (see Table 1 and fig.1) [21].

¹Standard International Trade Classification, Revision 3 - SITC
²Viet Nam Standard Industrial Classification

Table 1.The structure of export value of some commodities of the Northeast Vietnam

		<i>Unit: 1000\$</i>				
Goods		2012	2013	2014	2015	%
1	Tea	10,501	11,596	14,244	12,902	0.51
2	Tools	17,705	22,648	3,491	7,913	0.53
3	Garments	56,539	65,647	78,147	102,098	3.11
4	Cassava flour	-	-	-	33,419	0.34
5	Fabrics	67	52	39	35	0
6	Vegetables	6,989	8,292	18,428	24,164	0.59
7	Rice	3,896	7,906	9,034	2,487	0.24
8	Plastic products	9,684	14,679	32,544	28,133	0.87
9	Textiles	190,879	400,637	542,973	696,481	18.8
10	Electronics	68,442	180,011	362,811	415,139	10.54
11	Computers&Accessories	16,978	137,794	301,523	453,595	9.34
12	Coal	1,581,351	1,699,215	1,221,979	865,236	55.12
Total:		1,963,031	1,963,031	2,548,477	2,585,213	100%

Source: Statistical Yearbook of the provinces / cities, import and export of goods of the province in 2013,2014, 2015 and authors' calculations [16],[17],[18]

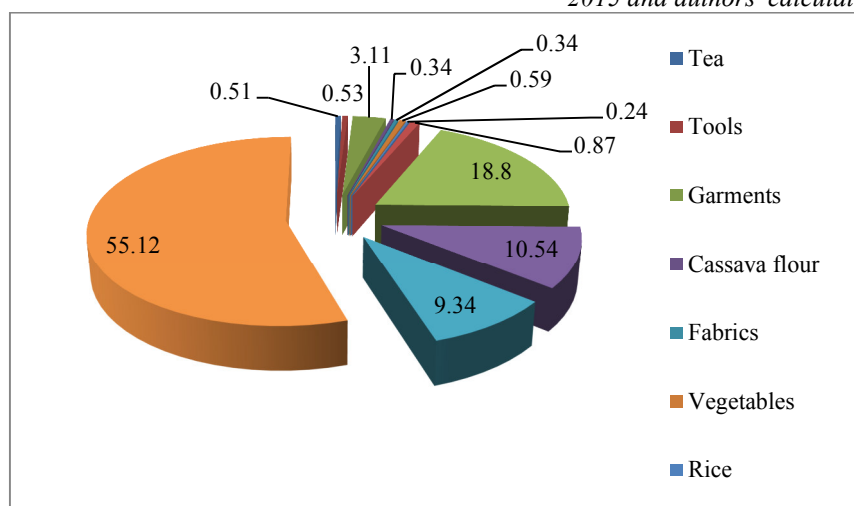


Fig.1. The structure of export value of commodities of the Northeast Vietnam (%)

7.2. The structure of exports according to quality of the Northeast Vietnam

The index of revealed comparative advantage (RCA) of exported products in the Northeast Vietnam - Structure of the quality of export products.

Applying the RCA calculation in some major export products of the Northern Delta region shows the following results (see Table 2)

Table 2.RCA of exported products in the Northeast Vietnam

Index	Goods	RCA 2012	RCA 2013	RCA 2014	RCA 2015
1	Tea	1.05	1.17	1.49	1.02
2	Cassava flour				0.55
3	Fruit and vegetables	0.30	0.27	0.52	0.41
4	Rice	0.02	0.04	0.06	0.02
5	Plastic products	0.17	0.22	0.50	0.26
6	Textiles	0.34	0.59	0.89	0.70
7	E. products, computers and accessories	0.48	1.42	1.99	1.48
8	Coal	19.63	21.43	23.22	17.12

Source: Author's calculations based on statistics

Considering the structure of exports of the Northeast Vietnam in the perspective of comparative advantage (RCA) showed that of the 8 commodity groups with RCA there are only 3 major groups with RCA of more than 1 including electronics group computers and components which can alter from no comparative advantage to a comparative advantage in the 2012-2015 periods. Notably, coal group, with the too large export amount, in areas with coal in Quang Ninh province is the country's granary. Thus, RCA is too high. But according to the theory with RCA of more than 1 this is not encouraged to export because the trend to export raw

materials and fuels will be gradually reduced. Vietnam is oriented towards reducing and not exporting coal in the near future.

Tea is the commodity with a comparative advantage of the Northeast of Vietnam. with the participation of some provinces such as Thai Nguyen, Yen Bai, Phu Tho, Cao Bang, Tuyen Quang, but the number and proportion of exports is also small, just 0.51% in the 2012-2015 period. Therefore, it is necessary boost tea production and processing to enhance the value of exports in the structure, replacing coal products. In the near future, tea, electronics group, components should be focused, especially when there are huge shift some manufacturing corporation electronic components, intermediate components and technology support, such as Samsung. Toyota. ... Enhancing advantages of textile group get export comparative because Vietnam has been a member of the partnership Agreement trans-Pacific (TPP) and to December.31.2015 will implement the commitments of the AEC.

Secondly, the structure of export quality of Northeast Vietnam in terms of the quality

Table 3.Structural quality index of exports (PROXY) of some items of Northeast Vietnam

Unit: 1,000 VND

Year Goods	2012	2013	2014	2015
Tea	406.1	311.8	168.4	175.3
Textiles and garment	185.9	170.8	147.2	159.96
Computer and accessories	10.2	90.2	125.5	159.96
Rice	424.9	944.0	685.7	159.96
Coal	574	630.1	597.4	453.15

Source: Calculations by the authors based on statistics

The results obtained from the analysis of the impact of market factors on the structure of exports show: the theory is true, the determinants of the structure of focused exports which are labor resources, capital and technology. Although market factors also affect the products of the Northeast Vietnam. However, these factors have not been reviewed systematically as resource elements.

Products have comparative advantage should increase exports, which means restructuring focused exports to increase these products in the export structure. For example, tea products, computer and component products of the Northeast Vietnam as the analysis and testing above. Other products do not have the advantage should not focus resources on production. This is also consistent with the theory of tangible goods exports.

In general, the Northeast Vietnam has a reasonable restructuring trend. The provinces in the region seldom have the same major export commodity as each other. This is a good characteristic which should be promoted; for example, the Red River Delta where the author had the opportunity to study. Maximizing the advantages of each province, planning for the whole region in this direction, the region will promote long term profit.

References

- Ba Le Xuan and Nguyen Thi Tue Anh, E.: The Vietnam Economic growth : 15 years (1991-2005) from the perspective of analyzing the contribution of the factors of production. Science and Technology Publishing House Art, Hanoi (2006)
- BinhD. :Export activity through the gate on the north: Reality and Solutions. Journal of Economic and Development (1997) 12-17
- Cuong Mai T.: Improving international trade policy in the context of Vietnam's international integration, economic last: 5:02:05 (2014)
- Hang Vu T.:The list of international commodity classification applies in import and export statistics of Vietnam's goods (2009). Available online at [http:// vienkhoahoc. Thongke.gov.VietNam /? Page = ttulieu&tabel = male = 2001 &hdnc&Cat_ID = 73 & id = 65](http://vienkhoahoc.thongke.gov.vietnam/?Page=ttulieu&tabel=maile=2001&hdnc&Cat_ID=73&id=65).
- Hausmann, R., Hwang, J. and Rodrik D: What you export matters. NBER Working Paper no.11905 (2005)
- Hoekman, B. and S. Djankov: Determinants of the Export Structure of Countries in Central and Eastern Europe. The World Bank Economics Review, Volume 11, No 3 (1997) 471-87
- Hong Nguyen V.: China's reform and opening up: Lessons Learned. World Publishing House, Hanoi (2003)
- Huyen Nguyen T.: The policy support and encourage the export of VN - problems and solutions adjusted to fulfill the international commitments, graduation thesis of Foreign Trade university of Hanoi (2007)
- Khai Nguyen H., Dao Ngoc Tien , V.: Restructuring Vietnam exports, monographs. Statistics Publishing House , Ha Noi (2007)
- Lall, Sanjaya, John Weiss, and Jinkang Zhang: The 'Sophistication' Of Exports: A New Trade Measure of ProductCharacteristics. World Development, Vol. 34 (2005) 222-237
- Long Nguyen Tien: China' experiences and Solutions to Prevent price dumping of Vietnamese exported Goods

- after WTO integration. Emerging Issues in the Sustainable Economic Growth of Vietnam: International Experiences and Solutions. Statistics Publishing House Hanoi (2009)
- Mayer, Jörg, and Adrian Wood: South Asia's Export Structure in a Comparative Perspective. Oxford Development Studies 29 (1) (2001) 5-29.
- Multrap: Vietnam's international trade regime and comparative advantage. Discussion paper, No 37 (2002)
- Nguyen Tien Trung: Vietnam's international trade regime comparative advantage. CAS Discussion paper No 37 (2002)
- Rodrik, D.: What's so special about China's exports?. CEPR Discussion Paper, no.5484 (2006)
- The General Statistics Office of Vietnam: Statistical Yearbook 2012, Statistical Publishing House, Ha Noi (2013)
- The General Statistics Office of Vietnam: Statistical Yearbook 2013, Statistical Publishing House, Ha Noi (2014)
- The General Statistics Office of Vietnam: Statistical Yearbook 2015, Statistical Publishing House, Ha Noi (2016)
- The General Statistics Office of Vietnam: Statistical Yearbook of the provinces of the Northeast, the years from 2010 to 2015. Statistical Publishing House (2015)
- The General Statistics Office of Vietnam: The Import and Export of goods Vietnam 20 years of innovation, Publisher Statistics (2015)
- The Ministry of Trade (MOIT): Development Strategy export period 2010-2020 (2010)
- Van Bui T.: Foreign Direct Investment to restructure the export of the Northern Plains, economics PhD thesis, University of National Economics (2011)
- Vietnam General Statistics Office: Statistical Yearbook 2014, Statistical Publishing House, Ha Noi (2015)
- Wang, Z. and S. Wei: What Accounts for the Rising Sophistication of China's Exports?. NBER Working Paper No. 13771, Cambridge (2008)