Netherlands’ Participation in GVCs: Facts and Features

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Abstract. In recent decades, global value chains (GVCs) gave national economies new opportunities to increase competitiveness by placing some segments of production processes in foreign locations with lower costs. The purpose of this work is to identify what factors influenced the integration of the Netherlands into GVCs, and also to consider the features of this integration from a sectoral and geographical point of view. The basic methodology for assessing the characteristics of the participation of the Netherlands in GVCs is the input-output approach. For a number of reasons, the UNCTAD-Eora GVC Database was chosen as the statistical background of the study. Based on the calculations, the authors came to the conclusion that the Netherlands has one of the highest GVCs participation rates: 78% compared with the global average of 51%. The high level of Netherlands GVC involvement is due to its deep backward linkages. The Netherlands is one of the few cases where the share of foreign value added (FVA) in gross exports exceeds the share of domestic value added (DVA): 54% versus 46%. However, forward links in Dutch value added chains are much weaker. The main factor that influenced the development of upstream ties was the high level of re-exports in the country’s gross exports, which was facilitated by the Netherlands’ status as a European transit and offshore center. Another factor that facilitated country’s upstream relations was the industrial nature of economy, which relies heavily on the import of foreign components. The most GVC integrated industries are Dutch chemical, food, agriculture industries and the manufacture of electrical appliances. The most important Dutch GVC partners are Germany and China.

Keywords: Global value chains (GVCs) · Value added trade · Netherlands · Re-exports · Foreign value added (FVA) · Domestic value added (DVA) · GVC participation rate

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1 Introduction

Given the challenge of limited resources, the relative saturation of world markets, increased competition for consumers, countries wishing to integrate into the global economy should search for additional ways to increase the efficiency of their goods and services production. GVCs have become one of these ways and have opened up new
horizons for national economies and firms: they can now transfer some segments of their production processes to other countries where comparative costs are lower.

The phenomenon of GVCs means that the availability of domestic resources is no longer the only condition that allows countries and firms to participate in international production and trade. Countries that lack the manufacturing factors and technologies needed for production of goods/services can now focus on a particular segment of the production process that matches their comparative advantages.

The Netherlands is one of the most industrialized economies of the world, it is the world’s 4th exporting country (UNCTADstat 2019), and the world’s 3rd country by GVCs participation rate (UNCTAD-EORA GVC database 2019). A Netherlands’ example illustrates how a small country with limited resources can successfully integrate into GVCs.

2 Methodology

Academic literature on the particularities of the Dutch GVCs participation is rather extensive. The most significant are works of such authors as: Amador et al. (2015), Batenburg and Rutten (2003), Berg (2014), Demeter et al. (2009), Lemmersand Wong (2019), Patel-Campillo (2011), Timmer (2014), Timmer and de Vries (2015), Verwaal and Hesselmans (2004), Wubben et al. (2013).

Currently, an analysis of value added trade is possible through the use of various statistical databases. At present there are six main sources of statistics for GVCs research: these are the UNCTAD-EORA GVC database, Inter-Country Input-Output model, Asian International IO tables, Global Trade Analysis Project, World Input Output Database and Trade in Value-Added database. The choice of the statistical base for the study depends on study goals, scope, countries and regions coverage.

In this paper authors prefer to use the UNCTAD-Eora GVC Database for a number of reasons. Nowadays this database covers the largest number of countries and industries among the above mentioned datasets; it more accurately decomposes international flows of value added, which are correlated with gross flows of international trade. In addition, this database has the most relevant data. Regardless of which base is selected for the study, the main indicators of the country’s GVCs integration degree are:

- Value added (VA) exports/imports is the gross exports/imports of a country;
- Foreign value added (FVA) in gross exports is the value of imports that was used to produce exports of final or intermediate goods;
- Domestic value added (DVA) in gross exports is that part of exports that was created domestically, it is a part of country’s GDP;
- Indirect value added (DVX) is that part of the country’s exports, which is then used by “third countries” in their production and exports;
- The global value chains participation rate (GVC rate) is the most important integral indicator, which reflects the share of the country’s exports, which is part of the multi-stage trade process in the framework of GVCs.
Based on these indicators, we will evaluate the degree of the Netherlands’ GVC participation.

3 Results

3.1 World Trade in Value Added

Indirect evidence of the international production expansion is data on trade in intermediate goods. So, in 2015, the global average share of trade in intermediate goods accounted for 59% of total world exports (TiVA 2018). For the Netherlands, this figure is slightly higher - 61%. However, trade in intermediate goods, though very important, does not provide an opportunity to assess how countries exchange the value added, including its domestic and foreign components.

As follows from Fig. 1, following the sharp recession of 2008 due to the financial crisis, world trade in value added (DVA and FVA) began to gradually recover, and after a slight slowdown in 2015, it showed only insignificant growth in the next years. Some experts discuss stagnating growth in value-added trade.

![Fig. 1. The dynamics of world trade in VA 2007–2019 with the division into DVA and FVA, in mln. dollars Source: UNCTAD-EORA GVC database 2019](image)

In 2018, the total volume of world trade in value added accounted for 21 trillion dollars, and the global average level of foreign value added in world exports decreased to 28% compared to 30% in 2007. These changes in the ratio of foreign value added can be explained by the slowdown in economic globalization, in particular, by the downward trend in global foreign direct investment (World Investment Report 2018, p. 22).
3.2 Netherlands: GVC Participation Indicators

Netherlands’ characteristics are significantly different from global ones. To get a more detailed picture we compare the Netherlands’ performance with that of other countries (Table 1). For comparison, we selected the top 10 countries by the GVC participation rate (UNCTAD-EORA GVC database 2019).

Table 1. DVA, FVA, DVX and GVC index: top-10 countries, 2018 (%)

| Rating | Country         | DVA (% of gross exports) | FVA (% of gross exports) | DVX (% of gross exports) | GVC index 2018 |
|--------|-----------------|--------------------------|--------------------------|--------------------------|-----------------|
| 1      | Norway          | 79%                      | 21%                      | 59%                      | 0.79            |
| 2      | Belgium         | 45%                      | 55%                      | 23%                      | 0.78            |
| 3      | Netherlands     | 46%                      | 54%                      | 24%                      | 0.78            |
| 4      | Hungary         | 45%                      | 55%                      | 22%                      | 0.78            |
| 5      | Singapore       | 38%                      | 62%                      | 14%                      | 0.75            |
| 6      | Estonia         | 50%                      | 50%                      | 25%                      | 0.75            |
| 7      | Czech Republic  | 63%                      | 37%                      | 37%                      | 0.74            |
| 8      | Slovenia        | 56%                      | 44%                      | 30%                      | 0.73            |
| 9      | Austria         | 59%                      | 41%                      | 32%                      | 0.73            |
| 10     | Hong Kong       | 42%                      | 58%                      | 15%                      | 0.73            |
| World  |                 | 72%                      | 28%                      | 28%                      | 0.51            |

Source: UNCTAD-EORA GVC database 2019

The Netherlands is characterized by one of the highest levels of GVC participation: in 2018, the Netherlands took the 3rd place in terms of the country’s GVC participation rate following Norway and Belgium, and significantly exceeding the world average (Table 1).

In 2018, the total Dutch exports of value added accounted for 822 billion dollars, with 46% of DVA share, and 54% FVA share (UNCTAD-EORA GVC database 2019). The Netherlands is one of the very rare cases where the share of FVA exceeds the share of DVA. At the same time, 24% of the country’s total exports were incorporated into exports of third countries. These data allow us to assume that the high level of Netherlands involvement in GVCs is due to its deep backward participation.

Despite the fact that the top-10 countries have similar GVC participation rates (above 70%), the factors that influenced the level of the indicator may be different. Consider the example of the Netherlands and put forward our hypotheses.

First, the Netherlands, like some other countries from the rating (for example, Belgium, Singapore, Hong Kong), is the regional headquarter and logistics center for multinational enterprises (MNEs). Thanks to its favorable geographical location and liberal legislation in the field of international trade and investment, the country has begun to play an important role as a global service, technology and offshore center that is linked with large trade flows, including value added flows.
Second, due to Europe’s largest seaport in Rotterdam, the Netherlands gained powerful competitive advantages as a location for transit trade, which also affected the country’s high level of GVCs integration.

Third, the Netherlands as an industrially developed country with a relatively narrow domestic market and a lack of resources is forced to rely on the widespread use of foreign intermediates for its exports, which, in turn, act as final and intermediate goods for the export markets of third countries. It confirms, in particular, by a high share of intermediate Dutch exports incorporated into the exports of third countries.

And finally, the Netherlands is characterized by a very high level of re-exports in its trade, which also positively correlates with a high share of FVA in the country’s gross exports.

3.3 Sectoral Features of Netherlands’ Participation in GVCs: Backward and Upward Linkages

This part of the paper deals with the sectoral analysis of both Dutch foreign value added in the gross exports (backward linkage in the chain) and the domestic value added, incorporated into the export of third countries (upward linkages in the chain), which is the most important part of the Netherlands’ GVC integration analysis.

We start with the backward linkages in the Dutch value-added production chains. Figure 2 shows that in 2017, 50% of Dutch exports were re-exported, that is, the export of products previously imported into the country for resale to other countries.

![Fig. 2. FVA in gross Netherlands’ exports by industry, 2017 (%) Source: UNCTAD-EORA GVC database 2019](image)

The high share of re-exports is explained by a number of factors that we mentioned above: the Netherlands is the center of European transit trade, where the seaport of
Rotterdam serve as the most important centers where the customs clearance of exports/imports cargo is carried out. Thus, 13% of total Dutch re-exported goods go to China, 6% - to Japan, and 6% to the United States (UNCTAD-EORA GVC database 2019). The majority of Dutch re-exported goods come from Germany (16%), but this is due to the specifics of the delivery conditions between third countries and Germany; it is very likely that the goods are already owned by Germany at the time they arrive at the port of the Netherlands (UNCTAD-EORA GVC database 2019). According to the Centraal Bureau voor de Statistiek, 55% of Dutch imports is re-exported, of which 31% is used for domestic production and/or for exports, and only 14% is used for final consumption (Jaarsma and Wong, 2019).

After re-exports, the second largest sector of value-added imports, which is included in Dutch exports, are chemical products. About 7% of FVA in total Dutch value added exports are food products. The Dutch oil and gas industry needs coke, oil products and nuclear fuel, which make up about 3.8% of the country’s total FVA in gross exports. A special place in the Dutch exports is occupied by electrical appliances, machinery and equipment, as well as components for their production. Often these products pass through the Netherlands in transit to neighboring countries.

Figure 3 demonstrates the industry specifics of the Netherlands’ upward links in value chains.

**Fig. 3.** Netherlands’s DVA, incorporated in exports of third countries, by industry, 2017 (%)  
Source: UNCTAD-EORA GVC database 2019

Thus, the largest share of Dutch DVX falls on the chemical, oil and gas sectors, retail and wholesale trade, agriculture, the metallurgical industry, the production of electronics and machinery, as well as the financial services sector. We note that the set of industries involved in upward GVCs links largely coincides with industries that play an important role in backward links.
The Netherlands is one of the internationally recognized leaders in the chemical industry. The Dutch chemical industry is mostly based on the production of chemicals and pharmaceuticals. The large share of Dutch chemical products are shipped abroad.

The Netherlands, considered as one of the largest natural gas producers in Europe, has already consumed nearly 80% of its reserves as of 2017 (Netherlands’ Central Office for Statistics (CBS) 2017). However, there has been a decline in oil and gas production in the Netherlands, both due to natural restrictions and the green policy of the EU. Nevertheless, oil and gas production and their processing are one of the most important sectors where a DVA is created.

It is necessary to stress the phenomenon of Dutch agriculture, the Netherlands is the world’s second largest exporter of food products, more than half of country’s territory is used for agriculture and horticulture (Viviano 2017). The Netherlands achieved such success by introducing special greenhouses that control the microclimate.

### 3.4 Key Netherlands Partners in Trade in Value Added

In recent decades, Dutch foreign trade has been primarily oriented towards European countries. So, for the period of 2008–2018 the share of Dutch imports from Europe accounted for about 80% of all imports. Europe was also the main export partner of the Netherlands, with an average of 60% of the country’s total exports going there (UNCTADstat 2019). In 2017, in gross value terms the Netherlands imported goods for 471 billion dollars, and the main partners were Germany (20% of gross imports), Belgium (15%) and the United Kingdom (11%). In the same year, the gross Dutch exports accounted for 566 billion dollars, the main importers of Dutch goods were Germany (16% of gross exports), China (12%) and Belgium (9%).

The geographical features of the Netherlands trade in value added are presented in Table 2.

| № | Country | FVA in Netherlands gross exports, mln. USD | % of gross exports | № | Country | Netherlands’ DVA incorporated in exports of third countries, mln. USD | % of gross exports |
|---|---|---|---|---|---|---|---|
| 1 | China | 79 493 | 17% | 1 | Germany | 47 185 | 26% |
| 2 | Germany | 66 717 | 15% | 2 | Belgium | 37 395 | 21% |
| 3 | Belgium | 29 564 | 6% | 3 | Italy | 12 729 | 7% |
| 4 | Japan | 26 464 | 6% | 4 | France | 12 691 | 7% |
| 5 | USA | 25 010 | 5% | 5 | UK | 10 236 | 6% |
| 6 | UK | 24 705 | 5% | 6 | Spain | 5 280 | 3% |
| 7 | France | 21 205 | 5% | 7 | Sweden | 4 936 | 3% |
| 8 | Italy | 12 232 | 3% | 8 | Switzerland | 4 167 | 2% |
| 9 | Russia | 11 323 | 2% | 9 | China | 4 041 | 2% |
| 10 | Norway | 10 564 | 2% | 10 | Denmark | 3 607 | 2% |
| 11 | Others | 150 560 | 33% | 11 | Other | 39 216 | 22% |
| Total | 457 837 | 100% | | Total | 181 483 | 100% |

Source: UNCTAD-EORA GVC database 2019
It is obvious that the main partners of the Netherlands in exports and imports in gross value terms and in terms of value added do not completely coincide. The key partner of the Netherlands is Germany, this country is mostly involved in the Netherlands’ bilateral GVCs.

The main value-added donor-countries for total Dutch VA exports are China (17% of the FVA in total Dutch exports), Germany (15%) and Belgium (6%). Moreover, for all the top-3 value-added donor-countries (China, Germany and Belgium), the main VA export items that are used in Netherlands for further processing and export are chemicals, food products, motor vehicles, machinery and equipment, basic metals, radio, television and communication equipment and apparatus and re-export. They account for between 70% and 80% of total Dutch FVA in gross export.

Germany, Belgium and Italy are the main recipients of Dutch value added, incorporated into their total exports (DVX). They accounted for 26%, 21% and 7% of the total Netherlands’ DVX in 2017. The main Netherlands’ products and intermediate goods, which are mostly demanded for production and exports of the top-3 Dutch VA recipients were manufacture of chemicals, wholesale trade, except of motor vehicles and motorcycles, extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction, agriculture, hunting, other business activities and manufacture of basic metals. From 40% to 50% of the total Dutch DVX in exports of Germany, Belgium and Italy consist from above listed products and intermediates.

4 Conclusion

The main purpose of this paper was to identify what factors influenced the integration of the Netherlands into GVCs, and also to consider the features of this integration from a sectoral and geographical point of view.

The authors concluded that the country’s high level of participation in GVCs was due to the high share of foreign value added in the country’s gross exports, which is a consequence of the high share of re-exports in Dutch trade. This was largely caused by the geographical position of the Netherlands as a transit trade center with favorable liberal tax legislation, as well as country’s advantageous location for the headquarters of international corporations, that choose it as offshore jurisdiction.

MNEs are the main engine for the development of GVCs, and the Netherlands is the birthplace of many largest and most influential companies in the world. For example, the Fortune Global 500 list includes 11 Dutch MNEs, mainly in the financial and food sectors: Royal Dutch Shell, EXOR Group, Airbus, Royal Ahold Delhaize, Louis Dreyfus, ING Group, LyondellBasell Industries, Randstad, Heineken Holding, Rabobank Group and Achmea (Fortune Global 500 2019).

The most GVCs integrated industries in Netherlands are chemical and food industries, agriculture, and the manufacture of electrical appliances. Moreover, the set of industries involved in upward links largely coincides with industries that play an important role in backward links.

The authors also came to the conclusion that the main partners of the Netherlands in export and import in terms of gross indicators and in terms of value added do not completely coincide. Most of all, partners from Germany and China are involved in the
GVCs with Netherlands. The failure of the chains due to Coronavirus is likely to affect precisely these interactions, which will negatively affect the economic situation in the Netherlands.

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