7.

Regional differences in export dependency

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International trade in goods contributes significantly to Dutch economic growth. However, the impact of trade on regional growth differs substantially. Taking into account the value added created in the production of exports, provinces with relatively few direct exports still turn out to be relatively dependent on production for exports for their economic growth.

7.1 Introduction

"Trade and foreign investments are crucial. Crucial for our jobs and our growth."
Lilianne Ploumen, Minister of Foreign Trade and Development Cooperation

International trade is beneficial to the economy as it gives enterprises opportunities to expand to new markets and to profit from economic growth abroad. Exporting firms are more productive (Bernard et al, 2007; Wagner, 2005), generate more turnover (Jaarsma and Lemmens-Dirix, 2010), have more knowledge workers on their payroll (chapter 10) and pay higher wages (Genee et al. 2010). As such exporting is actively stimulated by the Dutch government with programmes like Starters in International Business and Partners in International Business.

Many studies established the importance of exports for the Dutch economy. For example, Kuypers et al. (2012) concluded that the exports of goods and services are responsible for about 30 percent of Dutch GDP. In Chapter 2 we show that the share of value added due to exports in total Dutch value added slowly rose during 1995–2011. The chapter also shows that the contribution of exports to total value added is higher in the Netherlands than in most countries. In short, the exports contribute a great deal to our economy, their contribution has grown over time and is relatively high compared to other EU countries.

In chapter 6 we showed that some Dutch regions are more active in trade than others. As exports are not equally distributed over the Netherlands it also seems obvious that the share of exports in Gross Regional Product (GRP) will also differ per province. But to what extent do exports influence the regional economy? Are provinces with relatively large exports automatically more sensitive to fluctuations in foreign demand or do we need to look beyond the absolute export values? An example of how exports affect economic growth was given by the latest regional economic growth figures. All provinces but Zeeland saw the volume of their GRP decrease in 2012. The accompanying press release (Statistics Netherlands, 2013b)

highlights how Zeeland's extensive chemical industry profited from the growing exports and was responsible for economic growth in this province.

We try to shed some light on these issues by adopting two different ways of looking at the contribution of exports to the regional economy and at how dependent and intertwined provinces are with international trade. We will limit ourselves to the exports of goods as data on exports of services is non-existent. In the following sections we will first look into the data used in this chapter (7.2). Then 7.3 illustrates the development in provincial export value for 2002–2012: where are the most exports and in which regions did exports grow in the past few years? In section 7.4 we divide these regional export figures into Dutch manufactured products and re-exports and use this distribution to estimate the value added of the direct exports per province. This is our first method to gauge the impact of trade on the regional economy and will be referred to as the 'export value approach'. This approach is based on the assumption that the value added of export is created in the province that ultimately exports the goods. However, since the exported commodities are often not completely produced in the province that exports them, we introduce the 'value chain approach' in section 7.5. This approach takes into account that other provinces also can contribute to the value added of a province's export. Combining both methods allows for a more realistic analysis of the impact of trade on GRP, regional economic growth and vulnerability to worldwide shocks. Section 7.6 shows the contribution of the export to the economic growth for each province. The chapter ends with conclusions and suggestions for further research.

7.2 Data and methodology

As we look at regional value added from the 'export value approach' and the 'value chain approach' we needed to make two different datasets. For the 'export value approach' a new regional dataset on international trade in goods was constructed. At the base of the time series and the distribution used in paragraph 7.3 and 7.4 lies the 2002–2012 international trade in goods data. This data includes the value of the trade per VAT-id and per year and whether it concerns exports of goods produced in the Netherlands or re-exports. In order to obtain regional trade data a match was made with the address, specifically the postal code, used by this VAT-id for tax declarations. The choice was made to ignore changes in the addresses over the years for each VAT-id. The main reason for disregarding these changes is that they tend to be merely administrative changes rather than real relocations.

Table 7.2.1 depicts the decision tree that was followed in the determination of an address for VAT-ids.

7.2.1   Steps followed in determining an address per VAT-id

	Rule	Solution	Share of VAT-id's
			%
Step			
1	Most recent VAT address is not a PO-box and is a valid Dutch address	Use last VAT address	78.53
2	A previous VAT address is not a PO-box and is a valid Dutch address	Use the most recent valid VAT address	19.75
3	There is a valid VAT PO-box address	Use PO-box address	0.05
4	The administration of the international trade statistics contains a valid Dutch address for this VAT-id	Use the address from the ITS	0.78
5		There is no valid Dutch address for this VAT-id	0.95

Since all regional data in this chapter is grouped per province it is relevant to comprehend how often ignoring the changes in address could lead to a possible misrepresentation of the province. This is shown in table 7.2.2, which illustrates that 82 percent of the VAT-id's (representing 77 percent of total exports in 2012) only had addresses in one province between 2002 and 2012. Roughly 17 percent of all VAT-id's had a change in address across the provincial border.

7.2.2   Effects of ignoring changes in address over time

	Share of VAT-id's	Share of export value in 2002	Share of export value in 2012
	%		
Sort			
no address	0.95	4.66	6.65
all addresses in same province	81.71	69.53	76.76
multiple provinces over time	17.33	25.81	16.68

This regional export data is used to compute the value added generated by the exports of a province according to the 'export value approach'. The second step in our analyses (paragraph 7.5 and 7.6) looks at the value added from exports by taking into account the value chain preceding exports. This approach aims to yield the value added from the export of a province by determining to what extent the export products also originate in this province. The value added of exporting is calculated using macro data from the National Accounts. The steps in

the calculation are not difficult in themselves, yet it is a time-consuming process. We have divided the process into four parts; 1) Determining the total production per industry for exports, 2) subtracting the imports used to make this production, 3) allotting the amount of production for exports to each regional industry and last 4) calculating the amount of value added of the production for export per regional industry.

1. First the total production for exports was derived from the input-output tables (in basic prices) of the National Accounts. These tables contain, among others, the intermediate deliveries between industries and the contribution of industries to final demand (consumption, investment, exports). Next the total value chain was constructed by taking the final exported products and step by step determining the supplying industries (and the suppliers of the suppliers and so on). Using standard input-output techniques it is easy to calculate how much the supplying industries must produce for one euro of exports by the industry they are producing for. Adding all steps of this value chain together yields how much all industries should produce for the exports of every industry. This is their production that is used for exports. It can be direct production (to be exported immediately) or indirect production for exports (when it concerns intermediates that are used in the process to be used for exports).

2. The input-output tables also show how much imports an industry needs in order to produce one euro of exports. Then the value added of one euro of exports of "Made in Holland" is one minus these imports. Similarly, the value added of one euro of re-exports is one minus the imports necessary for these re-exports. Using methods described by Kranendonk and Verbruggen (2011), Kuypers et al. (2013) calculated for 2009 that one euro of "Made in Holland" added 58.5 cents to the Dutch economy, and one euro of re-exports added 7.4 cents to the Dutch economy.

3. Dividing production for exports by total production for every industry yields the share of production for exports. We use this export share per industry for all provinces alike, thus ignoring part of the heterogeneity between provinces. Not all industries are evenly distributed over the provinces, i.e. in one province the chemical sector is well-represented while in another the food sector is very important. So when we multiply the regional production of each industry with its calculated export share, the share of production for exports will be different between provinces: provinces with industries that produce a lot for exports will have higher shares of production for exports than provinces with industries that do not produce much for exports.

4. In the last step we use data from Regional Accounts on value added created by industries per provinces to derive the value added by industry by province. For example, in 2010 the value added created by manufacturing in Noord-Brabant was 14,647 million euros. From the previous calculations it followed

that 67.79 percent of production by the manufacturing industry was for exports. Then the value added thanks to producing for exports by the manufacturing industry in Noord-Brabant is 14,647 * 0.6779 = 9929 million euros. The total value added due to production for exports in a province is the sum of the value added of the production for exports for all industries. Because the provincial data from Regional Accounts are in current market prices, they can be compared properly to the data from the trade statistics. These are also in current market prices.

In paragraph 7.6 we compare the value added of exports to the Gross Regional Product per province. The Gross Regional Product is calculated in the Regional Accounts of Statistics Netherlands. We chose to use the GRP at market prices. It is common use to use GRP in constant prices as it depicts the economic growth between two periods better. However, our aim is to compare international trade data with the GRP and those data are also in market prices. The economic growth between the years 2008, 2009, and 2010 thus includes price changes.

7.3 Exports per province

Figure 7.3.1 shows the development of the export value of goods per province for the years 2002–2012. In recent years Zuid-Holland had the largest export value. This is mainly due to a unique 10 billion euro growth in export value for the last three years. Noord-Holland had the largest export value over the 2002–2010 period and also saw its export value increase in the last three years, albeit modestly. These provinces have the two Dutch mainports, the Port of Rotterdam in Zuid-Holland and Amsterdam Airport Schiphol in Noord-Holland, which of course handle a large share of Dutch exports. The third largest exporter is Noord-Brabant with its strategic position and easy border crossings to Belgium and Germany. Nonetheless Noord-Brabant has fallen a bit behind Zuid en Noord-Holland in recent years. The provinces with the least exports, Friesland, Drenthe, and Flevoland have no main seaport or airport nor any main highway crossing the border. At first glimpse it appears that benefitting from international trade hinges mainly on locating near mainports or borders.

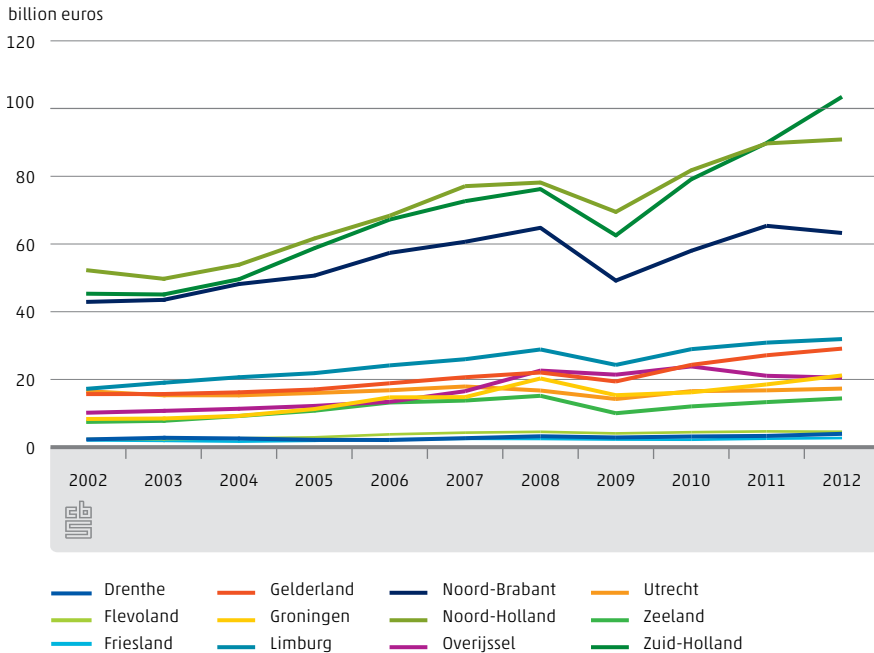## 7.3.1 Export value per province, 2002-2012

billion euros

Figure 7.3.2. shows the average annual export growth per province between 2002 and 2012. Groningen has the biggest increase in export value between 2002 and 2012 with an annual growth of over 9 percent resulting in a total growth of over 150 percent in a decade. The main reason is the dominant role of the natural gas exports in the economy of Groningen. The price per unit of natural gas has risen sharply over ten years[1] which shows in the Groningen export figures (Statistics Netherlands, 2012e). Figure 7.3.2 also shows that Friesland en Utrecht have the least export growth in this decade. Utrecht lags behind with only a 5 percent growth over the entire period, which is an annual growth of 0.5 percent. This might seem surprising for the fifth largest economy of the Netherlands, but it can be explained by Utrecht's specialisation in services[2].

[1] Statistics Netherlands, Statline. Table: Consumption and producer prices by energy commodity.
[2] Statistics Netherlands, Statline. Table: Production structure.

7.3.2 Average annual growth of the regional export value, 2002-2012

Legend:
- 0 to 3%
- 3 to 6%
- 6 to 9%
- 9% or more
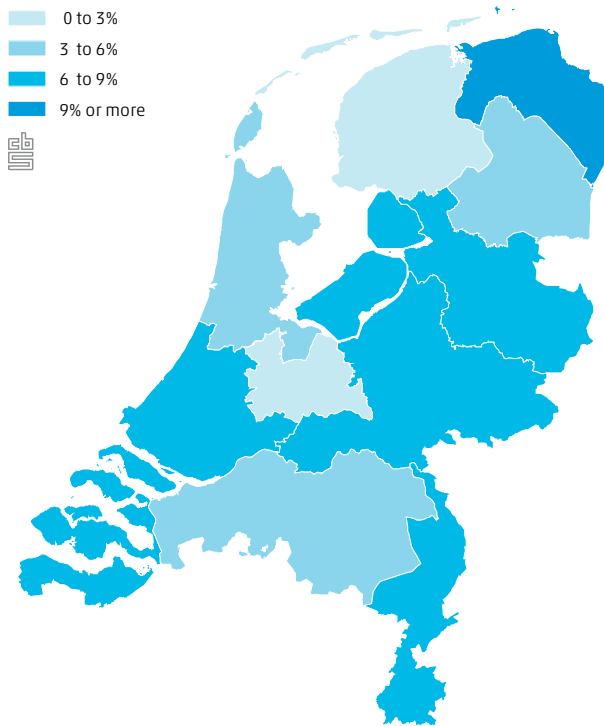
7.4 The value added of exports according to the export value approach

With the absolute export figures of section 7.3 in mind, we now want to illustrate the net contribution of exports, i.e. the value added that is created by exporting goods, to a specific region. A province can have a substantial amount of exports, but this does not necessarily mean that it generates the most value added by exporting. In other words, exports can be more important for one province than for another even if they export the same amount of goods; not every euro of exports yields the same amount of added value. Kuypers et al. (2013) showed that the value added of domestically manufactured export products is significantly higher for the Dutch economy than the added value of re-exported goods. For 2009 they estimated that the average value added of one euro in Dutch manufactured
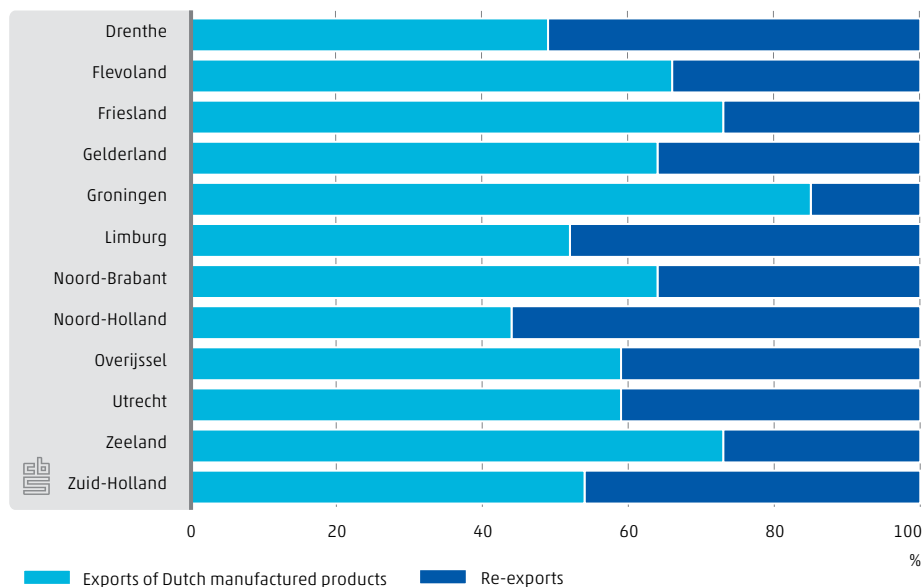
exports was 58.5 eurocents and of one euro in re-exports 7.4 euro cents. This large difference is not surprising as re-exports are defined as goods transported via the Netherlands, which are temporarily owned by a resident in the Netherlands, without any significant industrial processing. Therefore this requires a lot less labour and capital inputs than Dutch manufactured products.

Note that we use a rough estimate in this section as the composition of the export portfolio was not taken into account. E.g. the added value of products from the mining industry is higher than the added value of industrial products. We will introduce refinements at the industry level in section 7.5. As each method creates insight and the two combined do so even more, we choose to show both.

Figure 7.4.1 shows to what extent the exports of a province consist of Dutch manufactured products. There is a lot of heterogeneity between the provinces. Groningen has by far the biggest share of domestically produced exports because of the dominant role that natural gas plays in its economy. Of the three biggest international trade provinces only Noord-Brabant exports an above average share of Dutch manufactured products. We will see in chapter 9 (Top sectors) that the top sector 'high tech' in and around Eindhoven plays a major role in this respect. Noord-Holland appears to be relatively specialised in re-exports, with a share of 56 percent of its total exports. In absolute terms, the total export value of Noord-Holland is much higher than the exports of Noord-Brabant, but the export value of Dutch manufactured products of Noord-Brabant was in fact higher than that of Noord-Holland in 2012. Looking back at 7.3.1 and extending the time series with their yearly re-export share (not shown) reveals that a huge growth of re-exports in Zuid-Holland of over 200 percent is the main reason for the more than 100 percent export growth of Zuid-Holland. The export growth of Overijssel, Gelderland and Flevoland was also mainly driven by the growth of re-exports.

Because the share of re-exports in total exports differs per province, this has to be taken into account when estimating the value added of total exports. For each province we multiplied the domestically produced exports by 55 euro cents and the re-exports by 8.5 euro cents (the estimates for the year 2011, since those for 2012 were not yet available). This yields a rough estimate of the total value added of export per province (export value approach).
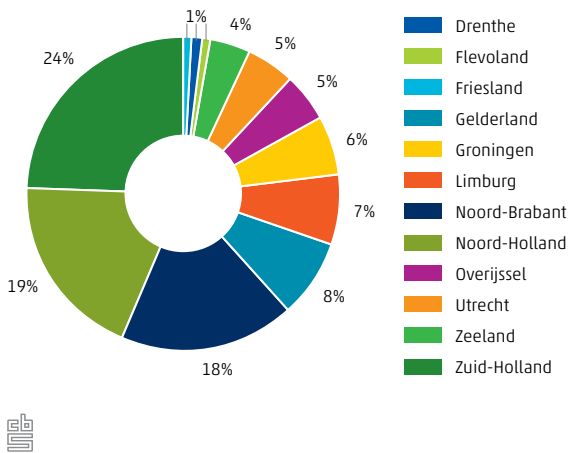
7.4.1 Distribution of regional exports, 2012

Province	Exports of Dutch manufactured products / Re-exports
Drenthe	
Flevoland	
Friesland	
Gelderland	
Groningen	
Limburg	
Noord-Brabant	
Noord-Holland	
Overijssel	
Utrecht	
Zeeland	
Zuid-Holland	

■ Exports of Dutch manufactured products ■ Re-exports

56% of the exports of
Noord-Holland consist of re-exports

Figure 7.4.2 shows the share of each province in total Dutch value added created by exporting. Keeping in mind that Zuid-Holland had the highest export value in 2012 (figure 7.3.1), the pie chart shows that it also had the highest share in Dutch value due to exports. The three provinces with the largest economies, as expected, also have the largest export and the most added value from the export. Note that Noord-Brabant is no longer as far behind to Noord and Zuid-Holland as in 7.3.1. This is due to the 64 percent share of the high value adding Dutch manufactured products in the exports of Noord-Brabant.

7.4.2 Share of province in value added due to exports, 2012

Legend:
- Drenthe
- Flevoland
- Friesland
- Gelderland
- Groningen
- Limburg
- Noord-Brabant
- Noord-Holland
- Overijssel
- Utrecht
- Zeeland
- Zuid-Holland

Pie chart values: 1%, 4%, 5%, 5%, 6%, 7%, 8%, 18%, 19%, 24%

7.5 The value added of exports according to the value chain approach

Almost all products are made in a so-called value chain or supply chain. This means that the final product is the result of a series of intermediate steps in which each step creates added value (see e.g. figure 2.1.1 in chapter 2). If a product is exported by Limburg it does not automatically follow that the added value of that product is completely created in Limburg. Other provinces or even imports may be involved in its manufacturing. E.g. the car parts needed to assemble a new car at Nedcar in Limburg are not exclusively manufactured in Limburg. To estimate the amount of value added a province earns from producing for the exports of goods, it is better to look at the production of goods and intermediate products for goods that will ultimately end up in exports instead of looking at absolute exports. In this value chain approach the value added of exports per province is calculated as described in section 7.2 and shown in table 7.5.1.

The second column of table 7.5.1 shows the value added per province of production destined for exports. According to the value chain approach, Zuid-Holland again creates the largest absolute amount of value added by export production. However, Noord-Holland is now surpassed by Noord-Brabant in terms

of value added. This implies that a large share of the production of export goods takes place in Noord-Brabant.

The third column shows the value added generated by re-exports per province. The provinces that are active in re-exporting (see 7.4.1) also have a large amount of value added from re-exports (Noord-Holland and Zuid-Holland top the list).

The total value added of exports calculated using the value chain approach is shown in the fourth column. Roughly the same pattern emerges as before, only less pronounced. Noord-Holland and Noord-Brabant are in the same league in terms of value added created by exports, even though Noord-Holland has a far larger export value (7.3.1). In terms of absolute export value, Limburg was the fourth largest exporter (7.3.1) but some of the value added is created elsewhere as Limburg is sixth on the value added ranking. Both Gelderland and Groningen create more value added for exports than Limburg.

7.5.1 Value added due to exports, by province, 2010

	Value added from production for the export*	Value added from re-exports	Value added total exports	Share value added exports in GRP
	million euros			%
Drenthe	2,638	136	2,775	22
Flevoland	1,879	145	2,025	21
Friesland	3,737	44	3,782	21
Gelderland	10,403	762	11,166	19
Groningen	9,995	213	10,208	36
Limburg	7,635	1,258	8,893	25
Noord-Brabant	18,126	1,867	19,993	23
Noord-Holland	16,402	4,051	20,453	19
Overijssel	6,971	1,191	8,162	23
Utrecht	7,193	580	7,773	15
Zeeland	3,165	251	3,416	27
Zuid-Holland	21,821	2,549	24,370	20

* Market prices.

When we confront the value added created by exports with the Gross Regional Product (GDP broken down by province) we gain insight into the relative export dependency of provinces. This is done in the fifth column of table 7.5.1. Interestingly the share of exports in GRP does not vary as much as might be expected from the absolute differences in export value. The relatively high degree of export dependency of Groningen is not surprisingly due to its position on the energy market (the economic bureau of ING comes to similar findings (2012)). Also the relatively low export dependency of Utrecht is as expected, since Utrecht

is mainly a service providing province. In general, for services most of the value added will be generated in the local instead of the global market.

It also becomes apparent that in provinces with high export values the value added from these exports constitutes a relatively small part of the GRP. This is due to the size of the regional economy. As Zuid-Holland has a GRP which is over twelve times the GRP of Flevoland, it is not surprising that Zuid-Holland exports far more. But the economy of Zuid-Holland is not driven by exports alone; it also has large services industries. This is not necessarily the case for the smaller provinces. Their share of value added from the exports in their GRP is in mostly higher than for the larger, more economically diverse provinces.

Figure 7.5.2 compares the results of the value chain approach to those of the export value approach. Where the export value approach comes to a higher value added than the value chain approach the province is coloured green and we conclude that this province exports more than it produces. When this difference is large, the colour is darker, indicating that the province exports far more than it produces for exports.

If the export value approach leads to a lower value added than the value chain approach the province is coloured blue and we conclude that this province produces more (intermediate) export products than it exports itself. Again, dark blue indicates that the two approaches diverge significantly in outcome; in this case, a dark blue province produces many (intermediate) export goods and generates substantially more value added in the region than one would have assumed from merely looking at the absolute exports of the province.

It turns out that the country is split in half. The northeast produces more for exports than it actually exports and as such it is the (national) starting point of the value chain for many export products. And this national value chain then often ends in the south or west of the Netherlands where the product is finished and subsequently exported.

When we look back at the absolute export values in 7.3.1, the provinces of Drenthe and Friesland appeared to have only little to do with exports as they have less than 1 percent of the total export value and (according to the export value approach) they each contribute about 1 percent to the total added value from exports. But looking at the added value from a value chain approach, their contribution to the total Dutch value added from exports more than doubles to 2.4 percent for Drenthe and 3.4 percent for Friesland. These provinces are much more involved with foreign demand than expected from the export approach. This is a result of their large share of industries which produce products that are not exported immediately, but ultimately end up in exports. For example, agriculture, mining and manufacturing.

7.5.2 Differences between value chain approach and export approach in determining value added, 2010

Legend:
- Production intensive
- Moderate production
- Moderate exports
- Exports intensive
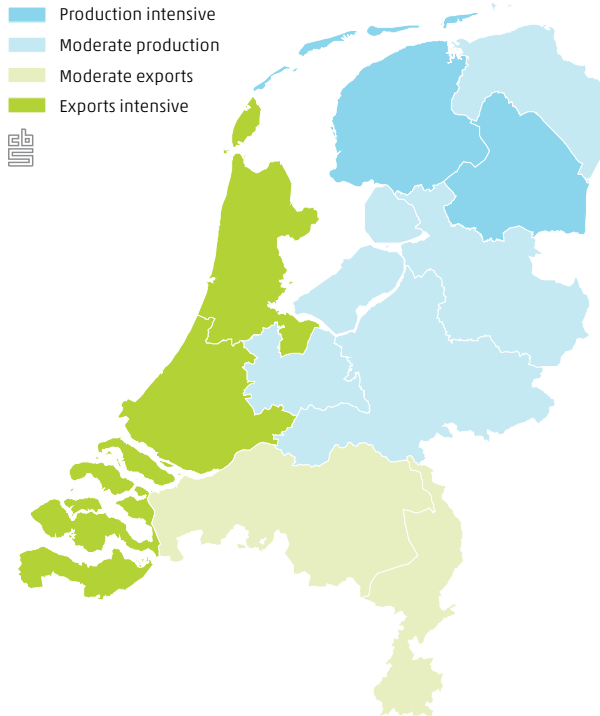
7.6 Regional dependency on export of goods and vulnerability to shocks

The value chain approach to exports has shown that differences between provinces in terms of foreign dependency are smaller than previously assumed. Money is not only earned in exports, but throughout the entire value chain. Hence, more provinces benefit from growth in foreign demand than we expected based on the regional export figures. The other side of the coin is that these provinces are also affected when foreign demand declines. This happened in 2009 when Dutch export value contracted 16.5 percent on 2008 because of the worldwide financial crisis. In 2010 exports bounced back with a strong 20 percent growth rate. In this paragraph we illustrate the impact of this contraction and recovery in foreign demand on the regional economy. The leading questions: Were the provinces

with larger export dependency actually hit harder, and how did their value added recover?

7.6.1 Economic growth per province between 2008 and 2010

	2008–2009			2009–2010			2008–2010		
	GRP growth*	growth value added due to exports	growth GRP excl. exports	GRP growth*	growth value added due to exports	growth GRP excl. exports	GRP growth*	growth value added due to exports	growth GRP excl. exports
	%								
Drenthe	−5.1	−14.8	−1.9	−0.9	6.5	−3.0	−6.0	−8.8	−5.1
Flevoland	−5.0	−9.0	−3.9	2.5	14.3	−0.3	−2.6	2.8	−4.1
Friesland	−2.7	−10.9	−0.1	1.6	8.0	−0.1	−1.1	−3.9	−0.3
Gelderland	−1.7	−8.5	0.0	1.4	10.3	−0.5	−0.3	3.1	−1.2
Groningen	−11.9	−25.6	−1.1	7.7	18.2	1.8	−5.1	−12.6	0.9
Limburg	−4.5	−13.2	−1.2	4.4	18.6	0.6	−0.3	2.4	−1.3
Noord-Brabant	−2.8	−13.8	1.2	3.2	13.6	0.4	0.3	−1.9	1.1
Noord-Holland	−1.6	−9.4	0.5	4.6	13.8	2.9	2.9	2.3	3.0
Overijssel	−1.1	−8.3	1.4	2.8	11.5	0.6	1.7	1.5	1.8
Utrecht	1.8	−7.0	3.6	1.1	9.9	−0.4	2.9	2.3	3.1
Zeeland	−5.8	−22.5	2.1	5.0	20.6	−0.0	−1.0	−6.4	1.5
Zuid-Holland	−4.0	−14.1	−1.2	2.7	13.4	0.4	−1.4	−1.7	−1.3

* Market prices.

First we compare the year 2009 to 2008. All provinces but Utrecht experienced economic decline, as table 7.6.1 shows. We saw earlier that Utrecht is not very active in the export of goods nor in the production of goods destined for exports, which is backed by these findings. Utrecht was the best performing province in the Netherlands in terms of economic growth, both including and excluding exports, indicating that it is relatively invulnerable to shocks in trade. This is confirmed by a report of the ING Economisch Bureau (2012). Diodato and Weterings (2013) also found that regions that are more specialised in services (i.e. Utrecht, Noord-Holland, Zuid-Holland) are somewhat less sensitive to worldwide export crises than regions specialised in manufacturing (Noord-Brabant, Limburg, Groningen). As expected, exports have a profound influence on the economic growth of Groningen. In part due to the dip in natural gas prices Groningen saw its added value of the exports decline by almost 26 percent. This and the relatively large dependency on exports resulted in a 12 percent decline of the Gross Regional Product in Groningen between 2008 and 2009. Not considering the exports, the rest of the Groningen economy also declined but by just 1.1 percent. Zeeland is also relatively dependent on foreign demand, as 27 percent of the GRP originates from exporting goods (7.5.1). This is reflected in the almost 6 percent decline of the regional economy in 2009, for which the export is fully accountable as added

value of the export fell by 22.5 percent. In fact, the rest of the economy in Zeeland managed to grow between 2008 and 2009, i.e. by 2.1 percent.

In short, the huge decline of the exports during the crisis had a major influence on regional economic growth. Not only on the regions directly involved in exporting but also on the provinces that mainly produce for exports in other provinces.

When we compare 2010 to 2009 we find that world trade recovered and so did Dutch exports. Looking at the 2009–2010 growth figures in table 7.6.1 we see that the situation is the opposite of the 2008–2009 figures. Just as for total Dutch GDP growth (chapter 1), almost all economic growth in the provinces is due to the growth of the value added of the exports. Only in Noord-Holland and Groningen does the economy grow on its own. Drenthe is the only province with negative economic growth in 2010, even including the value added of the exports. Also Utrecht performs below average. The value added from the exports does have a positive influence on the GRP of Utrecht, but its role is small. The hard hit exports of Zeeland benefit the most from the upswing in 2010, as the value added of exports grew by almost 21 percent. As a result, the economy of Zeeland grew by 5 percent, whereas the non-export sector in Zeeland still declined somewhat.

When we examine the total economic growth over the whole period (2008–2010), we see that not all regional economies recovered from the financial crisis in 2009. Drenthe and Groningen have the worst overall outcome of the period. The causes are partly similar and at the same time very different. For Drenthe the 6 percent loss in GRP between 2008 and 2010 had little to do with the turbulence in the world market. The loss is mainly caused by an 11 percent decline of the mining and manufacturing industry (predominantly mineral extraction for domestic use), resulting in a 3 percent loss of GRP. In Groningen the loss of over 12 percent of the value added from exports, also mainly due to less mineral extraction, caused a 6 percent decline in the GRP. When excluding the exports from the GRP of Groningen, GRP grew between 2008 and 2010.

The best overall outcome is found in Utrecht and Noord-Holland. Utrecht has a good overall outcome as it kept a positive GRP growth during the crisis and therefore had effectively nothing to recover from. Noord-Holland on the other hand saw its GRP decline by 2.1 percent due to the drop in exports in 2009, but had a very good year in 2010 as the GRP grew by 1.7 percent from the recovering exports and by 2.9 percent from domestic growth. As such, the two best performing provinces are both in the top three of the most export-independent provinces.

The most export dependent provinces, Groningen Zeeland and Limburg, suffered large losses in 2008–2009 and made the greatest recovery in 2010. It seems that being very dependent on exports makes a province more vulnerable to dips and more receptive to the recovery of foreign demand. It seems that the product

portfolio and the local economy are of far greater influence to the GRP growth than the small differences in export dependency.

7.7 Conclusion

We started this chapter wondering how exports influence regional economies in the Netherlands. Which provinces depend the most international trade and are most vulnerable to fluctuations in foreign demand. We concluded that the absolute export value of a province is not indicative for its export dependency since most large regional economies not only have large export values, but their other, domestically oriented activities as services or retail trade are also important. We found that smaller, less exporting provinces often are very dependent on exports. They may not export much directly, but they produce goods and services that other provinces ultimately use in the exports of goods. This explains why they can still have value added due to exports without exporting much. We also see that being more dependent on the value added by exports makes a province more vulnerable to fluctuations in foreign demand.

In terms of absolute figures, Zuid-Holland, Noord-Holland and Noord-Brabant are by far the largest exporting provinces. As a result, they yield the most value added from exporting, according to the export value approach that attributes all value added to the province of exports. However, since export products are not wholly produced in the province that exports them, we switched over to the value chain approach. This approach takes the per province production of goods and services used in exports into account. Therefore it is a more accurate way to model the value added created by exports.

From the value chain approach it became apparent that the export dependency of provinces (the share of value added due to producing for exports in GRP) is much more uniform than the absolute export values suggest. Utrecht is the least export dependent, with only 15 percent of its GRP coming from exporting goods. Groningen on the other hand, with its specialisation in mineral resources, is extremely dependent on the exports (36 percent of its GRP).

By comparing the export value approach to the value chain approach we uncovered that provinces that do not export much can still contribute a great deal to total Dutch value added due to exports by producing intermediate goods and services for exports. So these provinces, Drenthe and Friesland for example, are also influenced by the export fluctuations. We found that the southwest exports

more than it produces and the northeast produces more value added for exports than it exports.

Looking over the turbulent crisis years (2008–2010) shows that the fluctuations in foreign demand greatly influenced the growth of the regional economies. The sensitivity to fluctuations in foreign demand occurs in the entire value chain and not only where the final exporting takes place. But the degree to which a province suffers from these fluctuations is not the same, since being relatively dependent or very independent of exports greatly influences regional economic developments. Relatively dependent provinces such as Groningen, Zeeland and Limburg saw their value added dip in 2009, when trade worldwide collapsed. But in 2010 they experienced a greater recovery when international trade soared again. However the best 2008–2010 GRP development was for Utrecht and Noord-Holland, the least export dependent provinces. Provinces with an above average export dependency seem to base their GRP growth more on their export portfolio and local economy than on their export dependency.

Further research could include exports of services, in order to take into account all trade relations of a province. Using constant rather than current prices, the volume growth of the provincial economy can be broken down into a part that is due to exports and a part due to domestic growth of the economy. The results can be benchmarked against regional input-output tables, to refine the estimates. And using these tables would also show in more detail how the provinces are related: who produces the inputs for which exporter? Another option is to study how exactly the effects of exporting (benefits to growth when the world economy is booming, risk of contagion when it is affected) are reflected in the value chain. Are the effects delayed, magnified, or maybe dampened downstream in the value chain?