Internationalisation Monitor 2009

Explanation of symbols

.	= data not available
*	= provisional figure
x	= publication prohibited (confidentional figure)
–	= nil or less than half of unit concerned
–	= (between two figures) inclusive
0 (0,0)	= less than half of unit concerned
a blank	= not applicable
2008–2009	= to 2009 inclusive
2008/2009	= of 2008 up to and including 2009
2008/'09	= crop year, financial year, school year etc., beginning in 2008 and ending in 2009
2006/'07–2008/'09	= crop year, financial year, etc., 2006/'07 to 2008/'09 inclusive

Due to rounding, some totals may not correspond with the sum of the separate figures.

Publisher
Statistics Netherlands
Henri Faasdreef 312
2492 JP Den Haag

Prepress
Statistics Netherlands
Grafimedia

Cover
TelDesign, Rotterdam

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Internet
www.cbs.nl

ISBN: 978-90-357-1840-1

6019209010 M-21

Foreword

The growing internationalisation of the production of goods and services means that national economies are becoming more and more interconnected. This process of economic globalisation is characterised by increasing international trade and foreign direct investments, and by a growing role of multinational enterprises. The effects of globalisation for economic growth, innovation, employment and sustainability are frequently questioned by policymakers and the public at large. Statistics Netherlands (SN) aims to contribute to answering these questions and to support a balanced and factual discussion on globalisation by developing new, coherent statistics on globalisation in the Netherlands. This second edition of the Internationalisation Monitor illustrates trends in international trade, international direct investment, and the activities of multinational enterprises in more than 45 annotated tables and six in-depth articles. In addition, by integrating existing data available at SN (so without increasing the administrative burden on companies) this Internationalisation Monitor also analyses the effects of economic globalisation for the Dutch economy, the labour market, and innovation.

One of the key contributions of this publication involves a detailed analysis of the trends in Dutch trade, and of the characteristics of the enterprises involved in imports and exports. We find for example that small and medium sized enterprises (SMEs) account for 42 percent of Dutch exports of goods. But less than one in ten SMEs is actually involved in such exports. The most important origins and destinations of Dutch trade continue to be other EU countries and the United States. However, the importance of emerging markets, including China and India, is growing. At the moment, 9 percent of Dutch exports is destined for these countries. In addition, emerging markets form an important destination of Dutch outward foreign investment and a major origin of imports.

Globalisation also implies that foreign controlled enterprises play an increasingly important role in the Dutch economy: they generate up to 30 percent of the turnover, and produce 24 percent of the value added in the Netherlands. In addition, foreign controlled enterprises are more often engaged in R&D and innovation activities. However, this is not just because of their 'foreignness', but also because of their large size and international orientation. Dutch multinational enterprises that meet the latter characteristics are equally likely to engage in R&D activities in the Netherlands.

Foreign controlled enterprises also have important consequences for the Dutch labour market. They employ a substantial share of the Dutch workforce (15%), the average number of employees at foreign controlled enterprises is higher than in

comparable Dutch firms, and also grows more strongly over time. Foreign enterprises also pay significantly higher wages - employees of foreign owned enterprises earn on average 15 percent more than their counterparts at domestically controlled enterprises (though this difference varies across industries).

Future editions of the Internationalisation Monitor will cover more themes and indicators related to globalisation, partly based on collaborative research various universities and research institutes, and in consultation with policymakers. Please also visit our website (www.cbs.nl) for more information under 'Dossier Globalisation'.

The Director-General
of Statistics Netherlands

G. van der Veen

Heerlen/The Hague, November 2009

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Introduction: the Internationalisation Monitor 2009

Fabienne Fortanier, Martin Luppes, Anne-Peter Alberda

Introduction

Globalisation has become a well-known and much-discussed topic over the last two decades. It is a multidimensional process that incorporates economic, technological and social dimensions and effects. To discuss the variety of dimensions globalisation and the impact of an increasingly open economy on Dutch economic growth, employment and sustainability, it is essential to have relevant and timely statistical information at hand.

It is the responsibility of Statistics Netherlands (SN) to develop and publish such coherent data and statistics, with clear descriptions and annotations of trends and impacts. This facilitates politicians, policymakers, academics, professionals, entrepreneurs, businesses, and the public at large to analyse the opportunities and potential challenges that the process of globalisation brings.

To implement this ambition, various projects were started in 2007 and 2008 to match existing datasets in order to construct and publish new and relevant data on globalisation. The first results were published in the publications *Key Figures Internationalisation* (2007) and the *Internationalisation Monitor* (2008). These publications – as well as this 2009 edition of the Internationalisation Monitor – serve a threefold goal:

- first, they illustrate trends and developments in the area of international trade and international investment and activities of enterprises, keeping in mind the relationship between these developments and the economical role and position of the Netherlands in Europe and in the world;
- secondly, they monitor trends and developments in the effects of (economic) globalisation on growth, wealth, the labour market and innovation;
- and finally they contribute to a well-balanced and factual discussion on internationalisation and the position of the Dutch and foreign owned enterprises in this discussion.

In this introduction, we describe the structure of the Internationalisation Monitor 2009 and highlight the main findings. We start with the statistical challenges and innovations necessary to seize a widespread and complex phenomenon such as globalisation. In the subsequent paragraphs, we summarise the main trends and conclusions of this publication.

Measuring Internationalisation: statistical innovation

To accurately and consistently measure the process of globalisation is an enormous challenge for statistical authorities. Existing statistical concepts and frameworks – including various macroeconomic indicators, systems of national accounts and balance of payments principles – become increasingly difficult to construct. In addition, the ever-expanding activities of enterprises (and persons) abroad are inherently difficult to observe by statistical agencies, which are often restricted to a national mandate and area. It also is a major challenge to embody the many dimensions and effects of globalisation in such a way that justifies the intrinsic and methodological nuances of the individual indicators as well as the interconnectedness of the dimensions.

Thorough knowledge of the main concepts and subjects of debate within the theme are necessary to identify which indicators and figures are most significant in the political and policy debate. In addition, to ensure a correct interpretation of the data and figures, it is very important to explain clearly, which data is used to construct the statistics and indicators and to illustrate the trends within a context, while the limitations of the data and the methods used, are explicitly described. These considerations have materialised into the Internationalisation Monitor 2009, where several descriptive papers are combined with a large number of annotated tables on various indicators of globalisation.

The Internationalisation Monitor 2009 presents a wide variety of new statistics on the nature and consequences of the internationalisation of the Dutch economy. One of the key sources of these new statistics is integration of micro-data from various sources (surveys and registers) available at Statistics Netherlands. In particular, we report the results of the analysis of three types of matched micro-data:

- The linked employer-employee dataset. This data combines, at the micro level, data from business surveys and registers with information from social registers and surveys to analyse the effects of economic globalisation (firm level) for employment, wages and labour conditions (employee level). See chapters A5 and B5.
- The integrated trade-business register dataset. This data integrates detailed information on imports and exports derived from customs and the survey on international trade with the general business register. This allows for the breakdown of international trade by various firm characteristics, including an analysis of internationalisation of small and medium-sized enterprises. See chapters A1 and B1.
- The matched trade and transport data. By statistically matching data on international trade (based on tax registers and survey) with surveys and registers on traffic and transport, the distribution of trade flows with respect to different transportation modes can be analysed. In particular, this integration is the only means to analyse transit flows – flows of goods that are transported through the Netherlands that are not stored, do not change owner, and are not cleared through customs. See chapters A3 and B3.

In addition to integrating existing data, we also apply a new enterprises stratification – in addition to standard stratifications by e.g. industry, size and region – to a substantial part of the data presented in this Internationalisation Monitor. This stratification operationalises the concept of internationalisation by characterising an enterprise in terms of ownership (foreign-controlled versus domestically (Dutch) controlled). It is based on the concept of the Ultimate Controlling Institute (UCI) as defined by the FATS Regulation and will also be used in other publications. In addition, as much as currently possible, we also characterise internationalisation by whether or not enterprises are active in international trade (see in particular chapter A1 and tables B1), and by whether or not the enterprise itself has affiliates abroad (see in particular chapters A4 and A5 and tables B4 and B5).

Thirdly and finally, several papers add to our existing knowledge on internationalisation of the Dutch economy by highlighting specific topics – such as R&D (using e.g. CIS data) and the natural environment (based on the environmental accounts) – or by focusing on specific geographical regions – notably emerging markets including China and India.

Results

The six articles and the 45 annotated tables of the Internationalisation Monitor 2009 address two key themes, closely following our overall goal to describe both the trends and effects of globalisation for the Netherlands.

First, we describe the trends in internationalisation by focusing in particular on the developments in international trade. We aim to move beyond the standard macro-aggregations and investigate which firms are accountable for Dutch international trade, which partner countries are important – with specific attention to emerging markets like China and India, and in what way – in terms of transport modalities – Dutch trade in goods takes place.

Secondly, we analyse the economic, social and environmental effects of internationalisation, thereby addressing the three dimensions of sustainable development. In this part we focus on the investment and ownership dimension of internationalisation, in particular the role of foreign controlled enterprises in the Dutch economy. We analyse the consequences of foreign ownership for e.g. value added, turnover, R&D and innovation, and employment, wages and labour conditions.

Describing internationalisation: unraveling the pattern of Dutch trade

Nearly all Dutch firms (99 percent) can be classified as a small or medium sized enterprise (SME, with up to 250 employees). Hence, an analysis of

internationalisation should not only focus on the activities of the largest, multinational enterprises – however important their share in total economic activity – but should provide information related to and relevant for smaller firms as well. By linking, for the first time, Dutch trade statistics to the General Business Register, Statistics Netherlands is able to identify exactly which firms are responsible for the Dutch imports and exports, as detailed in chapters A1 and B1. Approximately 42 percent of Dutch exports can be attributed to SMEs, whereas large enterprises account for 34 percent of the export (the remaining part of exports is accounted for by foreign firms without a local base in the Netherlands). In 2007, 8 percent of SMEs exported goods. Yet for the majority of exporting enterprises – irrespective of their size – exports account for less than 25 percent of their annual sales. Firms that are larger (in terms of sales) and more productive (in terms of labour productivity), are more likely to engage in exports.

The key origins and destinations of Dutch trade remain other European Union countries and the United States. However, other trading partners are becoming increasingly important – in particular the so-called emerging markets, including countries like China and India. Emerging markets, with their market size and growth potential, present important opportunities for businesses in the Netherlands. The 16 emerging markets that are identified in Chapters A2 and B2 accounted for 19 percent of Dutch imports and 9 percent of Dutch exports in 2008. Compared to European countries, this is a relatively low percentage (the EU average – excluding the Netherlands - is 14 percent), which is amongst others due the industry composition of Dutch trade (agricultural products).

However, the Netherlands is more frequently active via Foreign Direct Investments in these emerging markets. Nearly 8 percent of Dutch FDI is directed to emerging markets, versus 6 percent for other EU countries. FDI is an alternative – and much more committing – mode of entering foreign markets, and is also often considered to be an optimal way of benefitting from the presence of natural resources and relatively low labour costs that prevail in such markets. Finally, compared to businesses in the other EU countries, Dutch enterprises do import more from emerging markets than their European counterparts. Part of the relatively small role of emerging markets in Dutch exports, and their large role in Dutch imports, is explained by the Dutch 'gateway to Europe' function: imports from emerging markets are traded via the Netherlands to the European hinterland.

This role of the Netherlands as a distribution centre in European and global trade and transport networks is also evident from the results presented in chapters A3 and B3. The trade and transport flows through the Netherlands do not only include Dutch imports and exports, but also goods flows for which the Netherlands is neither the ultimate origin nor the final destination. About 42 percent of Dutch exports are re-exports, i.e. goods that are transported via the Netherlands and become property of a Dutch citizen without being industrially processed in a significant way.

In addition to re-exports, the transit of goods via Dutch ports plays an important role in transport for the Netherlands as well. The value added earned from such transit flows is relatively low, but the transport flows generated by transit do contribute to traffic jams and emission of greenhouse gasses. Therefore, it is important to be able to quantify trade and transport flows and to analyse what types of goods are conveyed in transit, what transport modes are involved, and where these goods originate from and are destined for.

At present, however, directly observed data on transit flows is largely unavailable, but matching and then statistically integrating existing trade and transport statistics indicates that transit flow estimates amount to about 127 million tonnes, or 98 billion euro for 2004. This is 28 percent and 25 percent respectively of total outgoing transport. About 40 percent of the gross weight of transit is last loaded outside Europe, but almost all transit, over 90 percent, is unloaded in Europe. In terms of value, the sector 'other goods and manufactures', including a variety of products from transport equipment, computers and machinery to clothes, is by far the most important product group.

Effects of internationalisation: economic, social and environmental consequences

Although the number of foreign controlled enterprises is small (around 1 percent of all firms in the Netherlands), they count for 15 percent of the number of employees, generate up to 30 percent of the turnover, 24 percent of the added value and 21 percent of the total enterprise investments (See tables B6). In addition, foreign affiliates are more often engaged in R&D activities, are more innovative, collaborate more with others (firms, research institutes), more frequently subcontract R&D to others (abroad and in the Netherlands), and also receive external funding from others (abroad and within the Netherlands), than Dutch-controlled enterprises. Chapters A4 and B4 show that it is not only the mere 'foreignness' of firms that affects the propensity to engage in R&D or innovation. Instead, it is the different composition of the sample of foreign firms with respect to other factors that affect R&D, such as size, selling to international markets, and being part of an enterprise group, that determines that foreign firms are more frequently involved in R&D and innovative activities compared to domestic firms. In particular, it seems that being part of an enterprise group (whether Dutch or foreign) is a stronger predictor of whether or not enterprises engage in R&D and innovation. Given the size of the required investments and the often long time lines between the initial basic research and the marketable product, private sector expenditure on R&D is highly concentrated among a relatively low number of large, often multinational enterprises. For example, more than 50 percent of the intra mural R&D in the private sector in the Netherlands is accounted for by 10 enterprises.

While the consequences of globalisation for productivity and innovation are most often studied in the academic literature, the social consequences of Multinational Enterprise (MNE) investments and the effects of Foreign Direct Investment (FDI) on employment are increasingly recognised as similarly important. In addition to employing a substantial share of the Dutch workforce, foreign enterprises also pay significantly higher wages than domestically owned enterprises (see paper A5). More specifically, employees at foreign owned enterprises earn on average 15 percent more than their counterparts at domestically owned enterprises (but this difference varies across industries). In addition, Dutch controlled firms with investments abroad pay 10 percent higher wages than domestic firms without foreign affiliates. Finally, also wages at domestically controlled firms are higher in industries where the share of foreign investors is higher, which points at positive spillovers and increased competition on the labour market due to the presence of foreign investors.

The higher wages at foreign enterprises are in part a reflection of their relatively higher productivity levels (see for instance the Internationalisation Monitor 2008). In addition, foreign enterprises may pay higher wages to prevent labour migration (and subsequent unintended knowledge spillovers) to domestic enterprises. Indeed, employee turnover (employees leaving a enterprise each year as a share of total employees at that enterprise) is lower at foreign controlled enterprises. Higher wages are also partly explained by the higher levels of education of employees at foreign enterprises. Finally, the higher wages at foreign affiliates may be a means of compensating for their more demanding labour conditions: working weeks are longer and overtime is more prominent. Interestingly though, the overall employee satisfaction with labour conditions does not differ between employees at foreign and domestically controlled enterprises.

As a third and last area of impact, we addressed the consequences of globalisation for the natural environment. We concentrate on two key issues. First, we address the globalisation of inputs of the production process, in particular the use of (non-renewable) energy sources. Economic growth is generally paired with an increased use of energy carriers, which results in a worldwide depletion of natural resources such as oil, coal and gas. Often, these natural resources are imported, which increases the dependency of the Dutch economy on other countries with respect to those energy sources, and affects energy security. In the last ten years the Dutch economy has indeed become more and more dependent on energy carriers from foreign counties, primarily due to an increased demand for crude oil products. The transport and construction sector are main users of oil products and are, therefore, very dependent on imports. The energy dependency is spread over a large number of countries. Almost 50 percent is imported from European countries.

Secondly, article A6 investigates the international dimensions of one of the outputs of economic activity: the Dutch contribution to climate change as a result of CO_2 emissions. Relative decoupling is taking place in the Netherlands i.e. the growth rate of CO_2 is lower than the growth rate of GDP. This positive development does not go

hand in hand with global increases in emissions. This means that the Netherlands does not 'export' its pollution by decreasing domestic production of pollution intensive products and increasing imports of these goods. Instead, the Netherlands shows a positive environmental balance of trade. This indicates that global emissions resulting from Dutch consumption needs are less than the emissions produced by Dutch residents.

Structure of the publication

The current format of the Internationalisation Monitor 2009 follows the setup we have used in 2008. Six descriptive and analytical chapters are combined with annotated tables on various indicators of globalisation. The publication is a result of close cooperation with different researchers within Statistics Netherlands, and as such reflects the variety of available statistics present within the portfolio of our organisation.

Table 1 gives an overview of the analytical papers and annotated tables, highlighting that part 1 of the Internationalisation Monitor 2009 is primarily aimed at describing in more detail the patterns of Dutch international trade, and that part 2 focuses on analysing the effects of internationalisation (primarily international investment) for the three dimensions of sustainable development.

The annotated tables mostly cover the themes in the articles and as such can be seen as extensions of the articles. There are two exceptions. For the article A6 (effects of globalisation: the natural environment) there are no additional tables, and for the tables in section B6 (FATS and enterprise operational statistics) there is no corresponding article.

Table 1
Structure and correspondence of articles and tables in the Internationalisation Monitor 2009

Articles	Annotated tables
Introduction	–
PART 1: describing internationalisation: unravelling the pattern of Dutch trade in goods	
A1. Internationalisation and SMEs	**B1.** International trade and enterprise size
A2. Emerging market trade relations	**B2.** Emerging markets
A3. Transit flows: trade and transport	**B3.** International trade and transport
PART 2: effects of internationalisation: economic, social and environmental consequences	
A4. Foreign enterprises and R&D	**B4.** Internationalisation and R&D
A5. Foreign enterprises and wages	**B5.** Internationalisation and employment
A6. Internationalisation and the environment	–
–	**B6.** FATS and operational statistics

Each article and set of tables presents data that have not yet before been published by Statistics Netherlands. Chapters A1 and B1 present the results of the integration

of international trade statistics and the general business register, and describe who trades – large or small firms, and from which industries. The geographical distribution of trade is addressed in chapters A2 and B2 that focus on where imports come from and exports are destined to. It is innovative in its focus on emerging markets, highlighting the increasingly important role that e.g. China and India play in Dutch trade and investment. How these trade flows are subsequently transported to and from these markets is the topic of chapters A3 and B3. In particular transit flows can now be measured and detailed due to the matching and statistical integrating of existing trade and transport statistics.
Part 2 of this Internationalisation Monitor starts with the technological impact of foreign firms in the Netherlands. The internationalisation of R&D and innovation activities in the Netherlands is described and analysed in chapters A4 and B4. Chapters A5 and B5 focus on the social effects of globalisation, highlighting the differences in employment and workforce composition between foreign and domestically controlled enterprises in the annotated tables, and analysing the consequences for wages in the analytical paper. All these analyses were possible by creating a multilevel dataset that links data on firms (from surveys and registers) with that of individuals. Chapter A6 covers the third dimension of sustainable development by presenting an analysis of the relationship between globalisation and the natural environment in the Netherlands. Finally, more descriptive details on the contribution of foreign firms to various economic aggregates are presented in chapter B6.

Further developments

While the publication of the Internationalisation Monitor 2009 presents yet another step in publishing more detailed and more coherent data on globalisation and its consequences for the Netherlands, additional research remains necessary. Many topics that are central to the debate on globalisation and internationalisation have not yet been addressed. Examples include international outsourcing, regional distribution of wealth and welfare, labour conditions and international migration, the relationship between trade in goods and services, and entrepreneurship.
Statistics Netherlands has already started several new projects on the above-mentioned topics (or will start to do so in the near future). Many of these involve matching existing micro-level datasets and involve collaboration with strategic partners including e.g. the Ministry of Economic Affairs, the Dutch Central Bank (DNB), the Dutch Bureau for Economic Policy Analysis (CPB), EIM Business and Policy Research (on SME's and Entrepreneurship), universities, and Eurostat. This allows for the pooling of expertise and knowledge, and ensures a broad dissemination of the research findings.

Part A

A1. Measuring globalisation: factors influencing the commodities exports of SMEs and large enterprises

Marjolijn Jaarsma

1.1 Introduction

Even though large (multinational) enterprises control the bulk of economic transactions, the vast majority of the enterprise population consists of small and medium-sized enterprises (SMEs). In 2007, approximately 99 percent of all Dutch enterprises belonged in this category [1)]. SMEs are an important source of entrepreneurship and are increasingly recognised as a driving force of economic growth, innovation, productivity and employment (OECD, 2008). In addition, internationalisation is not only a reality for large enterprises but for SMEs as well. However, most of our knowledge of international transactions is based on the activities of MNEs, leaving the international activities of SMEs relatively underexposed.

Statistics Netherlands can make an important contribution in the research of SME internationalisation because of its unique ability to analyse (almost) the entire population of enterprises, and by linking enterprise data at the micro level on trade with other indicators. In 2008, the first (provisional) match was established between enterprises that engage in international trade in commodities and the general business register (GBR). This linked dataset makes it possible to analyse trade patterns per enterprise type, size class and activity code, for instance in terms of commodities and trading partners, thereby shedding light on the role of both large and SME firms in Dutch international trade.

The remainder of this chapter is constructed as follows. The second section of this chapter will provide some background information on the exporting behaviour of enterprises based on existing research. Section 1.3 briefly describes the methods used to assign Dutch commodities exports to the Dutch enterprise population (i.e., the data linking exercise), distinguishing between SMEs and large enterprises. Section 1.4 reports the first empirical results and shows in which economic sectors the share of exporting enterprises is highest, and how the export intensity of exporting SMEs and large enterprises varies across industries. In addition, based on several descriptive tables, we relate enterprise exports with other key economic variables, including labour productivity and turnover, while controlling for firm size and economic activity. Analysis of causality between these variables is not yet

possible due to a lack of time-series data – at this point in time, export data on enterprise level is only available for 2007. Hence, testing e.g. the 'learning-by-doing' hypothesis (which states that due to internationalisation, firms increase their productivity) is outside the scope of this chapter, but it will certainly be part of future research.

1.2 *Background: firm characteristics and propensity to export*

There are many factors that influence an enterprise's decision to start trading internationally. The reason why an enterprise decides to engage in international trade often boils down to achieving long-term objectives such as firm expansion or increasing profitability. Trading allows an enterprise to gain access to a foreign market, for instance to sell its products to new consumers or to be able to make use of scarce or low-priced factors of production. Accessing foreign markets, knowledge and technology are most often mentioned as a motivation for trading internationally (European Commission, 2004). Onkelinx and Sleuwaegen (2008) identified several drivers of SME internationalisation, including for instance firm-specific advantages in terms of resources, knowledge or technology, and the (managerial) expectation, experience and commitment to exploit these advantages. External factors that may drive internationalisation include government regulations and trade policies, the (international) activities of competitors in the same industry or the specificity of consumer demand.
However, especially SMEs can experience significant barriers to internationalise. Research carried out by Berenschot (2009) showed that SMEs experience trade impediments particularly with respect to bureaucracy, differences in legislation, and issues concerning currency or payment. Research carried for the European Commission (The Gallup Organization, 2007) showed that European SMEs regard the lack of knowledge of the foreign market and the cost of exporting (e.g. an internal or external lack of capital or finance, or existing tariffs and regulations in the foreign market) as the most important constraints.

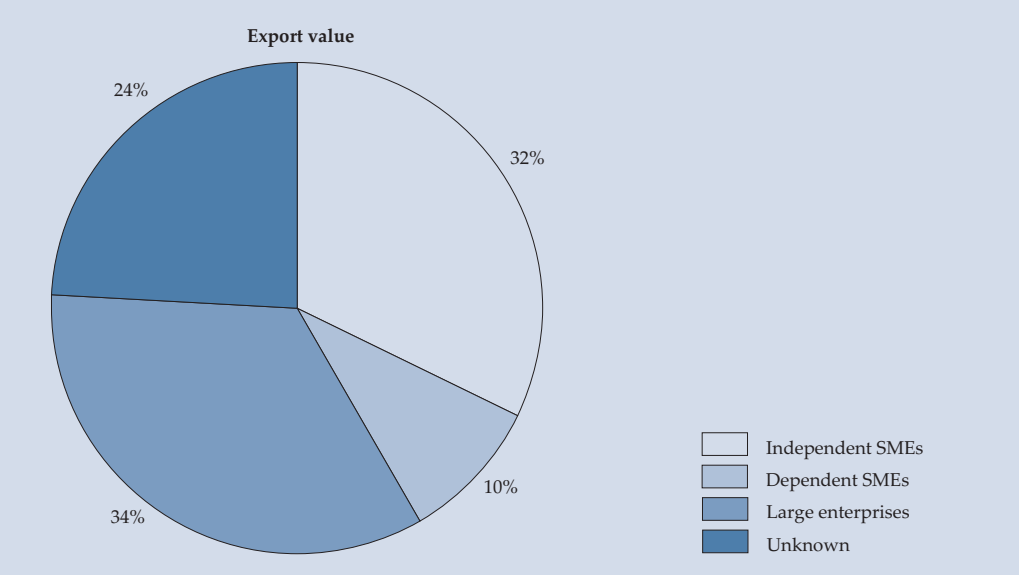
Enterprises that export are different from non-exporters. Existing empirical research shows that enterprises that export are in general more productive and pay higher wages than firms that sell their products domestically. Schank, Schnabel and Wagner (2008) found that German exporting firms paid higher wages than non-exporting firms and that this exporter wage premium already existed in the years before the firm started to export. EIM found that larger enterprises export a larger share of their turnover abroad (EIM, 2007). Wagner (2005) presented a synopsis of empirical research on the topic, in which almost all studies found that exporters have a higher productivity level and often also higher productivity growth than non-exporters, while controlling for firm-specific characteristics such as size and industry. In sum, exporters are expected to be more efficient, larger, more

technology-intensive and capable of generating more profit and turnover than comparable firms that do not export (Bernard and Jensen, 1997) [2]. In this chapter we will determine if these differences can also be found in the Dutch context, controlling for enterprise size and industry.

1.3 *Methodology and data: linking international trade and enterprise data*

Linking the international commodity trade statistics of 2007 to the general business register (GBR) makes it possible to analyse Dutch trade flows at the level of the individual enterprise. This exercise showed that approximately 8 percent of the total active enterprise population had exported commodities in 2007. However, linking trade statistics to enterprises in the GBR did not result in a match for all traders. Graph A1.1 shows that approximately 24 percent of commodities exported by or via the Netherlands could not be linked to an enterprise in the GBR.

A1.1 Exports of commodities by enterprise type, 2007



An important reason why part of Dutch trade cannot be assigned to an enterprise is that a significant part of Dutch trade is carried out by foreign controlled enterprises. Some of these foreign enterprises do not have an establishment in the Netherlands nor any other economic activities in addition to international trade. Such a foreign enterprise is therefore not part of the Dutch enterprise population and not registered

in the GBR, even though its trade *is* part of Dutch international trade [3]. Muûls and Pisu (2007) found a similar phenomenon in their dataset of Belgian traders. Often, these enterprises were identified as trading platforms of other European firms, using Belgium as a port of entry or exit.

In 2007, over 99 percent of all Dutch enterprises were SMEs. An SME is defined as a company employing less than 250 people. SMEs with exports accounted for approximately 8 percent of the total SME population in 2007. Logically, this percentage coincides with the overall share of exporters in the population, which is due to the strong prevalence of SMEs [4]. The latest survey of the Observatory of European SMEs showed that in some small open economies the export involvement of SMEs was significantly higher than in the Netherlands (The Gallup Organization, 2007). In Estonia, Denmark and Austria respectively 23, 17 and 14 percent of all SMEs reported turnover from exports in 2005. SMEs in larger economies such as Spain and Italy were less active in exporting.

Graph A1.1 shows that in 2007, the value of commodities exported by SMEs was approximately 145 billion euros or circa 42 percent of the total Dutch export value in that year. Since the characterisation of SMEs takes place at the enterprise level, it is possible that some SMEs are part of an enterprise group which, as a whole, employs more than 249 people. The individual enterprise is characterised as an SME but since it is part of a large enterprise group, its activities may be influenced by the parent company. Distinguishing between SMEs that are part of large enterprise group and independently operating SMEs (or SMEs which are part of an enterprise group that employs less than 250 workers in total) might provide policymakers additional insight into the composition of the SME population. In absolute numbers, most SMEs are independent, i.e. not part of a large enterprise group. However, in terms of value approximately 10 percent of total exports in 2007 were attributed to such affiliated SMEs.

Finally, at least 34 percent of Dutch exports in 2007 were carried out by large enterprises. This corresponded to a value of approximately 118 billion euros. The share of large exporters in the Dutch population of large enterprises approached 50 percent.

1.4 *Results: industry effects*

The distribution of exporting enterprises is not equal across all industries. Table A1.1 shows for a selection of industries which part of the enterprise population exported commodities abroad in 2007. For instance, at least 27 percent of Dutch manufacturers exported commodities abroad. This industry inhabited the largest share of exporters in 2007, even though the overall number of enterprises in this industry is relatively modest compared to services sectors. In trade, repair, hotel and restaurants, approximately 16 percent of all enterprises (and SMEs) exported goods abroad.

Circa 26 percent of SMEs in the manufacturing industry exported commodities in 2007, compared to 17 percent in Belgium (Onkelinx and Sleuwaegen, 2008). The majority of large enterprises in this industry reported cross-border deliveries in 2007.

Table A1.1
Share of enterprises with exports in population by industry and enterprise type, 2007

	Total	Large enterprises	SMEs
	%		
Total	8	47	8
Manufacturing industry	27	90	26
Production and distribution of energy and construction	2	56	2
Trade, repair, hotels and restaurants	16	x	16
Transport, storage and communication	6	64	5
Commercial services and real estate	5	40	5
Government, healthcare and public services	2	8	2

The export intensity of exporting enterprises provides an indication of the foreign market orientation of enterprises in an industry. Table A1.2 shows the average export intensity of exporting enterprises in 2007, where export intensity is measured as the export value of an enterprise in 2007 as a share of its turnover in 2005. Enterprises with no employees (e.g. self-employed persons) are excluded from the analysis, as well as incidents where the export intensity is less than 1 or larger than 100.

Table A1.2
Average export intensity of exporting enterprises (export value/turnover) by industry and enterprise type, 2005/2007

	Total	Large enterprises	SMEs
	%		
Total	28	34	27
Agriculture, hunting, fishing, mining and quarrying	22	36	22
Manufacturing industry	32	44	31
Production and distribution of energy and construction	10	14	10
Trade, repair, hotels and restaurants	25	21	26
Transport, storage and communication	20	20	20
Commercial services and real estate	19	11	19
Government and public services healthcare	13	3	15

In 2007, the average export intensity of exporters was approximately 28 percent. As a group, SMEs had a lower export intensity than large enterprises. We also found a positive association between firm size and export intensity, although the export intensity of the largest firms was lower than that of medium-sized to large enterprises.
SMEs had an average export intensity of 27 percent in 2007. EIM found an export intensity of 26 percent for SMEs that year (EIM, 2008). The SMEs in the manufacturing industry and SMEs in trade, repair, hotels and restaurants had the highest export intensity in 2007. The export value of large enterprises is on average 34 percent of their turnover, indicating that larger enterprises derive more revenue from exporting than smaller enterprises. Large exporters in the manufacturing industry reported the highest export intensity.

Table A1.3 shows that roughly 60 percent of exporting enterprises had an export value in 2007 that was less than 25 percent of their turnover. SMEs were more likely to have an export intensity below 25 percent than large enterprises, which is due to the lower average export intensity of many small-sized enterprises. Around 17 percent of large exporters had an export intensity exceeding 75 percent, while 7 percent had an export intensity higher than 90 percent. In comparison, for exporting SMEs these shares were 9 and 3 percent respectively. Mayer and Ottaviano (2007) researched the export intensity of exporting enterprises for a selection of European countries and find similar percentages. Their results showed that a quarter of exporting firms export more than 50 percent of their turnover, compared to 22 percent in our dataset.

Table A1.3
Average export intensity of exporting enterprises by enterprise type, 2007

	Total	Large enterprises	SMEs
	%		
Total	100	100	100
0– 24 percent	60	53	60
25– 49 percent	18	18	18
50– 74 percent	12	13	12
75–100 percent	10	17	9

1.5 Economic indicators of exporters versus non-exporters

Not only industry, but also other economic indicators influence the propensity of a firm to export. Data on enterprise turnover and labour productivity were obtained

from the 2005 structural business statistics and compared to the incidence of exporting in 2007. This diminishes the likelihood of reverse causality between a firm's performance and the activity of exporting, as predicted by learning-by-exporting theories. Whether or not such a causal effect exists is not tested here but in the future such an analysis would be possible. We have used a simple independent t-test to determine whether there existed significant differences in the economic indicators of exporters compared to non-exporters of 2007.

1.5.1 Turnover of exporting enterprises compared to non-exporting enterprises

Table A1.4 shows the relationship between firm turnover and export behaviour. Approximately 81 percent of Dutch enterprises without exports in 2007 had a turnover that was less than 5 million euro, compared to 42 percent of exporting enterprises. Roughly 11 percent of exporting enterprises had a turnover larger than 50 million euro in 2005, while only 2 percent of non-exporters attained such revenue.

Circa twice as many non-exporting SMEs had a turnover of less than 5 million euros compared to exporting SMEs. Roughly 7 percent of exporting SMEs had a turnover in excess of 50 million euro. Large exporters were especially capable of generating substantial amounts of turnover through their exporting activities. Circa 28 percent of large non-exporting enterprises generated more than 100 million euro in turnover whereas this percentage is twice as large for large exporters.

In sum, table A1.4 shows that, even while correcting for enterprise size, exporting firms are larger in terms of turnover than non-exporters.

Table A1.5 compares the average turnover of exporters to that of non-exporters in several (clusters of) industries. In general, SMEs that exported commodities in 2007

Table A1.4
Average turnover by enterprise type, 2005

	Enterprises without exports			Enterprises with exports		
	total	large enterprises	SMEs	total	large enterprises	SMEs
	%					
Total	100	100	100	100	100	100
0– 4.9 million euro	81	9	82	42	1	44
5– 9.9 million euro	8	5	8	18	1	19
10– 49.9 million euro	8	39	8	29	17	30
50– 99.9 million euro	1	19	1	5	24	4
100–249.9 million euro	1	15	1	4	33	2
Over 250 million euro	0	13	0	2	24	1

had a turnover in 2005 that was four times higher than the sales of non-exporting SMEs. Large exporters generated more than twice as much turnover in 2005 than large non-exporters.

Using an independent t-test, we compared the mean turnover of non-exporters to that of exporters, for each type of firm and industry. Especially for the SMEs, the turnover of exporters is significantly larger than that of non-exporters in each industry. The average turnover of large exporters is also higher than that of large non-exporters, although differences among companies that produce and distribute energy, construction companies and the government, healthcare and public services are only significantly at the 10 percent level. This could indicate that a large turnover has a stronger effect on the propensity to export for SMEs than for large enterprises. In conclusion, even when correcting for enterprises size and industry, the turnover of exporters was consistently higher than the turnover of non-exporters.

Table A1.5
Average turnover by enterprise type and industry, 2005

	Non-exporters	Exporters	T-stat [1)]
	million euro		
Total	8	41	112.38***
Manufacturing industry	8	35	40.28***
Production and distribution of energy and construction	13	65	16.34***
Trade, repair, hotels and restaurants	13	42	47.52***
Transport, storage and communication	7	101	21.20***
Commercial services and real estate	3	26	29.71***
Government and public services healthcare	5	24	9.92***
Large enterprises	148	343	13.60***
Manufacturing industry	105	308	6.68***
Production and distribution of energy and construction	203	306	1.96*
Trade, repair, hotels and restaurants	222	368	4.89***
Transport, storage and communication	139	505	3.54***
Commercial services and real estate	69	280	5.82***
Government and public services healthcare	67	132	1.77*
SMEs	5	20	110.97***
Manufacturing industry	6	13	37.86***
Production and distribution of energy and construction	9	15	13.68***
Trade, repair, hotels and restaurants	10	27	46.33***
Transport, storage and communication	4	38	17.77***
Commercial services and real estate	2	8	29.27***
Government and public services healthcare	4	7	9.13***

[1)] Independent t-tests carried out on log turnover per enterprise type and industry.

* p<0.10; ** p <0.05; *** p <0.01.

1.5.2 *Labour productivity of exporters versus non-exporting enterprises*

Finally, we explored differences in labour productivity of exporting enterprises versus non-exporters. In table A1.6, enterprises are divided into labour productivity categories depending on their size and export activity. Results clearly showed that exporters had a consistently higher labour productivity level in 2005 than non-exporters.

Almost 40 percent of SME exporters had an average labour productivity in 2005 of less than 50 thousand euro, while 12 percent had a labour productivity exceeding 125 thousand euro. For non-exporting SMEs, these fractions were 60 and 8 percent. Onkelinx and Sleuwaegen (2008) also concluded that SME exporters have higher levels of productivity than SMEs that do not export. Wagner (2005) found that exporters consistently outperformed non-exporters, in terms of higher levels and growth rates of productivity.

Almost a third of large exporters had an average labour productivity between 50 thousand and 75 thousand euro and roughly 13 percent of large exporters have a labour productivity over 125 euro, compared to 6 percent of non-exporting large enterprises.

Table A1.6
Labour productivity by enterprise type [1], 2005

	Non-exporters			Exporters		
	total	large enterprise	SMEs	total	large enterprise	SMEs
	%					
Total	100	100	100	100	100	100
1– 24 999 euro	23	21	23	7	4	7
25 000– 49 999 euro	37	38	37	32	27	32
50 000– 74 999 euro	21	22	21	29	31	29
75 000– 99 999 euro	8	10	8	14	15	14
100 000–124 999 euro	4	3	4	7	9	7
Over 125 000 euro	8	6	8	12	13	12

[1] Enterprises with a labour productivity of 1 million euro or less in 2005.

Table A1.7 shows that exporting enterprises had a consistently higher labour productivity than non-exporters in 2005, irrespective of firm size and industry. In our sample, the average labour productivity of an enterprise with exports was 79 thousand euro, compared to 62 thousand euro of enterprises without exports. But since labour productivity differs strongly across industries, not controlling for industry differences would distort the comparison of exporters versus non-exporters.

For both SMEs and large enterprises, the productivity advantages of exporters were significant and consistent across every industry. The differences between large exporters and non-exporters were most significant in the manufacturing industry, commercial services and real estate, trade, repair, hotels and restaurants. Especially in the manufacturing industry, the trade, repair, hotels and restaurants, the commercial services and in real estate the differences were quite significant.

Table A1.7
Average labour productivity by enterprise type and industry [1], 2005

	Non-exporters	Exporters	T-stat [1]
	1,000 euro		
Total	62	79	48.14***
Manufacturing industry	73	75	12.82***
Production and distribution of energy and construction	58	74	6.22***
Trade, repair, hotels and restaurants	69	83	27.51***
Transport, storage and communication	70	82	5.63***
Commercial services and real estate	57	76	14.44***
Government and public services healthcare	61	69	3.53***
Large enterprises	59	85	11.12***
Manufacturing industry	66	94	3.70***
Production and distribution of energy and construction	71	93	1.97*
Trade, repair, hotels and restaurants	63	62	2.75***
Transport, storage and communication	77	84	1.78*
Commercial services and real estate	48	88	7.57***
Government and public services healthcare	52	97	2.17**
SMEs	62	79	45.94***
Manufacturing industry	73	74	11.79***
Production and distribution of energy and construction	57	70	4.70***
Trade, repair, hotels and restaurants	69	84	27.43***
Transport, storage and communication	70	82	4.81***
Commercial services and real estate	57	75	13.14***
Government and public services healthcare	61	64	2.13**

[1] Enterprises with a labour productivity of 1 million euro or less in 2005.
[2] Independent t-tests carried out on log labour productivity per enterprise type and industry.

* p<0.10; ** p <0.05; *** p <0.01.

1.6 *Conclusion*

A preliminary matching of the international trade in goods statistics to the general business register has made it possible to shed some light on the characteristics of enterprises that engage in international trade. Approximately 8 percent of the Dutch enterprise population had exports of commodities in 2007. For SMEs this percentage was also 8 percent while for large enterprises this share was significantly higher,

approaching 50 percent. In terms of export value, SMEs exported circa 42 percent of the total Dutch export value while at least 34 percent of commodities exports were carried out by large enterprises. At present, the remainder of the export value cannot be assigned to a Dutch enterprise. SMEs are not always independently operating entities; sometimes they are part of a larger parent company. The majority of SMEs are independently operating enterprises, but nevertheless these 'affiliated' SMEs accounted for approximately a fifth of SME exports in 2007.

Enterprises active in the manufacturing industry are quite likely to export commodities abroad. In 2007, the majority of large manufacturers and roughly a quarter of SMEs had reported exports of goods. In addition, the export intensity of manufacturers was the highest of all exporters in 2007, namely 32 percent. On average, exporting SMEs had a lower export intensity than large exporters. However, in most services sectors exporting SMEs generated a higher (or equal) share of their turnover from exports compared to large enterprises.

Theory predicts and empirical studies show that enterprises that export are larger, more productive and that they generate more turnover than comparable enterprises without exports. Only the most efficient firms can afford the extra costs of entering a foreign market. This corresponds to the results presented in this chapter, which showed that Dutch exporting companies, irrespective of size and industry, had on average a higher labour productivity and turnover in 2005 compared to non-exporters. In 2005, exporting enterprises generated on average five times more turnover than non-exporters. Especially large exporting enterprises were often found in the highest turnover categories, but also exporting SMEs outperformed comparable non-exporters. Roughly a third of all exporters (and SMEs specifically as well) had a labour productivity higher than 75 thousand euro, compared to 20 percent of non-exporters (SMEs). For large exporters, the difference in labour productivity was even higher.

The results presented in this chapter provide a primary insight into the population and characteristics of Dutch exporters. More research is necessary to investigate whether or not enterprises (SMEs) that export also manage to increase their productivity even further, as predicted by the learning-by-exporting hypothesis. Economies of scale, knowledge spillovers or access to foreign technology might give a new impulse to productivity growth of internationalising enterprises. However, the possibility of a causal effect of exporting on performance was not analysed in this chapter, but will be part of further research when more data becomes available.

In this chapter, the focus was on exporting enterprises, but importing and re-exporting are also manifestations of a globalising economy. Such information can be found in section B1 of this publication. Tables B1.1 up till B1.8 provide further insight into the international trade pattern of the various types of Dutch enterprises.

Tables B1.2 through B1.5 show per enterprise type, the number of trading partners and the origin/destination of the commodities traded. In which industries the importing and exporting enterprises are active (and their trade value), is the topic of B1.6, while tables B1.7 and B1.8 show which commodities are involved.

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Notes in the text

1) CBS StatLine. Table: Bedrijven; grootte; rechtsvorm en economische activiteit; 2007–2008.
2) The presence or direction of a causal relationship will not be tested in this chapter, but will be part of future research.
3) If a foreign enterprise decides to engage in other economic activities besides trade and set up a local office, it must register with the Chamber of Commerce. In that case the foreign enterprise establishes a local affiliate and it will be registered in the GBR.
4) This is somewhat lower than the results published by EIM. EIM (2008) concluded that approximately 9.5 percent of all SMEs had exports in 2007. A reason for this discrepancy might be the fact that EIM included enterprises with exports of services in their analyses. The latest survey of the Observatory of European SMEs (The Gallup organization, 2007) showed a similar percentage as mentioned in the text; 8 percent of all European SMEs had turnover from exports in 2006–2007.

A2. Measuring globalisation: the role of emerging markets in Dutch trade and investment

Margot de Bontridder and Oscar Lemmers

2.1 Introduction

Globalisation is – for the Netherlands as well as for many other countries – often still a phenomenon of regionalisation. The vast majority of Dutch trade and foreign direct investment (FDI) takes place within the European Union. However, this does not imply that other countries are insignificant. The global economic playing field continues to change, in recent years especially China, India and Brazil have emerged as important business partners. The term emerging markets is often used to describe countries that are in a transitional phase between developing and developed. In 2008, the emerging countries together accounted for a GDP of 13 078 billion US dollar – equal to 75 percent of the GDP of the EU-15. Around 3.5 billion people – or more than half of the world's population – live in the emerging markets, and these people have seen their average per capita income rise substantially over the past two decades. Indeed, in their celebrated paper on the BRIC countries (Brazil, Russia, India and China), Wilson and Purushothaman (2003) predicted that in the year 2050, the five largest economies in the world will be China, the United States, India, Japan and Brazil.

Obviously, the influence of emerging markets on the rest of the world, and therefore on the Netherlands, will grow over time. Emerging markets represent opportunities as trading partners and investment markets. At the same time, they may also present a potential threat for Dutch businesses if they become competitors producing similar goods. This chapter aims to shed light on the role of emerging markets in Dutch international trade and investment at both the macro and micro level. The results are compared with those of other EU-15 countries, i.e. the EU-14, wherever possible. In doing so, we make an explicit distinction between exports of Dutch products and re-exports (of previously imported products), and also analyse the traders that are responsible for the trade flows with emerging markets, thereby contributing to existing information on these countries.

The structure of this chapter is as follows. First, we give some background information on emerging markets in general, including their potential role and influence on the Dutch economy. We also make the selection of emerging markets analysed in this chapter more explicit. Subsequently, we discuss our results both at

the macro and micro level of analysis. At the macro level, we compare the Netherlands with other European countries with respect to their trade and investment patterns with emerging markets. We find that the Netherlands invests and imports relatively more and exports less to emerging markets than the other European countries. At the micro level, we explore the individual traders responsible for imports from and exports to the selected emerging markets. We find that most traders with emerging markets also engage in trade with other countries. In addition, traders focus strongly on only 1–3 emerging markets.

2.2 *Background*

World Bank economist Van Agtmael coined the term 'emerging markets' in the 1980s. This term is often used to describe countries that are in a transitional phase between developing and developed status. Their growth is often export-driven (e.g. China, India, South Korea) – yet sometimes also by the internal market (e.g. Turkey) – and is paired with macro-economic stability, strengthening institutions, increasing openness and investment in education and human capital development (Wilson and Purushothaman, 2003). Whereas the emerging markets mainly exported primary products at first, they have gradually increased their share of exports of industrial products. Their activities shifted from simple production to process technology and innovation (Social Economic Counsel, 2008).

Emerging markets are often seen as opportunities for advanced economies, including the Netherlands. First of all, emerging markets may provide a new export market for Dutch enterprises. More than half the world's population lives in the emerging markets and they are all potential consumers of Dutch products. Secondly, low priced imports from emerging markets may supply Dutch companies and consumers with inexpensive resources and products. In fact, imports from emerging markets may compete with imports from other countries, making them less expensive. For example, Suyker and De Groot (2006) estimated that the average Dutch household saves 300 euros a year thanks to low priced imports from China. Finally, given their high growth rate, emerging markets are important new investment markets as well. While investing in emerging markets may still involve some risk, as these markets move along the path to become developed markets such risks likely diminish.

In principle, emerging markets provide such opportunities for all advanced economies. However, the Netherlands may benefit extra from these markets, given its function as gateway to Europe. Goods for the European hinterland pass through the Netherlands in the form of re-exports and transit trade. Even though Kuipers et al. (2003) estimated that the added value of re-exports and transit trade is relatively low – for every euro of re-exports 10 cents is added to the Dutch GDP, while the

added value for a euro transit trade is only 1.5 cents – the huge transport flows from the emerging markets through the Netherlands to Europe may contribute significantly to the Dutch GDP.

At the same time, the rise of emerging markets is also sometimes considered a threat for the Netherlands, as Dutch industry and traders may have to compete with those from emerging markets. In the past, competition from abroad has lead to major shifts in the Dutch economy. Large parts of the leather industry, the textile industry and the shipyards have left the Netherlands (Social Economic Counsel, 2008). These losses have been painful for individuals, cities and regions. Many low skilled production workers lost their jobs. The risk that emerging markets will lead to such a shift in the Dutch economy is largest when their products and services substitute Dutch export products and services. Partly in light of this possibility, the Social Economic Counsel (2008) advised to invest in education to enhance people's chances on the labour market.

Emerging markets could also potentially increase Dutch income inequality. According to a simple Heckscher-Ohlin model, when countries with relatively many highly skilled workers (such as the Netherlands) will start to trade with a country that has relatively many low skilled workers (such as China), both countries will specialise even more in their current type of work. So, in the Netherlands the reward for low skilled work would decline because of falling demand, while the supply has stayed the same. Similarly, the reward for highly skilled work would rise, thus increasing the inequality between the wages for highly and low skilled jobs even further. However, the Dutch Bureau for Economic Policy Analysis (CPB) has already found that the emergence of China and India did not have a noticeable impact on Dutch income inequality (Suyker and De Groot, 2006; Suyker, De Groot and Buitelaar, 2007). These results could indicate that emerging markets in general are not a large threat for the Netherlands.

2.2.1 Selection of emerging markets

There is no consensus on the list of emerging markets, hence we derived our criteria for selecting our countries from literature, among others the publication of the Dutch Ministry of Economic Affairs (2002). An emerging market:

1. represents a GDP of at least 75 billion US dollar;
2. has a Purchasing Power Parity (PPP) per capita of at most 80 percent of that of the Netherlands;
3. has shares of at least 3 per mille in global inward FDI and imports;
4. grows more rapidly than the OECD, both in the past and in the future;
5. did not join the EU before 2004.

According to these criteria, there were sixteen emerging markets in 2008, namely Argentina, Brazil, Chile, China, Czech Republic, India, Indonesia, Israel, Malaysia,

Mexico, Poland, Romania, Saudi Arabia, South Korea, Thailand and Turkey. Annex table A2.1 gives an overview of how the individual countries score on the selection criteria.

2.3 *Results: macro level*

2.3.1 *Benchmarking the Netherlands against the EU-15*

The Netherlands can benefit from emerging markets in several dimensions of international economic relations, among them exports of goods, imports of goods and outward FDI. Apart from giving some key facts about these three economic relations, we benchmark the results of the Netherlands to those of other European countries. We do not address inward FDI by emerging markets in the Netherlands, since these are still very small (less than 1 percent of total Dutch inward FDI). Table A2.1 shows the share of the sixteen selected emerging markets in outward FDI, exports and imports for the Netherlands and a selection of other EU countries. More detailed data on Dutch exports to, imports from and investment into emerging markets can be found in the annotated tables (chapter B2 of this publication).

Table A2.1
Shares of emerging markets in outward FDI, imports and exports of the Netherlands and the EU-14

	Outward FDI [1]		Imports		Exports	
	2002	2007	2002	2008*	2002	2008*
	%					
The Netherlands [2]	7.4	7.8	13.9	19.0	6.3	9.3
exports of Dutch products					7.2	9.4
EU-14 [3]	5.0	6.1	11.4	15.8	10.0	13.6
Belgium	.	.	8.9	12.2	8.3	9.5
Germany	7.2	7.6	15.2	19.3	13.7	17.9
France	3.9	5.1	8.6	12.0	8.2	11.7
Italy	4.7	5.0	12.5	18.1	11.7	14.8
United Kingdom	3.5	3.2	12.3	17.1	8.2	11.2
other	5.5	7.0	9.5	14.2	7.8	11.0

Source: Eurostat (FDI, imports and exports), adapted by Statistics Netherlands; Statistics Netherlands (Dutch exports, exports of Dutch products).

1) Without Romania and Saudi Arabia.
2) Dutch exports and exports of Dutch products according to country concept.
3) Imports and exports from EU–14 countries according to the EU community concept.

The exports of the Netherlands to the emerging markets already reached 34 billion euro in 2008, which is about one tenth of Dutch exports. With an annual growth rate

of 15 percent during the period 2002–2008 these exports grew twice as fast as Dutch exports to the rest of the world. Exports to Mexico, Romania, India and the Czech Republic grew particularly strong. Important export products were machines for the semiconductor industry and computers. The exports to the emerging markets consisted for a large part of re-exports, just like total exports did.

As table A2.1 shows, other European countries exported relatively more to emerging markets than the Netherlands (compare 9.3 percent for the Netherlands with 13.6 percent for the other EU-15 countries, i.e. the EU-14). The comparatively small share of emerging markets in total exports of the Netherlands can be explained by the important role of the Netherlands as 'gateway' to Europe – hence the share of European destinations in Dutch exports is relatively high. This implies that the share of exports to emerging countries is relatively low in comparison with other European countries.

However, the Netherlands also exported less domestically manufactured goods (thus controlling for re-exports) to emerging markets in comparison with exports (mainly domestically manufactured, fewer re-exports) by the EU-14 countries. Dutch manufactured products are more often destined for the European market. This is partly a reflection of the composition of the exports of Dutch produced goods. Agricultural products and mineral fuels have a higher share in the exports of Dutch domestic products than in the exports of the EU-14 countries. In particular, agricultural products are often locally produced in emerging markets, or may be bought from countries that are geographically closer. The EU-14 countries export relatively more machinery and transport equipment. For example, half of the total exports of Germany consists of these products. Such products in particular help countries to build up their economies. Indeed, the share of emerging markets in German exports is far higher than in Dutch exports.

The Netherlands imported 63 billion euro worth from emerging markets in 2008. With a growth rate of 14 percent, these imports were growing twice as fast as Dutch imports from the rest of the world. Particularly China is an important source of imports. An estimated 60 percent of the imports from emerging markets is, however, not destined for the Dutch domestic market but for other countries. Many of the major import products, such as computers, computer parts, televisions and computer games, arrive from China at the harbour to be sold immediately to the European hinterland by Dutch traders.

This translates also in a share of emerging markets in imports that is higher for the Netherlands than for most EU-14 countries (see table A2.1), illustrating the Dutch 'gateway to Europe' function. The Netherlands import goods from emerging markets for its domestic market and the European hinterland, whereas other European countries mainly import goods for their domestic markets.

Emerging markets have also become an increasingly important destination for Dutch investors. The Dutch direct investment position in these markets has nearly doubled since 2000. In the 2005–2007 period, FDI to emerging markets increased by 35 percent, whereas the stock of Dutch outward FDI to the rest of the world increased with just 13 percent.

In 2007, the Dutch direct investment position in the emerging markets was worth 47 billion euro [1)], of which more than a quarter was invested in Brazil. The Dutch mainly invest in mining, petroleum, transport, retail and financial services. The second-largest emerging market destination of Dutch FDI is Poland (19 percent), followed by South Korea, China and the Czech Republic, each accounting for about 9 percent of the Dutch FDI in emerging markets (see also table B2.5) .

Compared to other EU countries (see table A2.1), Dutch firms have invested relatively more in emerging markets, particularly in Brazil, China, India, South Korea and Poland. Of the largest European countries, only Germany invested as much as the Netherlands in emerging markets, whereas the United Kingdom invested far less.

We have seen that emerging markets are important investment markets for Dutch enterprises, and that also the trade relations with these markets are substantial. Yet, compared to other countries, the Dutch export relatively little, and import relatively much from these markets.

2.3.2 Exports emerging markets complement Dutch exports

Products from emerging markets may potentially compete with Dutch products. Increased industrialisation of emerging markets, combined with wages that remain relatively low may result in superior products at lower costs. However, existing studies have already indicated that exports from e.g. China and India do not compete with Dutch export products to world markets (Suyker and De Groot, 2006; Suyker, De Groot and Buitelaar, 2007). These fears are, therefore, also likely to be unwarranted for the other emerging markets. This section explores, at the product level, the revealed comparative advantages (RCAs) of the Netherlands and the emerging markets to further illustrate this point

Countries have a comparative advantage in producing a good if the opportunity costs of producing that good in terms of other goods are lower than in other countries. These comparative advantages are usually measured with the Balassa index, which measures a product's share in total exports relative to the product's share in the total exports of a reference category. This results in a characterisation of the strengths and weaknesses of the exports of a country. For sectors in which emerging markets have a strong revealed comparative advantage, emerging

markets might be potentially important trading partners as well as a source for enhanced competition from abroad for firms located in the Netherlands.

A comparative advantage may reflect a comparative advantage in production, in assembly or in trade of a certain good. It is important to distinguish between these types of comparative advantages, because a comparative advantage in trade might lead to higher re-exports, whereas a comparative advantage in production or assembly might lead to higher exports of Dutch products. Dutch products contribute far more to the Dutch GDP than re-exports. Usually the distinction is made using the import/export ratio, whereas here we show the share of Dutch products in total Dutch exports in the product group, using specific data of Statistics Netherlands on re-exports. This makes it possible to distinguish between a comparative advantage in trade or in production and assembly.

Table A2.2
The Balassa index: comparison of the Netherlands and emerging markets by chapter of the Harmonises System, 2007

	RCA with respect to world		Share of Dutch products in exports to OECD countries
	emerging markets	the Netherlands	
			%
Top 10 RCA the Netherlands [1)]			
06 Live trees, plants, bulbs, roots, cut flowers etc.	0.3	12.6	96
75 Nickel and articles thereof	0.4	4.7	4
79 Zinc and articles thereof	0.7	3.8	80
07 Edible vegetables and certain roots and tubers	1.0	3.7	83
24 Tobacco and manufactured tobacco substitutes	0.7	3.4	92
04 Dairy products, eggs, honey, edible animal product	0.3	3.2	82
15 Animal, vegetable fats and oils, cleavage products etc.	1.1	3.2	74
18 Cocoa and cocoa preparations	0.3	3.0	76
01 Live animals	0.5	2.8	87
02 Meat and edible meat offal	0.5	2.7	86
Top 10 RCA emerging markets			
67 Bird skin, feathers, artificial flowers, human hair	3.4	0.1	27
66 Umbrellas, walking-sticks, seat-sticks, whips etc.	3.2	0.4	21
46 Manufactures of plaiting material, basketwork etc.	3.0	0.4	47
95 Toys, games, sports requisites	2.8	0.4	41
50 Silk	2.6	0.0	36
42 Articles of leather, animal gut, harness, travel good	2.5	0.4	27
65 Headgear and parts thereof	2.4	0.3	25
63 Other made textile articles, sets, worn clothing etc.	2.4	0.4	45
64 Footwear, gaiters and the like, parts thereof	2.3	0.5	15
62 Articles of apparel, accessories, not knit or crochet	2.2	0.4	0

Source: OECD (foreign trade emerging markets and world with OECD), adaption Statistics Netherlands; Statistics Netherlands (Dutch trade with OECD).

1) Product categories that make up less than 2.5 per mille of total exports of Dutch products to OECD countries have been left out in the first part of the table.

Table A2.2 shows the top ten RCAs of the Netherlands and the emerging markets with respect to the world, by chapter of the Harmonised System. Some of the results are commonly known. The Netherlands have a strong comparative advantage in *plants and flowers* and *tobacco*, emerging markets have a strong comparative advantage in *footwear* and *apparel*. The table also gives some new insights. For example, the comparative advantage of the Netherlands in *nickel and articles thereof* is a comparative advantage in trade, as almost all Dutch exports in this product group consist of re-exports.

The tables show that the strengths of the Netherlands and those of emerging markets are complementary. Where emerging markets have the largest comparative advantages, Dutch exports mostly consist of re-exports. The value of Dutch exports (not shown) for products in the first part of the table is far higher (usually over 1 billion euro) than in the second half of the table (sometimes not even 50 million euro). Thus, emerging markets are more likely to be trading partners than competition for Dutch firms.

2.4 Results: micro level

2.4.1 Traders and emerging markets

This section analyses the actors responsible for trade with emerging markets – the so-called traders. This group consists of all traders in goods with a Dutch VAT-number and an office in the Netherlands that are importing, exporting or both with at least one emerging market. Note that these traders are not necessarily Dutch-controlled enterprises. A foreign enterprise with a Dutch VAT-number and an office in the Netherlands is also counted as trader in this analysis. Equally, the group of traders analysed here is not confined to enterprises engaged in wholesale – all actors involved in international trade in goods are considered, including e.g. manufacturers, transporters and retailers. Traders may also have trading relations with non-emerging markets, but these relations are not taken into account here.

We obtained our sample of traders from the register used for the monthly statistics on international trade in goods of Statistics Netherlands. It should be noted that both the number of traders and the value traded is slightly underestimated, since EU-traders with small trade flows are not required to report their imports and exports [2)].

Table A2.3 shows that an increasing number of traders in goods in the Netherlands is engaged in business with emerging markets. In 2008, a total number of 8 375 traders dealt with the selected emerging markets. This is an increase of 14 percent since 2005. In the same period, the value traded (i.e., exports and imports)

with emerging markets increased by 39 percent – implying that not only increasingly more Dutch enterprises are involved in trade with emerging markets, but also that those that do, trade increasingly more value.

Table A2.3
Traders exploiting business with emerging markets

	Traders			Trade value		
	2005	2008*	growth in 2005–2008*	2005	2008*	growth in 2005–2008*
			%	*million euro*		%
Total traders	7,335	8,375	14	68,388	94,982	39
Only importing	1,625	2,020	24	15,529	20,573	32
Only exporting	3,700	3,775	2	6,019	9,742	62
Importing and exporting	2,010	2,580	28	46,840	64,667	38

Table A2.3 also shows that the largest increase in traders with emerging markets occurred among those that both imported goods from, and exported goods to emerging markets. This group of traders is responsible for roughly 70 percent of the value of trade with emerging markets.

Almost 65 percent of the trade value related to emerging markets in 2008 represented imports. The share fell from 68 percent in 2005. This could indicate that traders in the Netherlands have discovered emerging markets as a potential export market rather than a place to buy inexpensive import goods. On the other hand, this drop could also be explained by the nature of the goods traded and their price effects.

Further analysis (see table A2.4) reveals that traders who do not do business with emerging markets on average deal with fewer countries than traders who engage in trade with both emerging markets and non-emerging markets. In table A2.4 we also see that the average trade value for non-emerging market traders is also much lower compared to the group that is engaged in trade with both emerging markets and non-emerging markets. This may indicate that serving emerging markets requires both substantial trading experience as well as a larger overall firm size as compared to serving other, non-emerging markets (in the Dutch context, often developed countries in the EU and the US). This suggests that trade with emerging markets requires extra efforts and resources or is still considered to be risky.

Finally, table A2.4 shows that there is a small set of traders that deals exclusively with emerging countries. On average, this group has a modest trade value and they usually trade with only one emerging market. In fact, even the traders who do business with emerging markets and many other countries focus on a limited number of emerging markets.

Table A2.4
Traders exploiting business with emerging markets and/or non-emerging markets, 2008*

	Number of traders [1)]	Average number of trading countries	Average number of emerging markets	Average total trade value	Average trade value with emerging markets
				million euro	
Imports					
No trade with emerging markets	10,635	4		6,917	
Trade with emerging markets and non-emerging markets	4,435	11	2	53,967	13,762
Only trade with emerging markets	165	1	1	4,837	4,837
Exports					
No trade with emerging markets	4,985	4		11,496	
Trade with emerging markets and non-emerging markets	6,305	18	3	46,066	5,222
Only trade with emerging markets	50	1	1	4,129	4,129

Table A2.5
Traders by number of emerging markets they are trading with and trade value, 2008*

	Imports				Exports			
	total	1 million euro or less	1–25 million euro	more than 25 million euro	total	1 million euro or less	1–25 million euro	more than 25 million euro
	%							
Total traders	100	100	100	100	100	100	100	100
Trading with:								
1 emerging market	61	83	66	27	37	64	38	16
2– 3 emerging markets	25	16	26	30	51	36	55	44
4– 5 emerging markets	6	1	5	12	3	0	3	6
6–10 emerging markets	7	0	3	24	5	0	3	16
11–16 emerging markets	2	0	0	7	4	0	1	17

Many traders focus on only one emerging market. This is true for both traders that deal exclusively with emerging markets and the group that also does business with non-emerging countries (see table A2.5). In 2008, no less than 61 percent of the traders importing from emerging markets concentrated on just one emerging market. An additional 25 percent of traders importing sourced its products from only two or three markets. For exporting emerging market traders, 88 percent focused on one to three markets and 37 percent concentrated on only one emerging market.

The concentration pattern differs with the trade value, as can be seen in table A2.5. The lower the trade value with emerging markets, the stronger the tendency to focus on only one emerging market. This result is consistent with the results reported in table A2.4: larger firms are more capable to do business with a larger number of emerging markets.

Clearly, traders on average tend to concentrate on a small set of emerging countries. This is also often the same country: nearly three quarters of the traders doing business with emerging markets in 2008 traded with Poland (see table B2.8). Runners up are the Czech Republic with 57 percent and Romania with 33 percent. China heads the list of Asian emerging markets as 17 percent of the traders do business with China. The top five is completed by Turkey with a 12 percent share of traders.

The ranking of 2008 is very similar to the one of 2005. The main difference is that only 9 percent of the traders did business with Romania in 2005. It seems that Romania's entry into the EU has made it far more interesting and easy to do business with (see table B2.8).

However, the share of traders who focus on only one emerging market decreases over time. In 2005 this share was 50 percent, but in 2008 this had declined to 41 percent of the traders. Apparently traders gradually increase their presence in emerging markets. Traders who indeed do broaden their horizon in such a way tend to do so mostly within the same region. A quarter of all traders who did business with only one emerging market in 2005 traded with more than one emerging market three years later. Almost 90 percent of this group expanded their trading activities to countries close to the emerging market they were already serving in 2005.

2.5 *Summary and conclusion*

Emerging markets, with their market size and growth potential, present important opportunities for businesses in the Netherlands. Emerging markets are markets for Dutch products, they supply goods that can be sold by Dutch firms to the domestic market and re-exported to other countries, and they are investment

markets. Compared to businesses in the other EU15 countries, Dutch businesses invest relatively more in emerging markets and they import more than their European counterparts. It is only in exports of goods that Dutch businesses seem to be lagging behind. A possible cause is the composition of the Dutch export basket, which may be less suited for emerging markets than the export basket of European businesses. At the same time, FDI can be considered as an alternative – and much more committed – mode of entering foreign markets, and Dutch firms invest much more in emerging markets than their European counterparts. FDI may not only be an alternative to exports in supplying foreign markets, but it is also often considered to be an optimal means to benefit from the presence of natural resources and relatively low labour costs that prevail in such markets. The extent to which emerging markets pose potential competition for Dutch products does not seem large, as the goods produced in emerging markets are not competing with those of the Netherlands.

At the micro level, we looked at the traders who do business with emerging markets. This group of traders increased since 2005, as did the value traded with emerging markets. Most traders with emerging markets also trade with many non-emerging markets and they concentrate on a limited number of emerging markets. Traders with a small total trade value tend to focus more on only one emerging market than traders with a large trade value.

Further research should explore how these traders compare with other firms in the Netherlands with respect to their economic activities, as well as how these develop over time. By linking information about traders with emerging markets with other data on e.g. the number of people working there and the turnover they generate, we can quantify the influence of emerging markets on the Dutch economy. Finally, research into the nature of goods traded and their possible price effects is recommended. This could explain the slight drop in the share of imports in the trade value related to emerging markets or provide clues that traders in the Netherlands have discovered emerging markets as export markets rather than as places to buy inexpensive import goods.

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Notes in the text

1) This amount is a lower limit, since data for Romania and Saudi Arabia are not available.
2) The bias is approximately 3 percent for the value traded.

Annex table A2.1
Selection of emerging markets, 2008

	GDP 2008	PPP per capita 2008	Share of world FDI 2005–2007	Share of world imports 2006–2008	Growth of GDP 2005–2008	Projected GDP growth 2008–2011
	billion US dollar	*US dollar*	*per mille*		*%*	
Cut-off value	75	32,345	3	3	2.2	–0.4
Argentina	326	14,413	3.8	3.2	8.0	0.6
Brazil	1,573	10,326	16.3	9.4	4.9	1.3
Chile	170	14,510	6.9	3.4	4.2	2.3
China	4,402	5,963	54.4	66.8	11.2	8.1
Czech Republic	217	25,395	6.4	8.2	5.3	–0.3
India	1,210	2,762	11.9	15.8	8.8	5.7
Indonesia	512	3,987	4.8	6.9	5.9	3.5
Israel	202	28,206	7.0	4.1	4.8	1.0
Malaysia	222	14,072	4.4	10.1	5.6	0.6
Mexico	1,088	14,560	15.4	20.6	3.3	0.6
Poland	526	17,482	11.2	11.5	5.9	1.5
Romania	200	12,580	6.6	4.7	7.1	0.2
Saudi Arabia	482	23,834	13.0	6.3	3.7	2.1
South Korea	947	27,647	3.5	25.5	4.2	0.9
Thailand	273	8,225	6.3	10.4	4.2	0.6
Turkey	729	13,138	12.4	11.9	4.2	0.1
(Netherlands)	869	40,431	36.9	34.4	2.9	–1.3

Source: IMF World Economic Outlook April 2009, UNCTAD, WTO.

A3. Measuring globalisation: an analysis of transit flows from integrated trade and transport statistics

Chris de Blois, Gert-Jan Linders [1)], Harm Jan Boonstra

3.1 Introduction

The Netherlands is a trading nation. It is currently (2008), the second largest export country in the European Union, after Germany (Lemmers, 2009), and plays an important role as a distribution centre in European and global transport networks. Hence, the Netherlands attracts a relatively large share of transport flows to and from the European hinterland. These flows not only include Dutch imports and exports, but also goods flows for which the Netherlands is neither the ultimate origin nor the final destination. About 45 percent of Dutch exports are re-exports, i.e. goods that are transported via the Netherlands and become property of a Dutch citizen without being industrially processed in a significant way. In addition to re-exports, transit [2)] of goods via Dutch ports plays an important role in transport for the Netherlands as well.

The Dutch position as gateway to Europe has implications for the potential benefits and costs of accommodating the further growth in export, re-export and transit flows that we are likely to observe in the near future (cf. CPB, 1999; Ubbels et al., 2000). International commodity flows are an important source of income, but as shown by Kuipers et al. (2003), the value added generated by transit flows is much lower than the value added generated by re-exports and exports produced in the Netherlands. Per euro of goods transported, the average value-added generated is 1.5 cent for transit, 10 cent for re-exports and 60 cent for domestically produced exports. In addition, the transport flows associated with the international trade in goods through the Netherlands contribute to traffic jams, emission of greenhouse gases and fine dust, road accidents, noise pollution and destruction of the landscape.

But before we can analyse the consequences of ongoing international integration of the world economy for the economic position of the Netherlands, we need to have a clear empirical insight into the various types of goods flows involved in the Dutch economy. Therefore, it is important to be able to quantify trade and transport flows and answer relevant questions like: What types of goods are conveyed in transit? What transport modes are involved? Where do these goods come from and what is their destination? At present, directly observed data on transit flows are largely

unavailable. Moreover, an integrated database on the volume and value of goods flows according to different types (*viz.*, exports and imports, re-exports and transit), by origin and destination and modal split is needed to complement the currently available separate databases that provide a partial and incomplete picture.

The aim of this chapter is to give more insight in the size, origin, destination, commodity types and transport modes of the transit flows of the Netherlands. This chapter reports newly derived estimates of transit flows based on matching and then statistically integrating existing trade and transport statistics. So far, the integration has been completed for the reporting year 2004. The results show that transit flows through the Netherlands cannot be neglected in terms of the volume and value of the flows involved. In 2004, transit amounted to about one third of the weight and value of exports. The chapter starts with a discussion of the existing data on merchandise trade and transport and the model used to integrate these data, so as to derive estimates of transit flows. Secondly, we will present the pattern of transit flows emerging from the data integration. The last section briefly concludes the integration results acquired so far and discusses some options for future research.

3.2 *Methodology*

Historically, data on transit were available at Statistics Netherlands. These were compiled from direct observations and customs procedures. After entering the single European market in 1993, most customs information on intra-European flows was lost. For transit flows, this resulted in a loss of information, and the statistics on transit were eventually terminated. As a result, directly observed or obtained data on transit flows are currently unavailable. At the moment, information on international goods flows for the Netherlands is available in two separate databases at Statistics Netherlands: the international trade statistics and the statistics on transport flows. Both datasets contain a substantial amount of relevant information, but there is no complete and integrated overview of international goods flows. These separate statistics cannot provide insight in the international goods flows, neither in terms of value and weight, nor broken down by type of flow (e.g. trade, re-export, transit), product group, country of origin or destination and country of loading or unloading combined with the transport mode at the border. Given the relevance of this information for analysing trends in globalisation and for policy assessment of investments in infrastructure and of environmental goals, it is essential to have integrated statistics on trade and transport flows.

This study represents the first attempt to integrate the two statistics at Statistics Netherlands that are explicitly intended to monitor international goods flows. It serves to complement the method and results, presented by Kuipers et al. (2003), and has the aim to start a new, consistent data series on trade and transport flows.

The integration of the trade and transport statistics provides a comprehensive view of international commodity flows. Comparing total foreign supply with total imports allows us to determine total incoming transit flows. Comparing total domestic supply with total export makes it possible to determine total outgoing transit flows.

To match both statistics, we expressed them in terms of gross weight. The net weight, quantity, or value of registered transactions in the trade statistics were converted into gross weight. We used the information from the customs authorities including value, quantity, net weight and gross weight for extra-EU trade transactions for this purpose (see Linders et al., 2008). The transport figures were already given in gross weight.

A complicating factor for the integration is the difference between country of origin or destination in the trade statistics and the country of loading or unloading in the transport statistics. The country of origin of a shipment is the *first* country where the goods were loaded for transport, whereas the country of loading is the *last* country where the goods were freighted. For example, for goods shipped in Shanghai and directly transported to Rotterdam the country of origin is the same as the country of loading, i.e. China. However, when there is a transfer in Alexandria, then the country of origin is still China but the country of loading is Egypt. Similarly, the country of destination is the *last* country where the goods were unloaded, while the country of unloading is the *first* country where the goods were defreighted. We addressed this issue in our data integration exercise by using a breakdown by continents. For the quantification of international goods flows by continent of origin or destination, the distribution over continents from the trade statistics was applied. For the subdivision by continent of loading or unloading, we made use of the distribution over continents from the transport statistics. As such, we assumed that the distribution over continents for trade and transit are the same.

For the classification of goods types we used the NSTR classification at level 1 (see Appendix 1). A significant problem for the integration in the transport statistics is the overrepresentation of gross weight in the rest category NSTR 9, representing 'other goods and manufactures', and especially in goods group NSTR 99, 'other goods (among which mixed cargo)'. This problem of overestimation of NSTR 9 weights was solved by extrapolating data from 1982–1992 (Linders et al., 2008). The international transport statistics for these years were still based on detailed customs reports, which did not include the overrepresentation in NSTR 9.

Uncertainty margins were defined for the original statistical data at the level of integration. We also assigned uncertainty margins to the value-to-weight ratios and NSTR 9 redistribution factors, used to match trade and transport statistics. The conversions and redistributions applied to the original statistical data led to several

successive recomputations of the uncertainty margins. The finally computed margins were input for a Bayesian integration model. The Bayesian integration model estimates the total incoming and outgoing flows, as well as the trade and transit flows that make up these totals.

In estimating the flows for which direct, separate information is not available, and which implicitly link both statistics – i.e. the transit flows –, we imposed two restrictions. First, transit flows should be non-negative. Second, incoming and outgoing transit flows should be equal for each product group because of the nature of transit flows [3]. For more details, see Boonstra (2007) and Linders et al. (2008).

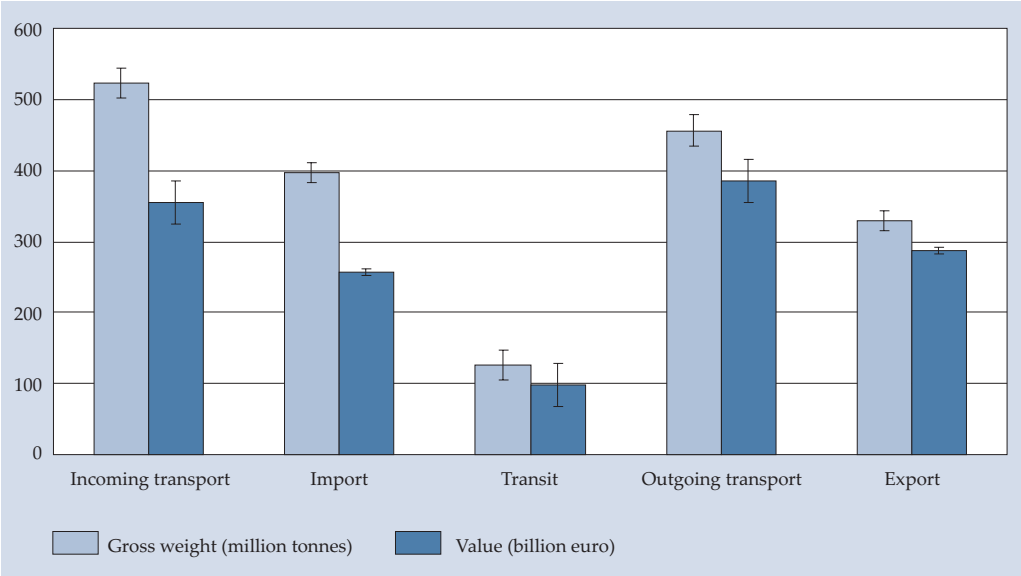
3.3 *Results: integrated trade and transport statistics*

The model results provide policy-relevant insights in the international trade and transit flows of the Netherlands. Graph A3.1 shows that more than 520 million tonnes of goods were transported to the Netherlands in 2004. The estimated value of these goods is 355 billion euro. Out of this total incoming transport almost 400 million tonnes of goods with a total value of almost 260 billion euro were imported into the Netherlands, i.e. were used for domestic consumption, re-export or production. The rest, 127 million tonnes with an estimated value of 98 billion euro, was conveyed in transit. About 455 million tonnes of goods left the Netherlands in 2004. The value of this total outgoing transport was estimated at almost 385 billion euro. Transit amounted to approximately a quarter of the total gross weight and total value of outgoing transport.
The comparison between value and weight reveals an interesting difference between various types of good flows. Import flows are on the whole less value intensive per unit of weight, while export flows consist of relatively high value to weight goods. The average unit value of import is 0.65 euro/kg, for export it is 0.87 euro/kg. This may reveal the nature of specialisation and development patterns across countries. Given that the Netherlands has a highly developed economy, the export sectors tend to produce relatively high value goods, while imports consist of more basic products. A compelling result is, however, that transit flows through the Netherlands consist of relatively high value to weight goods as well: the average ratio of value to weight is 0.78 euro/kg for transit.

The uncertainty margins given in graph A3.1 are 90 percent confidence intervals. The uncertainty for the estimated gross weights is about plus or minus 20 million tonnes for transport and transit and 15 million tonnes for trade. The relative margins are almost 5 percent for total transport and trade and 17 percent for transit.

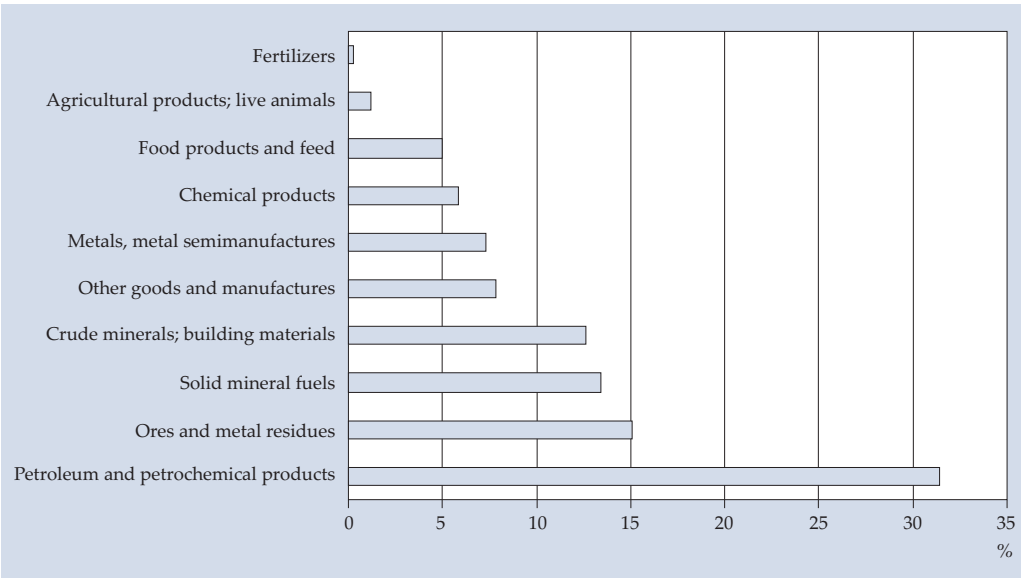
The integrated database also provides insights into transit flows at a more detailed sector level. As graph A3.2a shows, the gross weight of transit mainly consists of raw

A3.1 Gross weight and value of the international goods flows, with 90 percent confidence intervals, 2004

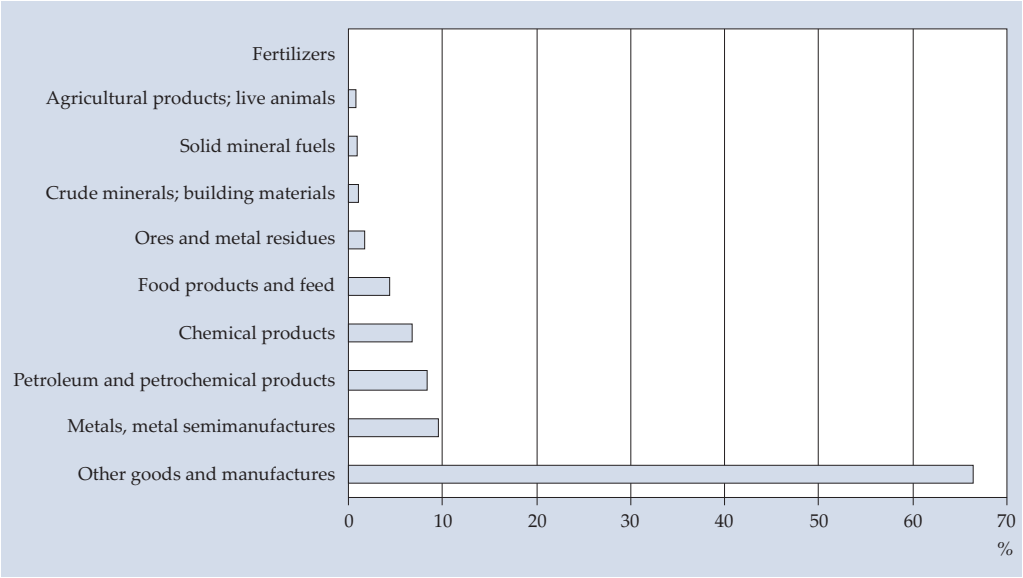


materials like petroleum (32 percent), ores and metal residues (16 percent), coal (15 percent) and crude minerals and building materials (13 percent). The value of transit (see graph A3.2b) is dominated by the category 'other goods and

A3.2a Transit flows by product group; gross weight, 2004



A3.2b Transit flows by product group; value, 2004



manufactures', which contributes almost 70 percent. The main products in this category are: machines and electrical appliances, transport equipment, garments and footwear, paper and cardboard, glassware and pottery and metal manufactures.

Table A3.1 shows the value-to-weight ratios for incoming and outgoing transit by product group and continent. Product group NSTR 9 clearly contains the most valuable goods. Especially, the NSTR 9 goods from the distant continents Oceania, Asia and America have a high value per kilo. Also for most of the other product groups the ratios are lower for Europe than for the other continents. Probably, this is because less valuable raw materials with smaller profit margins are transported from closer distances than more valuable goods. Another eye-catching aspect is that the differences among continents are larger for incoming transit of NSTR 9 goods than for outgoing transit of NSTR 9.

The pattern of NSTR 9 value-to-weight ratios clearly demonstrates the role of the Netherlands as a gateway to Europe. Besides the important transit flows from Europe to Europe, transit mainly flows from distant countries to Europe and vice versa, not from distant countries via the Netherlands to other distant countries. So, the relatively high value products from the distant continents are transported to the European hinterland of the Netherlands and mix with relatively low value products from other European countries.

Table A3.1
Value-to-weight ratios for incoming and outgoing transit by product group and continent of origin or destination, 2004

	Africa	America	Asia	Europe	Oceania
	euro/kg				
Incoming transit					
NSTR 0	1.06	0.68	0.63	0.45	0.86
NSTR 1	1.24	0.37	0.44	0.93	1.54
NSTR 2	0.04	0.05	0.06	0.05	0.06
NSTR 3	0.23	0.16	0.17	0.22	7.11
NSTR 4	0.05	0.06	0.24	0.21	0.03
NSTR 5	0.87	2.32	1.38	0.92	1.38
NSTR 6	0.07	0.14	0.20	0.06	0.17
NSTR 7	0.03	0.26	0.06	0.03	
NSTR 8	0.30	1.21	0.96	0.86	0.48
NSTR 9	5.51	16.06	10.23	4.92	24.45
Outgoing transit					
NSTR 0	0.31	1.78	0.91	0.48	1.76
NSTR 1	0.70	0.99	1.17	0.63	1.71
NSTR 2	0.07	0.08	0.12	0.05	0.09
NSTR 3	0.30	0.27	0.14	0.21	0.90
NSTR 4	0.55	0.29	0.59	0.08	1.26
NSTR 5	1.02	0.70	1.10	1.02	1.22
NSTR 6	0.13	0.15	0.35	0.06	0.62
NSTR 7	0.09		0.06		0.24
NSTR 8	1.42	1.02	0.76	0.90	1.97
NSTR 9	5.98	8.91	7.04	6.43	6.82

In the integrated database, transit can also be broken down by transport mode, continent of (un)loading and product group. About 60 percent of the gross weight of transit is last loaded in a European country, whereas 20 percent is from America (see table A3.2a). Over 70 percent of the incoming transit is transported over sea. The rest is mainly shipped to the Netherlands by inland vessel or truck: each with more than a 10 percent share in incoming transit. Table A3.2a shows that most of the incoming transit of petroleum and petrochemical products (NSTR 3) arrives by sea-going vessel from Europe and Africa or by pipeline from Europe. About 65 percent of the incoming transit of ores and metal residues (NSTR 4) is transported over sea from America.

Table A3.2b shows the distribution of outgoing transit over transport modes, continents and product groups. Almost all transit, over 90 percent, is unloaded in Europe. Several transport modes were used: inland shipping (35 percent), maritime transport (21 percent), pipelines (21 percent) and road transport (17 percent). Outgoing transit of petroleum and petrochemical products is mainly by pipeline (70 percent). The outgoing transit of solid mineral fuels (NSTR 2) mainly uses inland vessels (52 percent), trucks (24 percent) or sea-going vessels (14 percent).

Table A3.2a
Gross weight of incoming transit by transport mode, continent of loading and product group, 2004

	Maritime transport					Inland shipping	Road transport	Rail transport	Pipeline transport
	Africa	America	Asia	Oceania	Europe	Europe	Europe	Europe	Europe
	1,000 tonnes								
NSTR 0	61	302	94	2	255	492		44	
NSTR 1	39	588	206	8	113	162	552	5	203
NSTR 2	4,360	5,561	2,730	2,495	5,319	574	708	4	
NSTR 3	8,401	707	1,567		22,923	1,939	228	13	4,878
NSTR 4	2,040	18,168	522	1,377	2,223	2,504	1,339	49	
NSTR 5	250	534	799	23	2,878	1,060	1,765	272	
NSTR 6	185	353	522	36	3,395	7,039	7,259	1,515	
NSTR 7									
NSTR 8	223	1,016	697	12	3,864	1,463	3,298	90	176
NSTR 9	18	194	455	8	783	125	1,410	6	

Table A3.2b
Gross weight of outgoing transit by transport mode, continent of loading and product group, 2004

	Maritime transport					Inland shipping	Road transport	Rail transport	Pipeline transport
	Africa	America	Asia	Oceania	Europe	Europe	Europe	Europe	Europe
	1,000 tonnes								
NSTR 0					16		1,281		
NSTR 1	23	56	89	8	419	348	743	30	160
NSTR 2	45	227	426	26	2,352	11,379	5,194	2,101	
NSTR 3	673	1,396	728	39	2,303	6,095	455	490	28,477
NSTR 4	196	1,377	2,452	126	5,651	14,750	537	3,134	
NSTR 5	25	141	51	2	1,217	1,192	3,601	1,349	
NSTR 6	59	248	255	11	1,926	10,971	6,677	154	
NSTR 7									
NSTR 8	125	726	1,050	34	2,747	2,309	2,926	714	189
NSTR 9	31	195	378	20	730	121	1,429	38	

3.4 Conclusion

This chapter presented research at Statistics Netherlands that aims to contribute to improving the knowledge of the aggregate international merchandise movements through the country. We developed a statistical model that uses

existing information from trade and transport statistics that was made comparable by converting weights and compiling value-to-weight ratios, to derive consistent estimates for the value and volume of trade and transit flows by product group.

The integrated estimates are derived for 10 different product groups. They also include estimated uncertainty margins. The results can be summarised in the following four stylised facts:

1. Transit flow estimates amount to about 127 million tonnes, or 98 billion euro for 2004. This is 28 and 25 percent, respectively, of total outgoing transport. [4)]
2. About 60 percent of the gross weight of transit is last loaded in a European country, whereas 20 percent is from America. Over 70 percent of the incoming transit is transported over sea. Almost all transit, over 90 percent, is unloaded in Europe.
3. Perhaps surprisingly, transit flows do not appear to consist mainly of low-value products. The value-to-weight ratio for transit flows, albeit lower than for Dutch exports, on average exceeds that for imported goods.
4. When considering the sector composition of transit flows, most transit in terms of volume occurs in petroleum and petrochemical products. In value terms, though, the sector 'other goods and manufactures', including a variety of products from transport equipment, computers and machinery to clothes, is by far the most important.

The model developed to integrate trade and transport statistics yields both new variables, in particular for transit flows, and consistent estimates for trade and transport in terms of value and volume. These data may prove to be valuable for future research to assess the benefits and costs to the Dutch economy of developments in merchandise trade and transit flows. Though this is a step forward in our knowledge of the international goods transactions related to the Netherlands, we intend to invest in further development of the model and the database. In particular, a further division of imports and exports into pure trade, re-exports and quasi-transit flows will allow us to derive relevant information on differences between pure trade flows and flows with a 'transit' character. This will allow us to refine the model assumptions and improve the integrated estimates. Also, a more detailed level of product aggregation may be possible, especially for the sector 'other goods and manufactures'. This is limited by the classification of transport statistics. Modelling value-to-weight ratios within the model requires further attention, as does the matching of mode of transport characteristics and loading/unloading characteristics of flows from both statistics. So far, we have to make rather restrictive assumptions for more extended model versions, related to limited data availability and definition differences. We plan to test the model outcomes for sensitivity to these assumptions and to relax them where possible.

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Notes in the text

1) Department of Spatial Economics, VU University Amsterdam
2) In this chapter 'transit' is defined as the sum of transport transit and warehouse transit. Transport transit is the transport of goods which are transported through the Netherlands and which are not stored, do not change owner, and are not cleared through customs (Roos, 2006). Distinction is made between transport transit with transhipment and transport transit without transhipment. The smallest of both, transport transit without transhipment, is not considered due to

lack of data. Warehouse transit involves goods entering or leaving warehouses that are monitored by customs for possible charge of customs duties. Warehouse transit implies that goods are stored in these warehouses, possibly subjected to value added logistics (VAL), and are subsequently redistributed to a destination outside the Netherlands without customs clearance, as customs goods (Roos, 2006). In this research, we do not separately identify warehouse transit. Quasi-transit, i.e. transit of goods that enter or leave the European Union and are cleared for or from the common EU market via the Netherlands, is not considered as part of transit but as part of trade.

3) With this, we assumed that possible losses of cargo because of theft, accidents or wrongly stored or handled products are negligible small. Furthermore, we assumed that the waiting time in customs warehouses does not lead to significant differences between the annual incoming and outgoing transit.

4) Total outgoing transport is composed of outgoing transit and export. Export is defined including re-exports and quasi-transit flows. The latter are transit flows that are reported by Dutch customs for administrative reasons. These flows are typically (for a large part) imports of EU countries that are processed in Dutch ports. As such, there can be storage in the Netherlands and/or clearance through customs for the single European market. They have been included in trade, since they are part of trade statistics and as such not derived as part of transit flows.

Appendix 1
NSTR classification at the 1-digit level, with subdivision of NSTR chapter 9

No.	Sector
0	Agricultural products; live animals
1	Food products and feed
2	Solid mineral fuels
3	Petroleum and petrochemical products
4	Ores and metal residues
5	Metals, metal semimanufactures
6	Crude minerals; building materials
7	Fertilizers
8	Chemical products
9	Other goods and manufactures
of which:	
91	Transport equipment
92	Agricultural tractors and machinery
93	Appliances, engines, other machinery
94	Metal manifactures
95	Glass(ware), ceramics
96	Leather, footwear; textile, clothes
97	Other (semi)manufactures
99	Other goods (a.w. mixed cargo)

A4. Effects of globalisation: internationalisation of research and development (R&D)

Andries Kuipers

4.1 Introduction

The increased internationalisation of the world economy has for a large part been driven by new technological developments. In particular innovations in information and communication technologies in the 1980s and 1990s have made it possible to coordinate international production networks both within and between (multinational) enterprises at an unprecedented scale. Technological developments are not only one of the key drivers of the globalisation process, they are in turn affected by globalisation as well. Activities involving the creation of new products and innovative production processes – i.e. research and development – are increasingly carried out outside the home country of enterprises and coordinated internationally.

Given the size of the required investments and the often long time lines between the initial basic research and the marketable product, private sector expenditure on R&D is highly concentrated among a relatively low number of large, often multinational enterprises. For example, as we will illustrate in more detail below, more than 50 percent of the intra mural R&D in the private sector in the Netherlands is accounted for by ten enterprises. Hence, the way in which MNEs organise their R&D internationally importantly affects the role that these multinationals play in regional and national systems of innovation. In addition, since the motives for MNEs to invest in (or retain) R&D in certain countries also vary across different kinds of R&D and the way in which the MNE organises its R&D internationally, the effectiveness of policies aimed at attracting and keeping those MNE R&D investments that contribute most to national innovation and economic growth is also affected (Fortanier, 2007). This chapter aims to provide a better understanding of the way in which MNEs organise their international R&D, and the role of the Netherlands in such international networks of innovation. We will address the role of foreign controlled enterprises in R&D and innovation in the Netherlands, as well as the international R&D activities of Dutch controlled enterprises.

The remainder of this chapter is organised as follows. First, we provide a brief review of the academic and policy debates with respect to the internationalisation of R&D. Subsequently, the data and methodology section explains some of the

difficulties in actually measuring (international) R&D and innovation activities, and details our analytical approach. Section 4.4 then presents the results of our analysis: first with respect to R&D of foreign controlled enterprises in the Netherlands, then for Dutch controlled enterprises abroad. Section 4.5 summarises and concludes.

4.2 *Background*

Multinational involvement in overseas research, product development and innovation has increased significantly since the 1990s. Traditionally, the internationalisation of R&D by MNEs has been analysed in terms of a trade-off between the competing 'centripetal' forces for geographical centralisation and the 'centrifugal' forces for geographical decentralisation (see for example Pearce, 1989; Van Tulder et al., 2000). The former forces argue for performing R&D on a national scale with R&D facilities close to corporate headquarter, and stress the need to protect firm-specific technology (Håkanson and Nobel, 1993); to minimise organisational (coordination, control and communication) costs and benefit from economies of scale (Mansfield et al., 1979; Wortmann, 1990), and the strong embeddedness of enterprises and their R&D activities in home country factor markets and institutions (Porter, 1990).

However, while these factors still impose costs for enterprises, the increase in international R&D in the past decades indicates that these strong forces for centralisation of R&D are often counterbalanced by even greater forces for decentralisation of R&D. There is an extensive literature that identifies a wide range of (potential) factors that may induce enterprises to internationalise their R&D, and that explain the resulting locational choices of those R&D activities (see e.g. an overview by Von Zedwitz and Gassman, 2002; Fortanier, 2007). For example, it may be necessary or advantageous to adapt products (and/or processes) to local market characteristics, to provide local product support to customers, or to be in close proximity to lead users. In addition, the creation and maintenance of technological competitive advantages increasingly requires access to a wider range of scientific and technological skills and knowledge than is available in the home market. Hence, the presence of highly skilled labour, local specialists, universities and research parks also drives the internationalisation of R&D.

Parallel to the ongoing internationalisation of R&D, many member states of the European Union (EU), including the Netherlands, have expressed the ambition to stay or become knowledge-intensive economies. Policy goals are to preserve and augment existing R&D activities and to attract additional R&D from abroad. Against this background, the increased internationalisation of R&D poses policy questions related to for example the stability of current R&D activities of foreign controlled and Dutch controlled enterprises in the Netherlands. Fears are

sometimes expressed that R&D will partly follow production and will be transferred to other countries, or that new R&D activities will be started abroad instead of at home. In addition, the contribution of foreign R&D and innovation activities to the Dutch knowledge economy is sometimes questioned. For example, a Finnish study showed that domestically owned enterprises invest substantially more in basic research than foreign controlled enterprises (Pajarinen et al, 1999). Finally, questions remain as to the (location and policy) factors that attract (or hamper) additional R&D.

4.3 *Data and methodology*

The wide variety of questions posed with respect to the trends and consequences of internationalisation of R&D for the Dutch knowledge economy require an in-depth analysis of the available data. Indeed, a number of developments in the internationalisation of R&D can be illustrated with data captured in the bi-annual R&D Surveys, the CIS (Community Innovation Survey) surveys and other surveys of Statistics Netherlands, or administrative statistical sources, although numerous challenges with respect to measuring R&D remain (see box 1).

The description of the internationalisation of R&D will be presented in two parts. First, we address the role of foreign controlled enterprises in R&D and innovation in the Netherlands. We analyse how foreign controlled enterprises compare with Dutch controlled enterprises with respect to their propensity to engage in a variety of R&D and innovation activities, and also pay attention to differences in their perceptions of potential barriers to innovation. Since other factors such as firm size, selling to international markets, and being part of an enterprise group, may influence the propensity to engage in R&D as well, we also present the results of a logistic regression analysis that controls the effect of foreign ownership for such factors. The second part describes the internationalisation of R&D by Dutch MNEs.

Box 1 Challenges in measuring R&D

The production and distribution of knowledge is more difficult to measure than that of goods. In some cases knowledge transfers are invisible, e.g. within worldwide operating MNEs. In other cases knowledge is really and explicitly sold, e.g. royalties, and thus recorded as a transaction. R&D activities are another example of measurable 'production' of knowledge. The increasing international specialisation of the production and usage of knowledge makes it more urgent to have an adequate measurement of these transactions.

Statistics Netherlands has compiled data on the performance and funding of R&D in the Netherlands over a long period. This collection of data is done via an internationally harmonised survey. This work has proved to be very useful over the years. The methodological framework of this survey is fixed in the so called *Frascati Manual* (OECD, 2002). However, there is a growing feeling that the scope and treatment of the information gathered about R&D should be re-evaluated. The main reason is the increasing discrepancy between performing R&D, funding R&D and the actual use of the R&D results. The cornerstone of the actual R&D survey is the intramural expenditure on R&D and its focus is on R&D performance by enterprises located in the Netherlands. However, bearing in mind the increasing international specialisation of R&D, the question is if performing or funding R&D is an adequate proxy for who actually is using the output of R&D investments.

Capitalising R&D in the National Accounts

The re-evaluation of the treatment of R&D in the System of National Accounts (SNA) has led to the conclusion that R&D should be treated as a capital good and not any longer as intermediate consumption. So a methodology has been developed of how to capitalise R&D in the National Accounts as was done before for software in the 1993 SNA revision. These recommendations will be included in the next SNA revision. So, an adequate measurement of (cross-border) R&D transactions becomes even more important because of their direct impact on the level of a country's gross domestic product (GDP).

4.4 Results

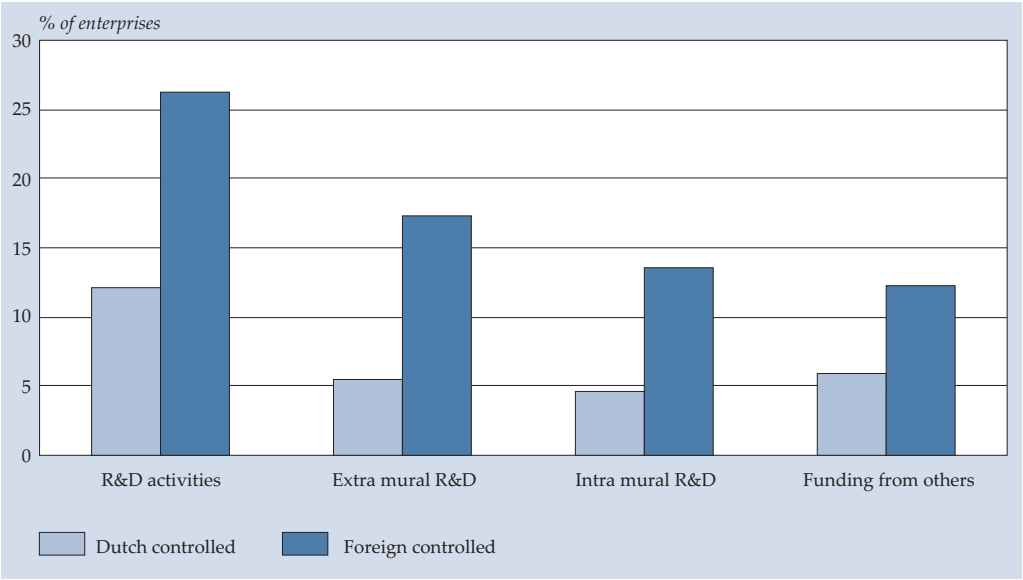
R&D and innovation of foreign controlled enterprises in the Netherlands

In 2006, roughly 22 percent of R&D expenditure of the Dutch business sector was controlled by foreign affiliates. This percentage seems stable over the last few years (see also the annotated table in part B of this publication). Graph A4.1 and graph A4.2 give an overview of the differences between foreign controlled and Dutch controlled enterprises in the Netherlands with respect to their R&D (graph A4.1) and innovation (graph A4.2) characteristics (more detailed results can be found in the annotated tables in part B of this Internationalisation Monitor).

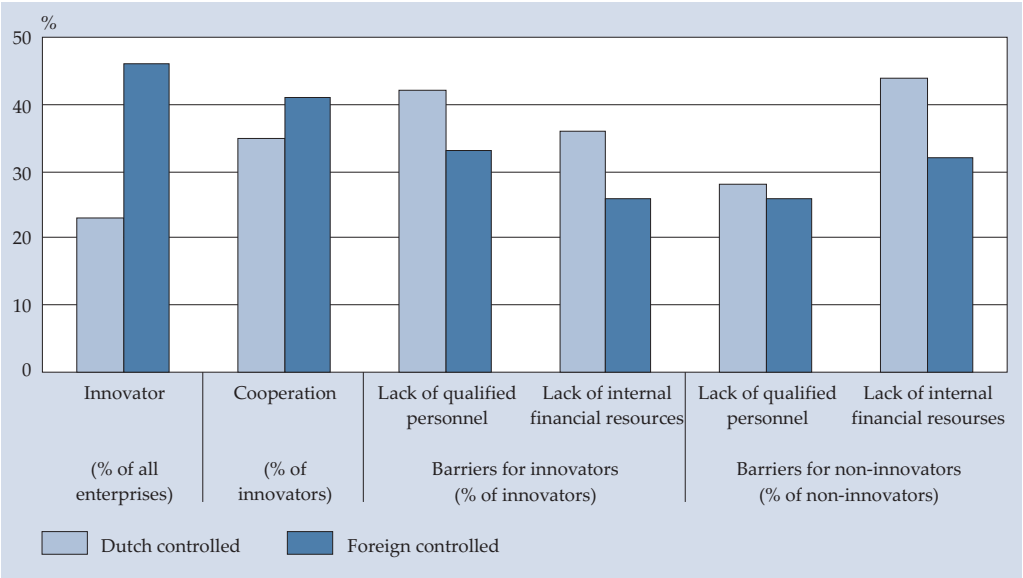
Graph A4.1 shows that foreign controlled enterprises are more often engaged in R&D activities, more often subcontract R&D to others (abroad and in the Netherlands), more often perform intra mural R&D (according to the international harmonised definition) and more often receive funding from others (abroad and within the Netherlands), as compared to Dutch controlled enterprises. Similarly, graph A4.2 shows that foreign controlled enterprises are more innovative than their

Dutch counterparts and cooperate more often during the innovation process. Foreign affiliates, innovators as well as non-innovators, experience fewer barriers to innovation compared to Dutch enterprises – both with respect to the availability of human capital and financial resources.

A4.1 R&D characteristics of foreign and Dutch controlled enterprises, 2004–2006



A4.2 Innovation characteristics of foreign and Dutch controlled enterprises, 2004–2006



Hence, it appears that the contribution of foreign controlled enterprises to R&D and innovation in the Netherlands is substantial. However, there are also other factors – in addition to foreign ownership – that may affect whether or not an enterprise

Table A4.1
Results of logistic regression of R&D and innovation variables

	Foreign controlled affiliate[1)]	Enterprises within an enterprise group [2)]	Operating on international market [3)]	Branch of industry		Size class	
				manufacturing [4)]	other [4)]	50–249 employees	250 and more employees
Innovator							
coefficient	0.218***	0.276***	0.908***	0.713***	–0.002	0.540***	1,147***
S.E.	(0.067)	(0.052)	(0.049)	(0.053)	(0.074)	(0.051)	(0.076)
Cooperation							
coefficient	–0.042	0.343***	0.324***	0.357***	0.307**	0.347***	1,087***
S.E.	(0.094)	(0.085)	(0.082)	(0.081)	(0.126)	(0.082)	(0.110)
Barriers for innovators							
internal financing							
coefficient	–0.135	–0.055	0.156**	0.602***	0.277**	–0.031	0.117
S.E.	(0.092)	(0.083)	(0.079)	(0.079)	(0.123)	(0.080)	(0.106)
lack of personnel							
coefficient	–0.264***	–0.009	0.168**	0.367***	–0.100	0.285***	0.365***
S.E.	(0.093)	(0.084)	(0.079)	(0.080)	(0.123)	(0.081)	(0.107)
Barriers for non-innovators							
internal financing							
coefficient	–0.136	–0.81	0.138**	0.469***	0.200***	–0.870	–0.229**
S.E.	(0.099)	(0.060)	(0.062)	(0.069)	(0.078)	(0.061)	(0.116)
lack of personnel							
coefficient	–0.319***	–0.135**	0.206***	0.223***	0.217***	0.159***	0.224**
S.E.	(0.101)	(0.060)	(0.062)	(0.071)	(0.077)	(0.061)	(0.111)
R&D activities							
coefficient	0.018	0.257***	1.077***	1.091***	0.150	0.593***	1.322***
S.E.	(0.074)	(0.062)	(0.059)	(0.059)	(0.092)	(0.061)	(0.084)
Extramural R&D							
coefficient	0.163*	0.477***	0.932***	0.754***	0.265**	0.628***	1.398***
S.E.	(0.084)	(0.081)	(0.075)	(0.073)	(0.113)	(0.078)	(0.097)
Intramural R&D							
coefficient	0.135	0.317***	1.365***	1.371***	0.085	0.851***	1.640***
S.E.	(0.090)	(0.087)	(0.088)	(0.078)	(0.145)	(0.086)	(0.107)
Funding from others							
coefficient	–0.057	0.204**	1.458***	1.359***	0.742***	0.536***	1.098***
S.E.	(0.092)	(0.082)	(0.086)	(0.077)	(0.12)	(0.080)	(0.106)

1) Compared to the enterprises with their head office in the Netherlands.
2) Compared to the enterprises not belonging to a group.
3) Compared to the enterprises only active on the domestic market.
4) Compared to the services sector.
5) Compared to the enterprises with 10–49 employees.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

engages in R&D. For example, firm size, being part of an enterprise group, or selling on international markets may all affect the probability of involvement in R&D and innovation activities. The results of the logistic regression analyses that address the impact of a number of these dimensions are displayed in table A4.1, and will be discussed in detail below.

Innovator

The model presented in the first row of table A4.1 has as its dependent variable whether or not an enterprise is considered an innovator (i.e., engaged in innovative activities). From the results we see that, also controlling for other factors, foreign controlled enterprises are more often innovative than Dutch enterprises. Yet other factors also play a role. Being part of an enterprise group (this variable differentiates between Dutch multinationals and other Dutch enterprises) positively affects the propensity of being an innovator. In addition, enterprises that are active on the international market are more likely to be innovative, and also enterprises in manufacturing, and larger enterprises, have a higher propensity to be innovative than to enterprises in services and SMEs, respectively.

Cooperation

Although our descriptive graphs above indicated that foreign affiliates tend to cooperate more during their innovation process than Dutch controlled enterprises, the analysis in table A4.1 shows that this effect is primarily driven by factors other than ownership. Being part of an enterprise group, and being active on the international market are much more important determinants of cooperation in innovative activities. Being active in the manufacturing industry contributes in a positive way to cooperation, compared to the services sector. And size class also plays a role. Primarily medium-sized enterprises (50–249 employees) are inclined to cooperate with others in innovation.

Barriers to innovation

The most frequently cited barriers to innovation are the lack of internal finances and the lack of qualified personnel. We analysed these for both enterprises that are engaged in innovation, and those that are not, but find that the barriers – as well as the factors influencing whether they are indeed experienced – are quite similar between innovators and non-innovators. The results of the regressions show that a lack of internal finances is a barrier that is mentioned across all types of enterprises, although enterprises in the manufacturing industry suffer more from this barrier than enterprises in the services sector. In addition, enterprises that are active on the international market have more problems with internal financing than enterprises operating only on the local or domestic market. The lack of qualified personnel experienced by innovators is a significantly smaller problem for foreign controlled enterprises. In addition, larger enterprises more frequently experience problems finding qualified personnel, as do enterprises that are

active on the international market. Similar results can be found for non-innovators.

R&D activities

Finally, table A4.1 provides the results for the regressions analysing engagement in R&D activities. The analysis shows that being a foreign affiliate only significantly influences whether enterprises engage in extra mural R&D – and not R&D activities in general, intra mural R&D, or external funding. The other variables – being part of an enterprise group, selling on the international market, being active in manufacturing, and firm size – have a much stronger influence on the propensity to engage in R&D.

R&D by Dutch MNEs abroad

In the 1960s and 1970s, corporate R&D activities were generally centralised in corporate laboratories in their home countries. However, from the 1980s onwards, enterprises integrated their R&D strategies into their overall business strategies, which became increasingly global. As a part of the trend towards globalisation and specialisation, international funding and subcontracting of R&D activities took off in the early 1990s. Funding from abroad became more and more important for private sector R&D, while also international subcontracting increased. Table A4.2 shows a breakdown of the extra mural R&D expenditures (subcontracting) and funding of R&D. It shows that in 2003, more than 20 percent (1,045 million euro) of the intra mural R&D expenditures in the Netherlands (4,806 million euro) was subcontracted and that more than 25 percent (1,273 million euro) was funded by non-Dutch sources. In 1970 these figures were 6 and 10 percent respectively.

In addition, the second column of table A4.2 presents the share of the ten largest enterprises – based on their intra mural R&D expenditures – in the various totals of the private business sector. It shows that these ten enterprises performed half of the R&D by the business sector.

Table A4.2 also shows that the extra mural R&D expenditures can be divided between expenditures in the Netherlands and abroad. The ten largest enterprises are responsible for 65 percent of the extra mural R&D expenditures of the business sector. It becomes clear that funding from abroad is the most important source of funding the R&D of the business sector. It has a share that is larger than that of the domestic private sector and the government together. Secondly, the funding from abroad consists almost entirely of financial flows within an enterprise group. Over half of these intra-company flows take place within the ten largest enterprises.

Hence the increased cross-border financial flows for R&D are dominated by a limited number of MNEs and the financial flows, especially the sources of funds from abroad, are almost entirely flows within an enterprise group. This picture

seems consistent with the increased international dispersion and integration of R&D activities of the MNEs with their overall business strategies, causing intra-company financial flows for R&D activities. The growing intra-company flows from abroad can partly be understood as flows from the production units of MNEs to their head offices in the Netherlands, because these production units make the money and have to contribute to the R&D of the company. The increased extra mural R&D expenditures abroad can partly be interpreted as subcontracting R&D within the enterprise group by their head office in the Netherlands to affiliates abroad.

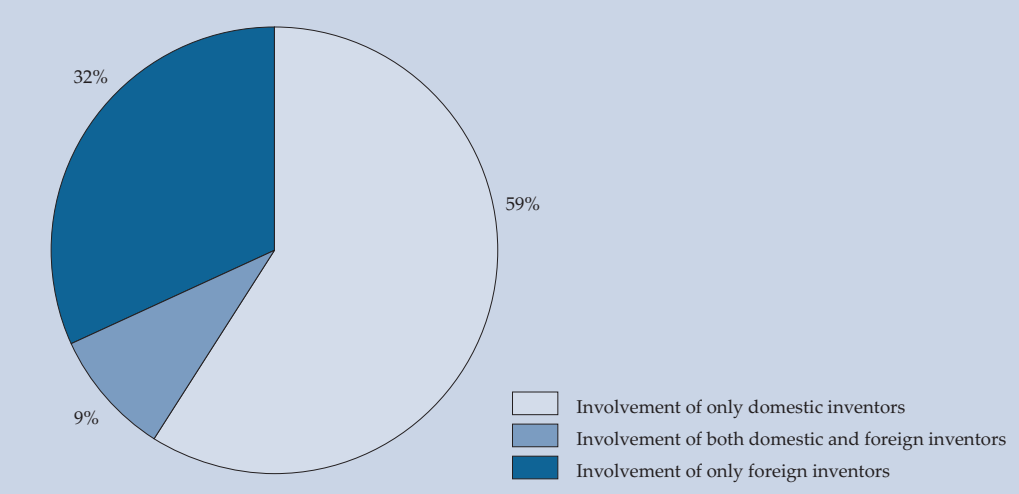
Table A4.2
Share of 10 largest Dutch MNE's in R&D variables of the business sector, 2003 [1)]

	Total business sector	Top 10 intra mural R&D expenditures
	million euro	*% of total business sector R&D*
Intra mural expenditures for R&D	4,806	51
Extra mural expenditures for R&D	1,045	58
of which		
home country	548	51
abroad	497	65
of which		
within own enterprise group	264	54
other	234	77
Funded by others	1,273	46
of which		
home country	410	42
government [2)]	183	49
abroad	679	48
of which		
within own enterprise group	618	53
other	61	1

1) Ten largest multinational enterprises based on their intra mural R&D expenditures.
2) Including subsidies from the EU.

Another approach to illustrating the internationalisation of research and innovation activities by Dutch controlled enterprises is to analyse the patents for which these enterprises apply. Patents are a rich source of information about technological performance and the organisational setting within which such performance was achieved. Patents show the inventor (i.e., an individual researcher) as well as the applicant (the owner of the patent at the time of the application), their addresses and country or countries of residence. In most cases, the applicant is an institution (generally a firm, university or public research institute).
Analysing the patent applications filed at the European Patent Office (EPO) by applicants from the Netherlands (see graph A4.3), we see that many are owned or

A4.3 Cross-border ownership of applications to EPO by Dutch residents[1], 2001–2005



Source: EPO Worldwide Statistical Database, April 2008

[1] Patent counts (EPO: Euro-direct and Euro-PCT) are based on the priority date and the inventor's country of residence, using simple counts

co-owned by applicants who are located outside the country of residence of the inventor(s). In the period 2001–2005 almost one third of the patent applications by applicants residing in the Netherlands were solely based on inventions made elsewhere.

An additional 9 percent of the patent applications were based on co-inventions of inventors located in the Netherlands and inventors located abroad. Such cross-border ownership is mainly the result of activities of MNEs, where the applicant is a conglomerate of enterprises with its head office in the Netherlands, and the inventor an employee of a foreign affiliate of this conglomerate. The results in graph A4.3 are consistent with the increased use of international subcontracting of MNEs to their foreign subsidiaries.

4.5 Summary and conclusions

This chapter analysed the internationalisation of R&D, addressing both the role of foreign controlled enterprises in the Netherlands, and that of Dutch controlled enterprises abroad. The increased internationalisation of R&D may not always be congruous with national policy goals to preserve and attract R&D. Questions remain with respect to a) the stability or 'stickiness' of R&D activities within

national borders, b) the contribution of R&D by foreign-controlled enterprises to national innovation and c) the locational and policy factors that attract (or deter) R&D.

The wide variety of questions posed with respect to the trends and consequences of internationalisation of R&D for the Dutch knowledge economy require an in-depth analysis of the available data. Given the high levels of concentration of R&D efforts – for example, more than 50 percent of the intramural R&D in the private sector in the Netherlands is accounted for by 10 enterprises – we explored in more detail how individual firm characteristics affect their R&D activities.

We started by addressing how foreign controlled enterprises compare with Dutch controlled enterprises with respect to their propensity to engage in a variety of R&D and innovation activities, and also pay attention to differences in their perceptions of potential barriers to innovation. We found that it is generally not the mere 'foreignness' of enterprises that affects the propensity to engage in R&D or innovation, but that it is the different composition of the sample of foreign enterprises with respect to other factors that affect R&D, such as company size, selling to international markets, and being part of an enterprise group, that determines that foreign controlled enterprises are more frequently involved in R&D and innovative activities compared to Dutch controlled enterprises. In particular, it seems that being part of an enterprise group (whether Dutch or foreign) is a much stronger predictor of whether or not enterprises engage in R&D and innovation.

While foreign controlled enterprises locate R&D and innovation activities in the Netherlands, Dutch controlled enterprises equally expand their R&D activities internationally to take advantage of a local market presence and proximity to foreign sources of highly skilled labour and specialists. The second part of our analyses describes the outward internationalisation of R&D from the Netherlands. For example, we established that by 2003, more than 20 percent of intramural R&D expenditures in the Netherlands was subcontracted (compared to 6 percent in 1970). Again, it is a small group of enterprises that is responsible for most international R&D: the top 10 enterprises accounted for 65 percent of all extramural R&D expenditure abroad.

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A5. *Effects of globalisation: wage differences between employees at Dutch and foreign controlled enterprises in the Netherlands*

Fabienne Fortanier and Marjolein Korvorst

5.1 Introduction

Economic globalisation in the form of increased international direct investment has a multitude of potential consequences. While the impact on productivity and economic growth is probably most often studied in the academic literature, the social consequences of Multinational Enterprise (MNE) investments and the effects of Foreign Direct investment (FDI) on employment are increasingly recognised as similarly important, and subject of growing research interest (see e.g. Görg, 2000; Lipsey and Sjöholm, 2004). At first sight, MNEs do not play a major role in absolute employment. The latest UNCTAD World Investment Report (2008) estimates suggest that worldwide only 82 million workers (or 2 percent of a total global workforce of 3.5 billion, see ILO, 2007) are directly employed by foreign affiliates. In an open economy such as the Netherlands, however, this share is substantially higher: foreign enterprises in the Netherlands employ approximately 17 percent of employees in the private sector (SN, 2008). However, it is not necessarily only the quantity of employment that is affected by FDI: MNEs also have the opportunity to create 'higher quality' jobs, given their size (and associated need for managerial capacity) and level of technology. In addition, their indirect (multiplier) employment effects may be substantial, due to linkages with local suppliers and buyers (cf. Bloom, 1992; Pack, 1997; UNCTAD, 1999).

In particular the wages paid by MNEs to their employees are considered to be an important way in which foreign controlled enterprises may contribute to host countries' economies and societies. Indeed, most empirical studies in non-Dutch contexts have now established that MNEs pay higher wages than domestic enterprises, both in developing and developed countries (Görg, 2000; Lipsey and Sjöholm, 2004; Caves, 1996), although the distributional effects of such premiums may be substantially higher for highly skilled labour and are therefore sometimes questioned (ODI, 2002; Lipsey and Sjöholm, 2004; Aitken et al., 1996). For the Netherlands, however, little is known empirically with respect to the impact of foreign investment on wages. Therefore, this paper analyses the difference in

average wages per employee between foreign controlled and domestically controlled enterprises in the Netherlands, using a newly developed integrated employer-employee dataset for the 2001–2005 period.

The remainder of this paper is organised as follows. First, we present some of the stylised facts from the existing theoretical and empirical literature that explored the question of foreign ownership and wages in other (i.e., non-Dutch) empirical contexts. We then briefly describe the process of matching employer and employee-level data, and subsequently present the results. We find that foreign enterprises indeed on average pay higher wages than domestically controlled enterprises (controlling e.g. for enterprise level variables like enterprise size and industry of activity). Wages at foreign controlled firms are on average 15 percent higher than those at domestically controlled firms. In addition, Dutch controlled firms with investments abroad pay 10 percent higher wages compared to domestic firms without foreign affiliates. Finally, we also establish effects that point at positive spillovers and increased competition on the labour market due to the presence of foreign investors: wages at domestically controlled firms are higher in industries where the share of foreign investors is higher. Traditionally, such wage differences are explained by differences in productivity. Furthermore, the frequently cited explanation that this wage differential can be explained by foreign enterprises preventing labour migration seems warranted, given that labour turnover at foreign enterprise does differ substantially from labour turnover at domestically controlled enterprises (reported in tables of chapter B6 in this Internationalisation Monitor).

5.2 *Theory and background*

The existing theoretical and empirical literature generally assumes and finds that MNE affiliates pay on average higher wages than local enterprises in host countries (Caves, 1996). This is the case both for developing countries (see e.g. Lipsey and Sjöholm, 2004), as well as developed countries: for example, inward FDI has been found to positively affect wages in the UK (Taylor and Driffield, 2005), Ireland (Barry et al., 2005) and the US (e.g. Figlio and Blonigen, 2000).

Higher wages might simply be triggered by the fact that foreign enterprises are more productive in general, due to their enterprise specific competitive advantages (Caves, 1996; Dunning, 1988). Enterprises need such advantages in order to compensate for the fixed costs that they encounter when entering foreign markets, such as costs associated with market exploration, the search for local business partners and other adaptation costs. Indeed, as we have seen in other publications of Statistics Netherlands (cf. SN, 2008; Fortanier and Van de Ven, 2009), foreign controlled enterprises in the Netherlands are on average more productive than

domestic ones. Another reason that explains the higher wages at foreign controlled firms is that they aim to refrain employees from switching jobs to domestically controlled competitors or to set up their own businesses (Globerman et al., 1994). This 'labour migration' is an important channel through which technology transfer from MNEs to local enterprises may occur, especially if workers also receive extensive on-the job training (Bloom, 1992; Pack, 1997; UNCTAD, 1999; Fosfuri et al., 2001).

In order to empirically establish to what extent and in what way foreign investors affect wages in the Netherlands, a simple comparison between wages paid at foreign and domestically controlled enterprise is not sufficient however. First of all, other factors are known or expected to affect both wages and the propensity of enterprises to be foreign controlled, including industry, enterprises size, and foreign activities. In addition, foreign firms may also affect wage levels at domestic firms, e.g. of those active in the same industry in which these foreign firms operate (Lipsey and Sjoholm, 2004; Driffield and Girma, 2003). Such so-called indirect effects may be due to the positive consequences of foreign investors for productivity at Dutch firms (through competition, and demonstration effects) that translates into higher wages, and by the increased demand for (primarily highly skilled) staff due to the entry of new foreign firms.

5.3 *Data and methodology*

In order to assess the consequences of economic globalisation (in the form of inward direct investment) for employees working in the Netherlands, we built an integrated employer-employee database that allows us to link employee level information (in the form of earned wages) with employer level information data, including enterprise size, sector of activity, and international investments. Foreign controlled enterprises have a centre of control outside the Netherlands, whereas Dutch controlled enterprises are nationally owned. The distinction enables an analysis of the consequences of inward foreign direct investments (FDI) in the Netherlands at the micro level.

The integrated employer-employee dataset presented in this paper consists of a sample of approximately 20 thousand enterprises from the General Business Register in each year (2001–2005), for which the locus of control (i.e., Dutch vs. foreign) is known from either the Financial Statistics of Large Enterprise Groups (SFGO) or the Community Innovation Survey (CIS) and for which the Social Statistics Database (SSB) employment data were available. The micro data integration occurred at the enterprise level with the unique enterprise identifier (BEID) as key variable. More details on the matching methodology are available in Fortanier and Korvorst (2009).

The sample of approximately 20 thousand enterprises forms only a relatively small part of the total population of approximately 600 thousand enterprises in the Netherlands. However, since this sample of enterprises contains a disproportionate share of large enterprises, they account for nearly 3 million jobs (full-time equivalent). This number is equal to 55 percent of the total number of jobs (fte) in the Netherlands, and 75 percent of the jobs (fte) in the private sector. This means that although the results should be interpreted with caution – in particular with respect to the sample of enterprises – the data give a clear perspective on the consequences for employees of working for foreign versus Dutch controlled enterprises.

In order to explore the differences in wages between foreign- and domestically controlled enterprises, we first present a set of descriptive tables. These tables compare the wages paid by foreign and Dutch controlled enterprises, over time and broken down by industry, size class, and foreign affiliates (i.e., if the enterprise has foreign affiliates itself or not). Subsequently we combine the various factors influencing wages in a regression analysis, in order to establish if foreign firms pay higher wages when other variables are controlled for. In this regression equation we also include a variable FDI, which measures for each industry the share of value-added accounted for by foreign controlled enterprises and thereby captures intra-industry spillover effects. The regression model includes time (α_t) and industry (δ_s) fixed effects and controls the standard errors for heteroskedasticity:

$$\text{LogWage} = \alpha_t + \delta_s + \beta_1 Size_{it} + \beta_2 ForControl_{it} + \beta_3 ForAffiliates_{it} + \beta_4 FDI_{it} + \varepsilon_{it}$$

5.4 Results

The first results are displayed in Table A5.1 – indicating the raw, uncontrolled wage differences between foreign and domestically controlled enterprises. We see that in the time-frame under investigation, foreign controlled enterprises pay consistently higher wages than domestically controlled enterprises. This difference also gets more pronounced over time.

Table A5.1
Average annual wage per employee at foreign and Dutch controlled enterprises

	Dutch controlled	Foreign controlled	T-value
	1,000 euro		
2001	32.6	39.8	–16.63***
2002	33.6	41.0	–20.42***
2003	34.9	43.2	–19.14***
2004	35.1	44.0	–21.39***
2005	35.6	46.5	–20.97***

***p<0.01; **p<0.05; *p<0.10.

However, this comparison cannot be made too readily: foreign controlled enterprises are often not equally represented across the various industries of the Dutch economy (and wages differ across industries); foreign controlled enterprises are also often larger (resulting in more managerial – highly paid – staff); and differ also in a number of other ways from domestically controlled enterprises, such as job productivity, working hours and the like. In addition, the sample of domestic enterprises is also not homogeneous: it includes both enterprises with activities only in the Netherlands, as well as enterprises that have international investments themselves (i.e., Dutch multinationals). In order to adequately compare wages at foreign and domestic enterprises, we need to control (at least) for these factors. Tables A5.2, A5.3 and A5.4 do exactly that.

Table A5.2 shows the average wage per employee at foreign and domestically controlled enterprises broken down by industry. It is clear that the wage differential between foreign and domestically controlled-firms remains present even within individual industries. The wage differences are highest in agriculture, mining, and food and beverages, as well as in trade and repairs, and business services. In financial intermediation, wages paid by domestically controlled enterprises are nearly as high as those paid by foreign enterprises.

Table A5.2
Average annual wage per employee at foreign and Dutch controlled enterprises by industry ('000 euro)

	2001			2005		
	Dutch controlled	Foreign controlled	T-value	Dutch controlled	Foreign controlled	T-value
	1,000 euro			*1,000 euro*		
Agriculture, forestry, fishing	26.5	38.8	–5.83***	28.0	41.0	–5.53***
Mining, quarrying	37.5	52.9	–4.15***	42.9	65.9	–5.38***
Food, beverages	27.6	35.5	–7.57***	31.7	41.6	–9.00***
Paper, paper prod, publishers	30.2	36.1	–7.67***	33.6	38.7	–5.88***
Chemicals/ plastics	30.7	37.7	–8.90***	36.1	44.3	–7.95***
Metal products	29.0	31.4	–3.29***	31.8	35.4	–4.12***
Machinery, equipment	30.2	33.6	–5.71***	34.2	38.3	–5.93***
Other industry	27.7	33.7	–12.20***	31.6	39.6	–13.46***
Construction	29.8	34.7	–4.37***	33.8	38.9	–5.03***
Trade, repairs	29.2	39.3	–20.03***	31.0	44.2	–25.73***
Hotels, restaurants	21.8	24.0	–3.38***	23.2	27.2	–6.02***
Transport, storage, communication	31.2	34.9	–5.10***	33.4	41.1	–7.94***
Financial intermediation	52.4	54.4	–0.5	50.7	64.2	–3.49***
Business services	39.7	50.1	–7.50***	44.8	60.9	–10.05***
Other services	30.4	33.6	–2.11**	32.0	50.9	–6.05***

*** p< 0.01; ** p< 0.05; * p<0.10.

The foreign controlled enterprises in our sample for the Netherlands are on average larger than domestically controlled enterprises. Table A5.3 gives a comparison of

wages at foreign and Dutch enterprises while taking into account enterprise size (measured by number of employees). Controlling for size classes, foreign controlled enterprises consistently pay higher annual wages than domestic firms, both in 2001 and 2005. Differences in annual wage between foreign and Dutch firms average around 15 percent. The wage differential however becomes less pronounced as enterprises are larger. This is likely due to the fact that very large enterprises often involve production plants with a large share of low-skilled (and hence low-paid) labour.

Table A5.3
Average annual wage per employee at foreign and domestically controlled enterprises by size class

	2001			2005		
	Dutch controlled	Foreign controlled	T-value	Dutch controlled	Foreign controlled	T-value
	1,000 euro			*1,000 euro*		
0– 4 employees	41.7	55.5	–5.38***	48.7	71.6	–6.70***
5– 9 employees	33.7	47.3	–7.97***	38.8	50.4	–5.18***
10– 19 employees	30.2	42.9	–15.22***	32.8	50.6	–14.99***
20– 49 employees	30.8	38.8	–10.99***	33.2	46.2	–20.17***
50– 99 employees	30.2	36.9	–11.93***	32.8	43.4	–18.14***
100– 149 employees	31.0	36.8	–8.57***	34.2	42.5	–10.27***
150– 199 employees	31.7	36.0	–4.98***	35.6	41.8	–3.46***
200– 249 employees	31.8	35.9	–4.13***	35.7	41.7	–4.20***
250– 499 employees	32.0	37.7	–3.81***	36.2	42.2	–6.65***
500– 999 employees	31.5	36.1	–4.20***	36.5	43.1	–4.07***
1,000–1,999 employees	30.7	35.4	–3.03***	36.7	42.3	–1.92*
2,000 and more employees	32.9	35.0	–0.77	35.7	40.5	–1.67*

*** p< 0.01; ** p< 0.05; * p<0.10.

International investments also play a mediating role in the annual wage level at (foreign and domestically controlled) enterprises in the Netherlands, as Table 5.4 shows. Enterprises with foreign subsidiaries pay substantially higher wages than enterprises of which the scope is confined to the Netherlands only – this applies to foreign and Dutch enterprises alike. Apparently, there is an additive correlation between locus of control of an enterprise and the existence of foreign affiliates: the lowest average annual wages are paid at Dutch enterprises without foreign subsidiaries whereas the highest annual wages are paid at foreign controlled enterprises which also have foreign subsidiaries (MNEs).

Table A5.5 shows the results of our regression analysis. The bivariate findings reported above are confirmed by these results. All the models control for time and industry effects, and show that the overall effect of firm size on wages is negative (though not very large). In addition, we see that foreign ownership is positively associated with wage levels: based on models 3 and 4, we see that also after

Table A5.4
Average annual wage per employee at foreign and Dutch controlled enterprises with of without foreign affiliates

	2001			2005		
	Dutch controlled	Foreign controlled	T-value	Dutch controlled	Foreign controlled	T-value
	1 000 euro			*1 000 euro*		
With foreign affiliates	37.6	40.7	–3.73***	44.4	49.2	–4.50***
Without foreign affiliates	34.1	38.8	–5.89***	37.8	47.6	–8.53***

*** p< 0.01; ** p< 0.05; * p<0.10.

controlling for the presence of Dutch multinationals (i.e. Dutch controlled firms with foreign affiliates), foreign firms pay on average 15 percent higher wages. Firms that have foreign affiliates themselves also pay higher wages compared to those that do not (10 percent), and also the presence of foreign firms in an industry is positively related to wages at domestic firms (see models 6 and 7 in particular). In an industry where 75 percent of the value added is controlled by foreign firms, wages at Dutch controlled firms are 10 percent higher than in industries where foreign firms only account for 25 percent of value added.

Table A5.5
GLS regression results (dependent variable: average annual wage per employee)

	Full sample					Dutch controlled enterprise	
	1	2	3	4	5	6	7
Constant	10.67***	10.62***	10.80***	10.76***	10.68***	10.62***	10.66***
	590.97	635.71	467.67	468.15	673.65	606.00	469.26
Size	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
	–11.45	–22.02	–21.41	–21.40	–20.48	–15.64	–17.92
Foreign controlled		0.25***	0.15***	0.14***	0.24***		
		76.34	33.99	31.52	72.61		
Foreign affiliates			0.09***	0.08***			0.09***
			21.99	21.62			19.08
FDI in industry				0.00***	0.00***	0.00***	0.00***
				17.36	26.19	22.37	11.96
Time fixed effects	Included	Included	Included	Included	Included	Included	Included
Industry fixed effects	Included	Included	Included	Included	Included	Included	Included
n	90,536	90,536	30,106	29,436	85,361	72,095	21,117
F	764***	1,005***	404***	422***	975***	585***	271***
R-square	0.14	0.20	0.24	0.24	0.19	0.14	0.23

Heteroscedasticity corrected t-values below the coefficients.

*** p< 0.01; ** p< 0.05; * p< 0.10.

5.5 Discussion

The key conclusion from this study is that foreign enterprises pay higher wages than domestically controlled enterprises. Controlling for enterprise size, sector and foreign investments, foreign enterprises pay 15 percent higher wages compared to their domestic counterparts.

Comparing these findings with other results from the linked employer-employee dataset used in this paper (reported in tables of chapter B5 in this Internationalisation Monitor), we can explore several reasons as to why this may be the case. First of all, we have already seen in previous work that foreign enterprises are on average more productive than domestic enterprises – clearly part of that productivity differential translates into higher salaries. Secondly, labour turnover, i.e. annual outflow of jobs, tends to be much lower at foreign enterprises than their domestic counterparts, see Table B5.7. This results in a higher retention rate of employees working at foreign enterprises, possibly mediated by a higher wage level in general. Furthermore, higher wages and hence higher retention rates might also be driven by more opportunities of training-on-the job, and greater job mobility within foreign enterprises compared to their domestic counterparts.

However, wages are not only dependent upon the enterprise-level characteristics explored in this paper. The prevailing academic literature on the determinants of wages also indicates that individual characteristics including education and work experience play a major role in wages. Table B5.8 highlights the differences between employees working for foreign and Dutch controlled enterprises. The data indicate that labour conditions differ between foreign and Dutch controlled enterprises: workers at foreign controlled establishments report longer average working weeks and more importantly, more overtime hours. Physically demanding or heavy work is more concentrated among employees at Dutch controlled enterprises. Interestingly though, the overall evaluations of labour conditions do not differ between employees at foreign and domestically controlled enterprises.

5.6 Conclusion and further research

This chapter analysed the differences in wages between foreign and domestically controlled enterprises in the Netherlands for the 2001–2005 period. We found that foreign enterprises on average pay significantly higher wages than domestically owned enterprises. More specifically, employees at foreign controlled enterprises earn on average 15 percent more than their counterparts at domestically controlled enterprises. We established however that this difference was not equally distributed across all industry sectors: in the sectors of paper and publishing, metal products,

machinery and equipment, as well as in construction and hotels and restaurants, foreign controlled enterprises paid about 15 percent more, whereas in the sectors of agriculture, mining, and food and beverages, as well as in trade and repairs, and business services, foreign controlled enterprises paid up to 50 percent higher wages. We also established that these differences are influenced by enterprise size. The wage differential between foreign controlled and domestically controlled establishments is lower among the very large enterprises.

These higher wages at foreign enterprises in part merely represent the higher in productivity levels at foreign controlled enterprises (see e.g. SN, 2008): because foreign investors need to overcome the fixed (often sunk) costs that are by definition involved in doing business overseas (e.g. exploration, adaptation costs), they will only engage in foreign direct investment if they believe they cannot only equal the performance of domestic enterprises but also outcompete incumbents. A second often cited reason in the academic literature that could explain for the wage differences between foreign and domestically controlled enterprises is that exactly because foreign controlled enterprises compete with local enterprises based on their technological advantages, they will pay their employees more than they would earn at local enterprises, in order to prevent labour migration (and subsequent unintentional knowledge spillovers) to domestic enterprises. We found indeed that employee turnover (i.e., employees leaving a enterprise each year as a share of total employees at that enterprise) does vary substantially between foreign and domestically controlled enterprises. This would mean that enterprises pay higher wages not only as a reflection of productivity differentials but also to prevent labour migration, resulting in better retention of skilled labour. However, to the extent that labour migration indeed represents the transfer of knowledge and skills across enterprises, these results bode somewhat less positive in the short run for the Dutch economy as a whole: knowledge that is embedded within foreign enterprises does not spread at the same rate as knowledge at domestic enterprises.

A third and final explanation comes from linking the findings of this paper to the results reported in table B5.8 on labour condition differences at foreign and domestically controlled enterprises. Work at foreign controlled enterprises is not only better paid but also more demanding: working weeks are longer, overtime is more prominent, and overall education levels of employees are also substantially higher. The sample of matched firms and employees is yet too small to draw strong conclusions or make more detailed inferences with respect to industry, but does seem to indicate that higher wages paid by foreign controlled enterprises also partly reflect more demanding labour conditions.

In addition to these direct effects, we also found evidence pointing at indirect effects: in an industry where 75 percent of the value added is controlled by foreign firms,

wages at Dutch controlled firms are 10 percent higher than in industries where foreign firms only account for 25 percent of value added. This may either reflect increased labour market competition, or Dutch firms benefiting from foreign entrants in terms of productivity increases (which in turn are partly transferred to employees). Further research in this area should elaborate this point, and will include a wider variety of dimensions of globalisation – not only including the activities of foreign enterprises in the Netherlands, but also of Dutch investment abroad, outsourcing, and international trade – and a more fine-grained analysis of the role of employee characteristics as determinants of wages, exploiting the multilevel structure of the linked employer-employee dataset.

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A6. *Effects of globalisation: the natural environment*

Roel Delahaye and Sjoerd Schenau

6.1 Introduction

There are many mechanisms through which globalisation affect the natural environment (OECD, 2002). For example, globalisation expands production and world economic output, as well as the consumption of polluting goods (scale effects). This can lead to growing pressures on the environment due to increased pollution and natural resource use. In addition, globalisation is characterised by a reallocation of production and consumption across sectors and countries (structural effects), with different consequences for the natural environment in each country. By improving structural efficiencies, globalisation can make new investments in environmental protection possible. At the same time, globalisation is paired with the development and diffusion of new technologies (technology effects), resulting both in new products and services, as well as more efficient production processes (Fortanier and Maher, 2001). Increased environmental regulations provide an incentive for multinational enterprises and other firms to innovate in areas that improve resource efficiency or reduce industrial waste. Once developed, new technologies can be applied on a worldwide basis by the multinational, in order to benefit from economies of scale.

It is not within the scope of this paper to address all these elements related to the consequences of globalisation for the natural environment in the Netherlands. Instead, we concentrate on two key issues. First, we address the globalisation of *inputs* of the production process, in particular the use of (non-renewable) energy sources. Economic growth is generally paired with an increased use of energy carriers, which results in a worldwide depletion of natural resources such as oil, coal and gas. Often, these natural resources are imported, which increases the dependency of the Dutch economy on other countries with respect to those energy sources, and affects energy security. We analyse how the dependency of the Dutch economy on external sources of energy has developed over time, and how it varies across energy sources, sectors, and geographic regions.

Secondly, this paper investigates the international dimensions of one of the *outputs* of economic activity: the Dutch contribution to climate change as a result of CO_2 emissions. We include both the production and consumption points of view.

From a production point of view, globalisation leads to an increase in international transportation and tourism. In addition, developed countries may also 'export' their pollution by decreasing domestic production of pollution intensive products and increasing imports of these goods. In contrast, the consumption approach considers global pollution as a result of Dutch consumption demands. Until now most policies regarding climate change, for example the Kyoto protocol, focus on reducing CO_2 emissions that occur during the production processes. However, recently the Social and Economic Council of the Netherlands advises the government to promote sustainable consumption by taking the (global) production chain into account (cf. SER, 2008).

The remainder of this paper is structured as follows. The first section discusses the data and methodology used to address the consequences of globalization for the natural environment for the two selected issues. Subsequently, section 6.3 shows the results of the analyses of the relationship between The Netherlands and other countries with regard to the supply and use of energy carriers. Section 6.4 then addresses the effect of Dutch production and consumption on global CO_2 emissions. The final section summarises the main findings and suggest several areas of further research.

6.2 *Methodology*

The data that are discussed in this paper are derived from the Dutch environmental accounts (CBS, 2009). Environmental accounts are satellite accounts of the national accounts and have been developed to link environmental and economic statistics. They provide an excellent basis for understanding and analysing the relationship between globalisation, the economy and the natural environment. Environmental accounting has a long history of international coordination culminating in the System of Integrated Environmental and Economic Accounting (SEEA; UN et al., 2003). The SEEA handbook was produced to provide an overview of a variety of environmental accounts.

The environmental accounts are consistent with the national accounts. This means that many of the national accounting aggregates which are affected by globalisation (GDP, exports, imports and transportation) can be linked to environmental indicators. Also, environmental accounts can be linked to the economic input-output tables, and can hence be used for input-output modelling. This type of economic modelling provides a good basis for in-depth environmental-economic analyses, including investigations of the impact of globalisation and the environment. In the next section the applications of the environmental accounts are illustrated, first with respect to energy dependency, and then for CO_2 emissions.

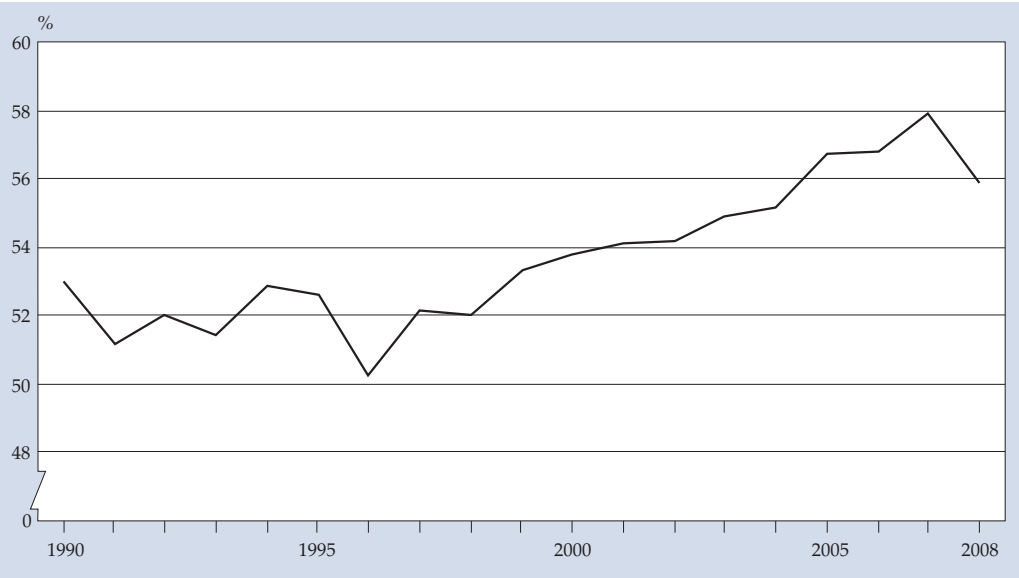
6.3 *Energy dependency*

Energy is essential to all economies, both as input for production and as a consumer good. Energy carriers such as oil, coal, and natural gas, can either be extracted from a country's own territory or imported from other countries. When many energy carriers have to be imported, a national economy will become very dependent on these other countries.

Such so-called energy dependency can be defined in several different ways. What makes a univocal definition problematic is that part of the imported and extracted energy carriers are not for domestic use, but destined for export. For example, in the Netherlands a large part of the imported crude oil is exported again after conversion by refineries into oil products like diesel and petrol. Therefore, energy imports cannot be directly related to energy use in order to calculate the energy dependence. In this study energy dependency is calculated as the share of net domestic energy consumption that originates from imported energy products [1)]. Defining the energy dependency in this way has the advantage that energy dependence can be related to domestic energy consumption as well as to different industries.

The net domestic energy consumption of the Dutch economy has increased by 23 percent since 1990. Particularly the energy use of the aviation sector, the chemical sector, the refineries and the electricity producers has increased. As graph A6.1 shows, in 2008 the energy dependency of the total Dutch economy amounted to

A6.1 Energy dependency Dutch economy on foreign countries

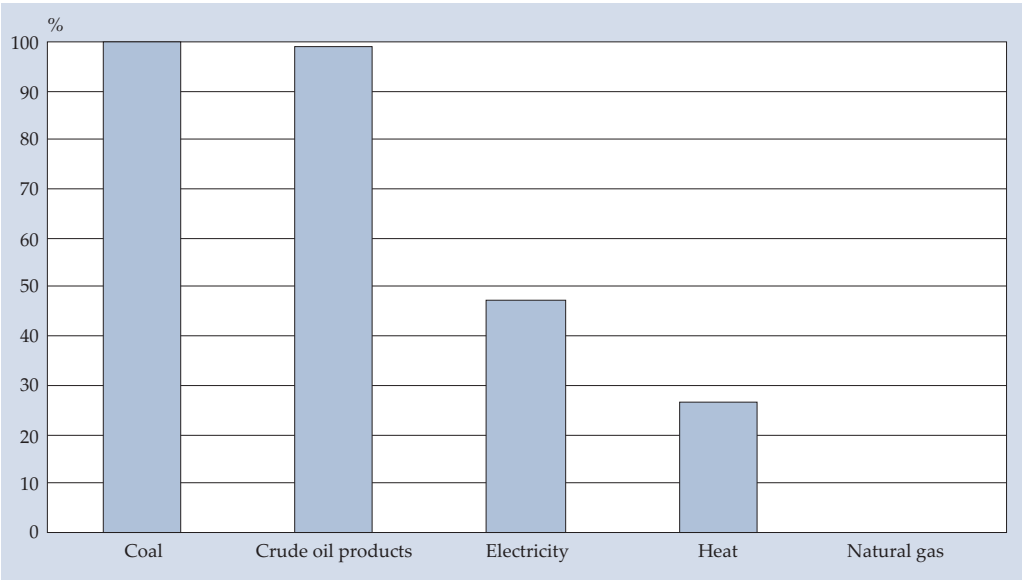


56 percent. This means that 56 percent of the net domestic energy consumption originates from foreign countries, whereas the remainder was extracted within the own country. The Netherlands has substantial stocks of recoverable natural gas beneath the surface. Since its discovery in the fifties and sixties of the previous century, natural gas has been extracted for the benefit of the Dutch economy. So, the Netherlands is self supporting with respect to natural gas. For oil and coal, however, the situation is completely different. The few oilfields on Dutch territory do not supply nearly enough crude oil to meet the large demand for oil products. Since the closure of the coal mines in the province of Limburg all coal is imported.

Over the last ten years the Dutch economy has become increasingly dependent on energy carriers from other countries. Imported energy rose from 51 percent in 1997 to 58 percent in 2007. The increase in import dependency is mainly due to the increased demand for crude oil products. In the nineties the growing demand for crude oil products was compensated by the increasing use of natural gas by power plants for the production of electricity. From 2000 onwards the domestic demand for natural gas has remained stable. Between 2007 and 2008 the energy dependency decreased because of an increase in the domestic demand for gas and a decrease in the domestic demand for oil products. The lower demand for oil products, particularly in manufacturing, is a direct result of the financial crisis.

The import dependency is different for each energy carrier (see graph A6.2). With regard to natural gas, the Netherlands are self supporting due to large subsoil

A6.2 Dependency on the import of energy carriers, 2007

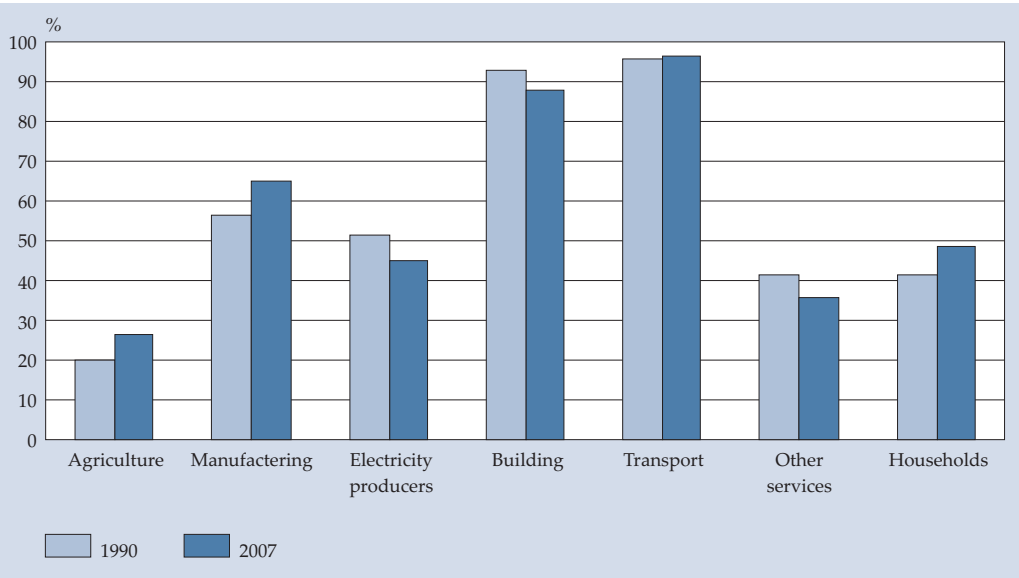


reserves. Coal, and almost all crude oil and related products, however, have to be imported. The import dependency of electricity amounts to around 50 percent. Most of the electricity is generated by burning imported coal or domestic natural gas. Around 15 percent of the electricity is directly imported.

By analysing the energy use of different industries it is possible to estimate their energy dependency. As graph A6.3 indicates, agriculture is least dependent on energy imports. This is because horticulture, which consumes by far most energy in the agricultural sector, primarily uses gas to heat greenhouses. In contrast, the transport and building sector are highly dependent on imported energy. These industries mainly use oil products, such as diesel, fuel oil, petrol, and asphalt. Manufacturing is dependent on energy imports for 60 percent. This percentage has increased over the last eighteen years, mainly because of the growing turnover in the refineries and chemical sector. Electricity companies have become less dependent on other countries for their energy supply. This is because in the nineties the electricity companies have been using more gas than coal for the production of electricity. Households are dependent on energy imports for approximately 50 percent, as they are using a mix of gas for heating and petrol for their cars. This percentage has also increased for households in the 1990–2007 period, as motor fuels became more important in their total energy consumption.

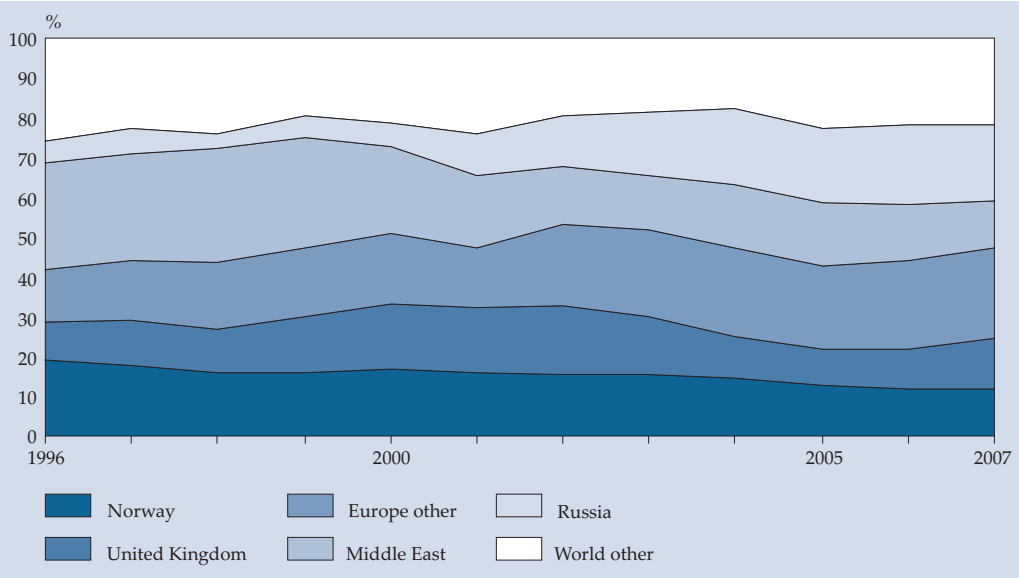
The Netherlands depends on a number of countries for its energy supply, see graph A6.4. Nearly 50 percent of energy is imported from other European countries.

A6.3 Dependency on the import of energy carriers by industry



Coal is mainly supplied by the United States and South Africa. Crude oil is imported from Russia, the Middle East and Africa (Algeria). The last decade saw a shift in the import of crude oil from the Middle East to Russia. The import of oil and gas from Norway decreased, whereas the import of these products from Belgium and Germany increased. The oil and gas from Belgium and Germany were probably not extracted within these countries, but imported from elsewhere. So, the energy dependency is spread over a large number of countries.

A6.4 Imported energy by geographic region



6.4 CO_2 emissions

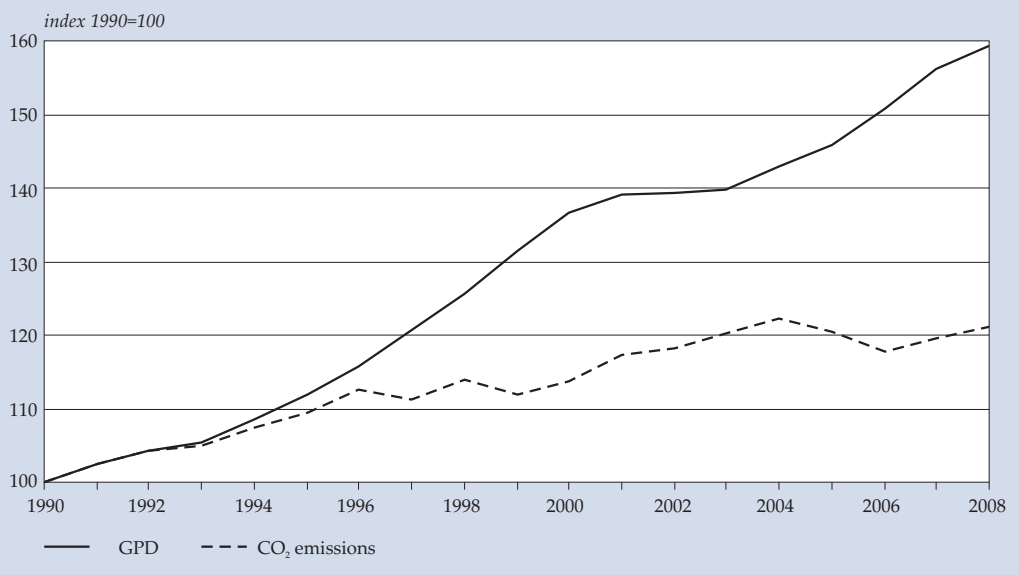
6.4.1 CO_2 emissions related to Dutch production

The relationship between economic growth and environmental pressures has been a major issue in environmental economics. Some academics expect that the positive correlation between economic growth and environmental pressure will reverse, as higher incomes would result in higher demands for environmentally friendly products. Others expect that such decoupling between economic growth and environmental pollution will be impossible in the long run.

In graph A6.5 we show the relationship between economic growth and CO_2 emissions for the Netherlands. The graph indicates that, *relative decoupling* took place in the Netherlands in the 1990–2008 period: i.e., the growth rate of CO_2 from production processes was lower than the GDP growth rate. However that relative

decoupling has still lead to a net *increase* in total emissions. Only *absolute decoupling*, whereby environmental emissions actually decrease, can lead to reduced environmental pressures.

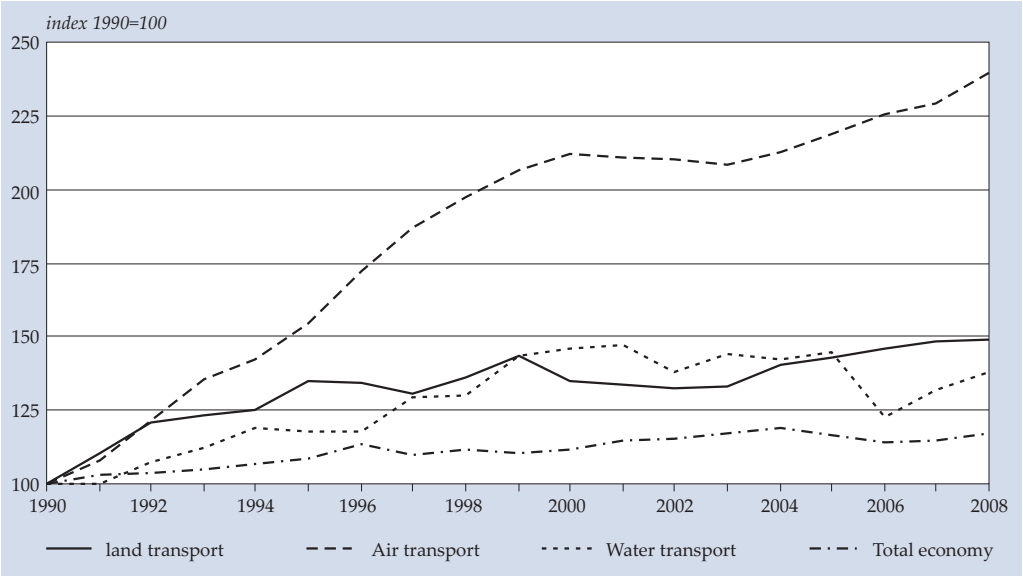
A6.5 Development of CO_2 emissions and GPD in the Netherlands



However, decoupling for a single country does not inevitably lead to reduced global environmental pressure. From the Dutch perspective decoupling represents a positive development, but this does not automatically translate into absolute decoupling on a global scale. The contrary could be the case – decoupling in the Netherlands could actually go hand in hand with global increases in emissions, if for example CO_2 intensive products are increasing imported from the rest of the world. To make a balanced assessment of the relationship between economic growth of the Dutch economy and CO_2 emissions, the international re-distribution of production and consumption patterns should be considered (see section 6.4.2).

Transport activities, and their related CO_2 emissions, often take place beyond the Dutch border. Graph A6.6 shows the emissions caused by different means of transport (in the Netherlands and abroad). It shows that globalisation has caused the emissions of the Dutch transport industry to increase much more rapidly than the domestic emissions of residents. Emissions from air transport have more than doubled in this period. This can be explained by the increases in international transportation activities in the last eighteen years.

A6.6 Development of CO_2 emissions for different means of transport



6.4.2 *CO_2 emissions related to Dutch consumption*

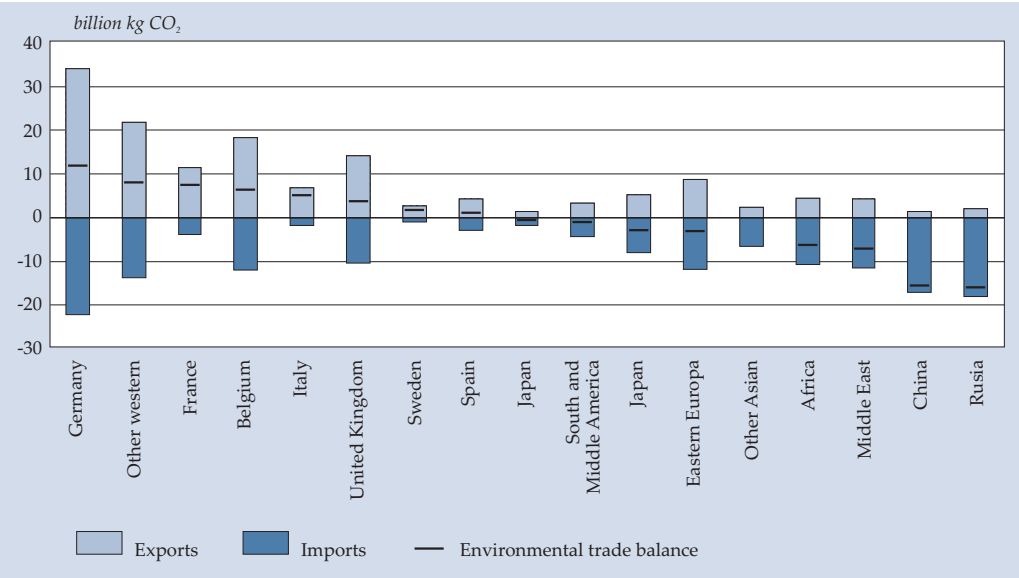
Environmental pressures are not only 'exported' by international transport but also by reallocating CO_2 intensive industries abroad. Industries that produce CO_2 intensive products may go abroad because of more lenient environmental regulations, for example. These products are then simply imported. This mechanism will lead to decreases in the national CO_2 figures because the CO_2 emitted in production processes abroad to produce our imports are not taken into account. This process is sometimes referred to as 'carbon leakage' or the 'pollution haven hypothesis' (PHH). The hypothesis is basically that developed countries specialize in clean production and start to import the 'dirty' products from developing countries. In order to investigate this issue, a shift from a production approach to a consumption approach should take place. What global environmental pressures occur as a result of our final consumption requirements?

The environmental accounts provide an excellent opportunity to investigate the consumption approach by estimating the 'environmental balance of trade' for the Netherlands in an input-output model (de Haan, 2004). The environmental balance of trade is equal to the embodied emissions in exports minus those in imports. Embodied emissions are the emissions that have occurred during the whole chain of production processes involved in making a particularly commodity. The model attributes emissions to exports and imports irrespective of the location (domestic or abroad) where the emissions take place. Worldwide emissions as a result of Dutch consumption needs can be estimated by subtracting the environmental trade balance from the emissions produced by Dutch residents.

Graph A6.7 shows the CO_2 emitted in each region to produce imports to the Netherlands and the CO_2 emitted in the Netherlands to produce exports to each region. The difference is presented as the environmental balance of trade. The CO_2 emissions per unit output of an industry are based on the production technologies applied in different regions of the world. The overall CO_2 balance of trade is negative. A negative balance indicates that global CO_2 emissions as a result of Dutch consumption needs are higher than the emissions produced by Dutch residents. Especially non-western countries show a negative trade balance. Their level of emissions associated with the manufacturing of the goods consumed in the Netherlands is higher than visa versa. The use of less 'clean' production technologies in developing countries is one reason for the negative balance. Furthermore, energy-intensive raw materials are imported while, at the same time, exports to developing countries are low. The negative balance for China is a result of the latter: import volumes from China are more than 7 times the export volumes to China. For Russia and Africa the negative balance can be attributed to the large imports of emission-intensive resources like crude oil. The import of oil from Russia amounts to 6 billion euro. This is more than half of the total import value from Russia and about equal to the total export value to Russia. The positive CO_2 balance with western countries is mainly due to the export of emission-intensive products like products made from crude oil, chemicals and horticulture products.

The development of the environmental balance of trade indicates the displacement of polluting industry between the Netherlands and foreign countries. Because no

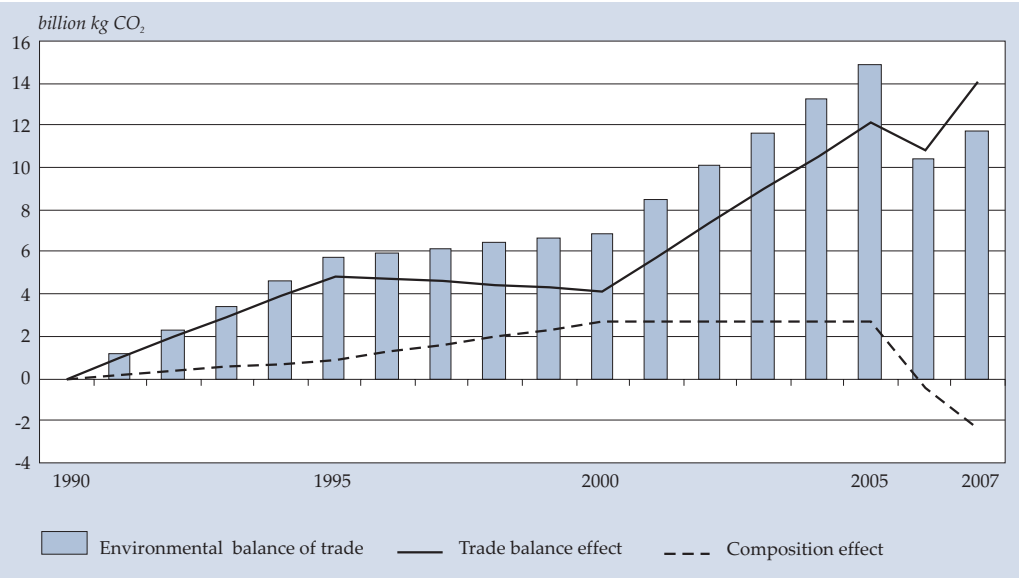
A6.7 Bilateral environmental trade balance for CO_2 by geographic region, 2007



time series of foreign emission coefficients is available, Dutch emission coefficients are also used for foreign countries. Thus, it is assumed that the imported goods are produced with the same emission intensities (CO_2 emissions per unit output) as the Dutch economy. Graph A6.8 shows an environmental balance of trade that is increasing slightly in time. On aggregate, it appears that the Netherlands is not shifting its environmental burden abroad in the case of CO_2 emissions. In fact, the opposite is true – our deficit for CO_2 emissions is decreasing.

The environmental balance of trade can be decomposed into a product composition and trade balance effect. The balance of trade effect indicates that part of the environmental trade balance can be attributed to volume differences between import and export. The Dutch economy has a substantial trade surplus that increases over time. The trade balance effect results in a decrease of the net environmental burden abroad that becomes stronger over time. The composition effect quantifies that part of the environmental trade balance resulting in differences in product composition between import and export. From 1990 to 2005 the composition effect increased over time. Dutch export products became relatively more environmentally intensive. The negative composition effect in 2006 is partly due to the increased import of electricity, resulting in a higher share of emission intensive products in the imports.

A6.8 Breakdown of the environment balance of trade



6.5 Conclusions and future research

Two important mechanisms by which globalisation affect environmental pressures are discussed in this chapter. The first section is about the relationship between the Netherlands and other countries with regard to the supply and use of energy carriers. In the last ten years the Dutch economy has become more and more dependent on energy carriers from other countries. The increase in import dependency is mainly due to an increased demand for crude oil products. The transport and building sector mainly use oil products and therefore they are very dependent on imports. The energy dependency is spread over a large number of countries. Almost 50 percent is imported from European countries. In the last decade there has been a shift in the import of crude oil from the Middle East to Russia.

The second section is about the effect of Dutch production and consumption on global CO_2 emissions. Relative decoupling is taking place in the Netherlands i.e. CO_2 increases less than GDP. This positive development does not go hand in hand with global increases in emissions. A negative environmental balance of trade indicates that global emissions as a result of Dutch consumption needs are higher than the emissions produced by Dutch residents. From the increase of the environmental balance in time, it appears that the Netherlands is not shifting its environmental burden abroad any further in the case of CO_2 emissions. In fact, the opposite is true – our deficit for CO_2 emissions is decreasing. Looking at bilateral balances of trade for the Netherlands with other countries or regions we find a negative balance for non-western countries and a positive balance for western countries.

In the future, our understanding of the complex relationship between globalisation and the environment could benefit from improvements in the source statistics, increased research into indicators such as the environmental balance of trade and increased international coordination. Data on the CO_2 (and other greenhouse gasses) emission coefficients of individual countries, especially those outside Europe, could be improved. There is already statistical coordination by Eurostat and other institutes in collecting data and a single widely accepted method to estimate the balance of trade is already being developed. International consensus would enhance the use of indicators, such as the environmental balance of trade, as a tool for policymakers to develop policies that take the influence of globalisation on environmental performance into account.

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Note in the text

1) The net domestic energy consumption equals the final energy use for energetic and non energetic purposes plus the transformation losses by residents.

Part B

B1. International trade in goods of Dutch enterprises

Introduction

The aim of chapter B1 is to describe the pattern of international trade in goods of enterprises in the Netherlands. This is a demonstration of recent developments in the international trade statistics and provides further insight into the population of Dutch traders. International trade flows of 2007, in terms of commodities and partner countries, are enriched with enterprise characteristics such as economic activity or size class. As of yet, the matching process and its results are in the pilot phase, which implies that the findings presented in this chapter are preliminary. These tables support chapter 1 'Measuring globalisation: factors influencing the commodities exports of SMEs and large enterprises' in part A of this publication.

The international trade in goods statistics describe the value and volume of goods crossing the Dutch border on a monthly basis. Approximately 10 thousand commodities and around 250 trading partners can be distinguished. To obtain these data, Statistics Netherlands conducts a monthly survey on intracommunity trade and obtains information on extra-EU trade flows mainly from customs [1)].

Approximately 76 percent of total Dutch exports and around 81 percent of Dutch imports in 2007 were assigned to enterprises in the General Business Register (GBR). This amounts to circa 263 and 249 billion euro respectively. However, attributing international trade flows to enterprises is not possible for all traders. Some traders are not registered in the GBR simply because they have no establishment in the Netherlands. These foreign enterprises are allowed to trade within or via the Netherlands since they are either registered for VAT or because their VAT- and/or customs duties are deferred to a fiscal representative. Other reasons why some traders cannot be matched to an enterprise in the GBR are e.g. trade reported via customs declaration checkpoints or enterprise birth/death during 2007. Approximately 60 percent of the 'unmatched' trade consists of re-exports, compared to 45 percent for total Dutch exports in 2007.

SME: small or medium-sized enterprise. An SME is an enterprise that employs less than 250 people. A small enterprise employs less than 50 people and a medium-sized enterprise employs between 50 and 249 people.

Re-exports: commodities, in temporary custody of a Dutch resident, which are transported through the Netherlands without any significant industrial processing. Re-exports are commodities that are cleared for customs by for instance Dutch distribution centers and distributed to other countries (mostly European Member States). Contrary to quasi-transit trade, re-exports are part of Dutch international trade (National concept).

(Dutch) enterprise: an enterprise is the actual transactor in the production process, characterised by independence in decisions about the process and by providing products to others. As a result of the definition and particular the required independency, one enterprise can comprise several local units or several legal units. Whether or not an enterprise is foreign or Dutch controlled, according to the principle of Ultimate Controlling Unit (UCI) is not investigated in this chapter. Here, the term 'Dutch enterprise' merely refers to the geographical location of the enterprise; in our case the Netherlands.

B1.1 The international trade in goods of enterprises

In terms of international trade in goods, 2007 was a good year for the Dutch economy. It was the fifth year in a row that the imports and exports increased compared to the previous year. In 2007, the Netherlands exported commodities at a value of 347.5 billion euros, which was 9 percent more than in 2006. The import of commodities increased by almost 8 percent compared to 2006. The resulting trade surplus of 40.2 billion euro was the largest surplus ever recorded in Dutch trading history. It had increased by almost 20 percent compared to 2006.

Economic transactions such as (international) trade, investments or job creation are often associated with large multinationals. Yet, large enterprises are far outnumbered by small and medium-sized enterprises (SMEs). In 2007, over 99 percent of the enterprise population was characterised as SMEs [2)].

In terms of the Dutch enterprise population, roughly 13 percent of all Dutch enterprises had imported commodities in 2007 and approximately 8 percent had exported goods. Since SMEs make up for the majority of the Dutch enterprise population, the share of SMEs active in international trade in the total SME population is similar to the share in the total population.

In 2007, around 46 percent of the total Dutch import value and approximately 42 percent of the export value of goods was carried out by SMEs. In euros, this amounted to circa 140 billion euro of imports and 145 billion of exports. Large enterprises accounted for at least a third of the total import and export value, or 109 and 118 billion euro respectively.

In most cases, an SME is an independently operating enterprise, able to make its own decisions about production, financial matters and employment. However, in some cases an SME is part of an enterprise group that, as a whole, employs more than 249 people. SMEs with such a link to a large enterprise group are called 'dependent SMEs' in graph B1.1a. In terms of numbers, most SMEs were independent, but in terms of value approximately 10 percent of total trade in 2007 belonged to affiliated SMEs [3)].

The economic activities of such dependent SMEs seem to be somewhat different than those of independent SMEs. In 2007, dependent SMEs were relatively more active in the sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel and in the supporting and auxiliary transport activities; activities of travel agencies (NACE 50 and 63). They are less frequently found in the wholesale industry than independent SMEs (see table B1.6 for more information on trade by industry). The re-exporting activities of dependent SMEs are, however, not different from those of independent SMEs.

B1.1 International trade in goods by enterprise type, 2007

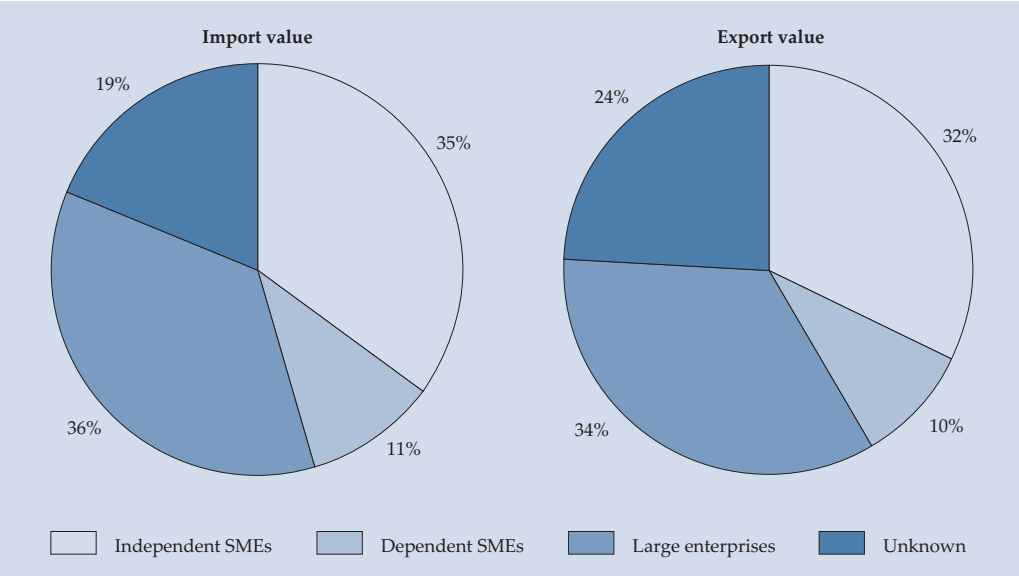


Table B1.1
International trade in goods by enterprise type, 2007

	Import value		Export value	
	billion euro	*%*	*billion euro*	*%*
Total	307.3	100	347.5	100
SMEs	140.1	46	145.0	42
independent SMEs	107.7	35	111.8	32
dependent SMEs	32.5	11	33.2	10
Large enterprises	109.1	36	118.2	34
Unknown	58.0	19	84.3	24

B1.2 The trading partners of enterprises: imports

The total Dutch import of commodities can be divided into goods coming from EU-partner countries and commodities imported from other countries in the world. The import of commodities by large enterprises amounted to 109 billion euro in 2007 while SMEs imported commodities at a value of 140 billion (see also table B1.1). The remaining import value could not be assigned to an enterprise (see precursor).

Graph B1.2 shows that, in 2007, the Netherlands obtained 56 percent of the total import value of commodities from EU-26 countries. Large Dutch enterprises imported approximately 50 percent of their materials and intermediate products from EU-countries, while for SMEs the intra-EU imports comprised almost two-thirds of their total import value. Small enterprises imported approximately the same share of their imports from EU-countries as medium-sized enterprises.

The finding that SMEs import significantly more from EU-countries than from non-EU-countries compared to large enterprises, is in line with economic theory and empirical evidence, stating that geographical distance reduces trade flows. The transaction and transport costs involved with exporting are larger the more remote the foreign market and such costs are easier to incur by large enterprises than by small businesses.

A further distinction in the trade pattern of SMEs and large enterprises can be made by disaggregating their imports into continents and regions. Table B1.2 shows the country of consignment, which is often also the country of origin, of Dutch imports. For both SMEs and large enterprises the share of imports coming from Western Europe was the largest, respectively 51 and 54 percent [4)]. The fact that the SME share of trade with Western Europe was lower than the total share of 56 percent is because approximately 9 percent of SME imports cannot be assigned to a specific EU-country.

In terms of imports, Germany and Belgium were the most important trading partners of the Netherlands, closely followed by China and the United States. Asian countries were the second most important import partners of Dutch enterprises, followed by North America.

Remarkable is the relatively high share of SME imports from Asia. Approximately one fifth of their total imports came from Asian countries, in which China plays an increasingly important role (see also chapter B2). Large companies also imported a significant share of commodities from Asia as well as from North America. Middle-eastern countries are above all a source of valuable fossil fuels, imported by large Dutch enterprises or Dutch affiliates of foreign multinationals. SMEs imported relatively little from middle-eastern countries.

B1.2 Intra versus extra-EU imports of enterprises, 2007

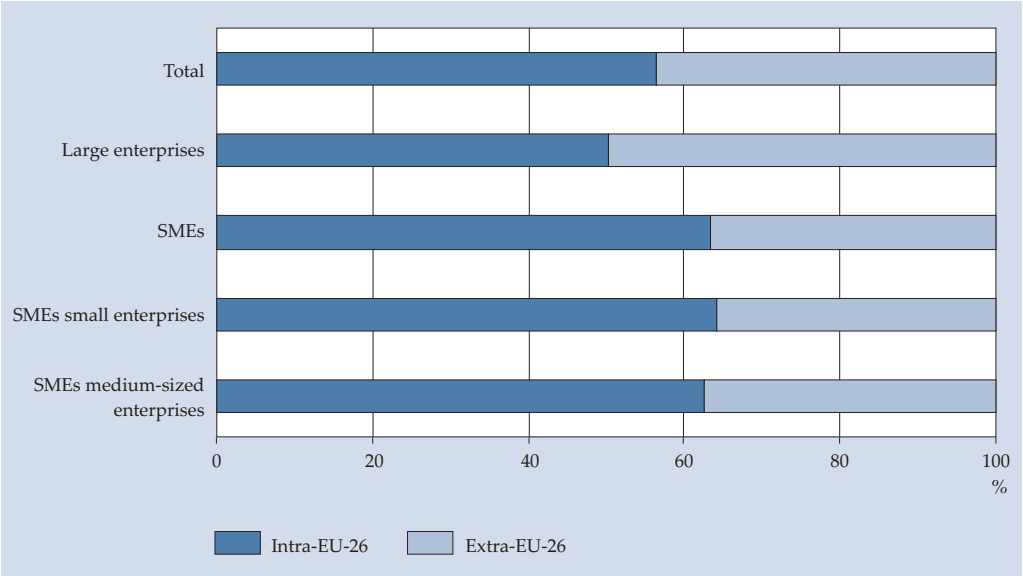


Table B1.2
Imports by continent of origin/consignment; large enterprises versus SMEs, 2007

	Total		Large enterprises		SMEs	
	million euro	*%*	*million euro*	*%*	*million euro*	*%*
Total	307,274	100	109,127	100	140,132	100
Europe	194,546	63	66,931	61	94,323	67
Western Europe	172,215	56	55,508	51	75,064	54
Eastern Europe	22,143	7	10,793	10	6,685	5
Unknown Europe	188	0	630	1	12,574	9
North America	25,762	8	12,060	11	9,216	7
Central and South America	11,244	4	4,213	4	4,776	3
Asia	56,729	18	14,929	14	26,012	19
Middle Eastern countries	8,853	3	6,238	6	1,581	1
North Africa	3,882	1	2,443	2	1,298	1
West Africa	1,725	1	856	1	516	0
Central, East and South Africa	3,480	1	1,091	1	1,942	1
Oceania	968	0	357	0	417	0
Unknown	86	0	8	0	49	0

B1.3 The trading partners of enterprises: exports

The exports of enterprises can be divided into exports (including re-exports) going to an EU-country and exports to the rest of the world. Graph B1.3 shows that 25 percent of Dutch exports were destined for countries outside the European Union in 2007. In other words, 75 percent of the value of Dutch exports (including re-exports) was destined for the internal market.

Roughly the same export pattern was found for both large and medium-sized enterprises. Yet, small enterprises were relatively more focused on exporting to EU-countries. Circa 84 percent of their exports went to an EU-partner country, of which Germany and Belgium were the most important. The share of intra-EU exports of medium-sized companies was approximately ten percentage points less. For SMEs as a group, this culminated in a 78 percent share of intra-EU exports in total exports, due to the large number of small enterprises involved.

As was also concluded in terms of imports in B1.2, the presence of transaction and transport costs, causes enterprises to export relatively more commodities to neighbouring, EU-countries rather than to countries located further away. Small enterprises are more likely to do so than large enterprises, since large enterprises are more capable of overcoming these costs. Moreover, the nature of business may also differ between large enterprises and SMEs. Large enterprises are often part of an international network of enterprises, engaged in optimising their production process, which also leads to cross-border (intra-company) commodity flows involving many countries and products. Although the incentive to export is different for each individual firm, smaller firms are more likely to export to countries close to home while large enterprises are also capable of servicing remote markets.

In table B1.3 the destination of Dutch exports is presented in more detail. As was the case with imports, Western Europe dominates the export pattern of Dutch enterprises in 2007 (see also footnote 5). The bulk of Dutch trade still takes place with familiar and/or neighbouring countries even though the EU has expanded to include Eastern European countries. For both SMEs and large enterprises, the share of trade with Western Europe was by far the largest.

As a destination of Dutch exports, Eastern European countries came in second, closely followed by North America and Asia. SMEs exported relatively more commodities to Eastern Europe, while the exports of large enterprises were more focused on Asia and America. African countries and Oceania played only a minor role in Dutch exports.

B1.3 Intra versus extra-EU exports of enterprises, 2007

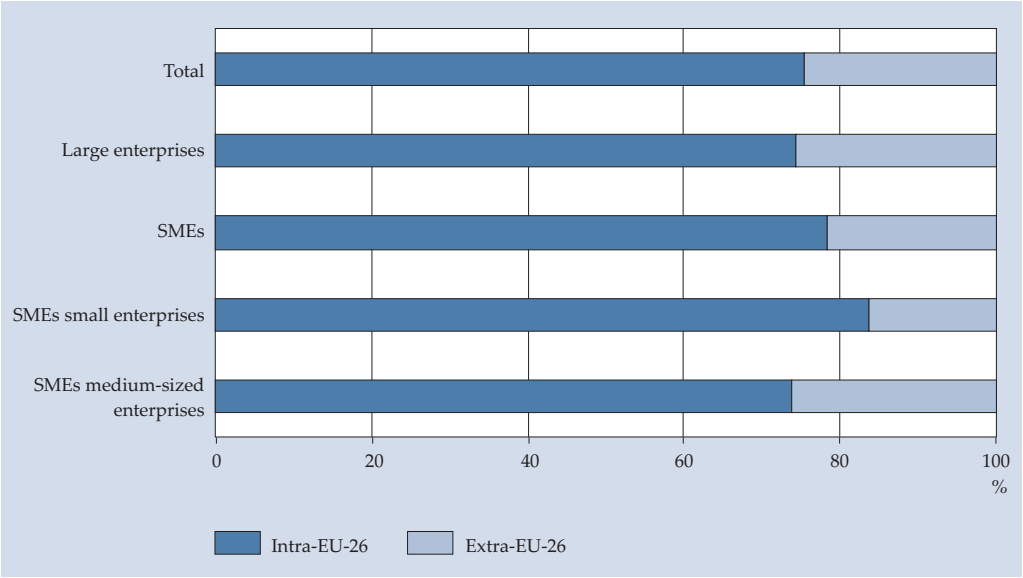


Table B1.3
Exports by continent of destination; large enterprises versus SMEs, 2007

	Total		Large enterprises		SMEs	
	million euro	*%*	*million euro*	*%*	*million euro*	*%*
Total	347,501	100	118,163	100	144,997	100
Europe	284,213	82	94,689	80	121,354	84
Western Europe	257,039	74	86,613	73	99,526	69
Eastern Europe	26,943	8	7,477	6	10,135	7
Unknown Europe	231	0	599	1	11,693	8
North America	18,668	5	6,739	6	7,641	5
Central and South America	5,845	2	1,577	1	2,618	2
Asia	18,486	5	8,382	7	5,809	4
Middle Eastern countries	7,625	2	2,551	2	2,552	2
North Africa	2,597	1	871	1	1,085	1
West Africa	3,339	1	737	1	1,624	1
Central, East and South Africa	2,734	1	931	1	964	1
Oceania	1,413	0	549	0	557	0
Unknown	2,582	1	1,137	1	793	1

B1.4 The country extensive margin of imports

Graph B1.4 shows per enterprise type the number of partner countries that were involved in the importing process in 2007. This is also called the 'country extensive margin' and it measures with how many countries an enterprise trades (Castellani, Serti and Tomasi, 2008).

For importing enterprises, a negative relationship was found between the number of partner countries and the number of importing enterprises. Such a negative association was also found for Belgium as well as for Italy, Sweden and the US (Castellani, Serti and Tomasi, 2008; Bernard, Jensen, Redding and Schott, 2007).

In 2007, approximately 40 percent of all SMEs that imported commodities obtained the goods from one single partner country. Nearly 30 percent of the SMEs had two or three partner countries and almost 80 percent of all SMEs imported goods from five countries or less.

Making a comparison between large and small enterprises provides an indication of the concentration of imports, testing the intuitive notion that larger enterprises trade with a greater variety of countries than smaller enterprises. This could indicate that there are also fixed costs involved in the import process (as is in the case of exporting: Melitz (2003), Rojas-Romagosa (2009)) and for each new partner country. Examples of fixed costs for importers might be the cost of setting up distribution channels or the costs related to obtaining the necessary information on the trading partner involved, product specifications or the financial side of the transaction. Such costs are easier to incur by large enterprises, which is reflected by their larger number of import partners.

For small enterprises the country extensive margin of imports was approximately the same as for SMEs in general. Yet, medium-sized enterprises had more import-connections than small businesses. About 30 percent of medium-sized enterprises imported commodities from 11 to 25 countries. Medium-sized enterprises imported on average from 9.6 countries.

The import pattern of large enterprises resembled that of medium-sized enterprise, but was more skewed towards a large number of import partners. On average, large enterprises imported from 12.7 countries. Yet 2 percent of them imported from more than 50 countries.

Country extensive margin: The number of geographical markets an enterprise trades in, i.e. the number of partner countries that are involved in the trading process.

B1.4 Concentration of imports by enterprise type, 2007

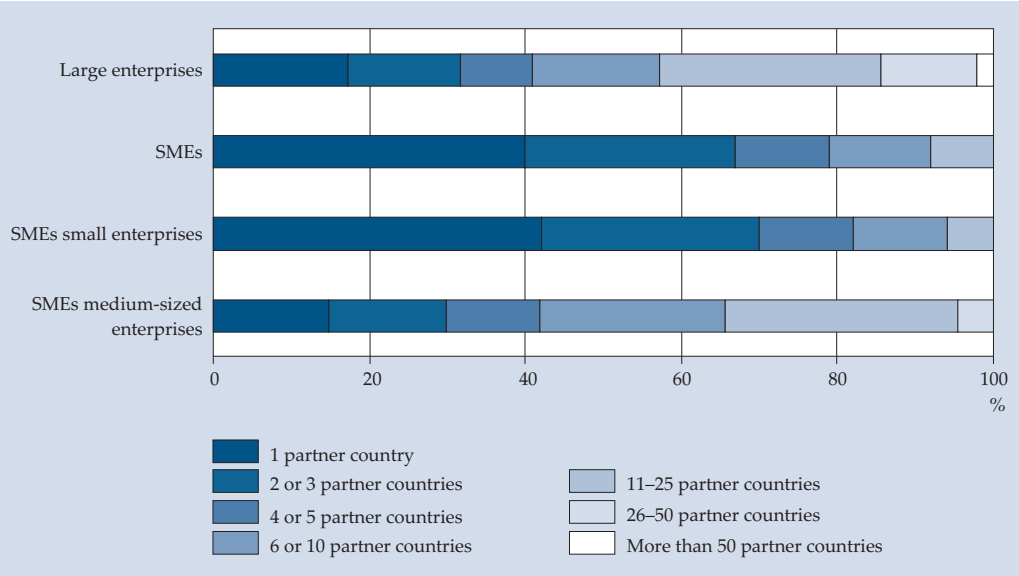


Table B1.4
Concentration of imports by enterprise type, 2007

	Large enterprises	SMEs		
		total	small enterprises	medium-sized enterprises
	%			
1 partner country	17	40	42	15
2 or 3 partner countries	14	27	28	15
4 or 5 partner countries	9	12	12	12
6–10 partner countries	16	13	12	24
11–25 partner countries	28	8	6	30
26–50 partner countries	12	1	0	5
More than 50 partner countries	2	0	0	0
Average number of partner countries	12.7	4.1	3.5	9.6

B1.5 The country extensive margin of exports

Graph B1.5 shows per enterprise type the relative distribution of partner countries to which commodities were exported in 2007. This is also called the 'country extensive margin' and in this case it measures to how many countries an enterprise exports commodities.

Circa 74 percent of exporting SMEs shipped their goods to 10 countries or less in 2007, compared to 48 percent of large and medium-sized enterprises. The average number of countries to which large enterprises exported commodities is three times as large as for small enterprises. Approximately 17 percent of large exporters trade with more than 50 partner countries.

Small enterprises are more likely to focus on the domestic market, and once they internationalise, they stay closer to home. Large enterprises are capable of overcoming the variable cost involved with exporting (such as transport costs, insurance, tariffs etc.) as well as the fixed costs (such as local regulations, customs and preferences). Fixed costs differ per market and there is evidence that they re-occur for each new market entry (Kox and Lejour, 2005), which implies that expanding international activities is relatively more costly for SMEs.

The fact that Dutch enterprises export to relatively many countries is on the one hand due to the small Dutch domestic market, causing domestic enterprises to export in order to increase their returns to scale. On the other hand, the Netherlands is an important gateway to the European Union, which implies that a significant share of the EU-imports enter the union via the Netherlands. Re-exporting commodities to the rest of Europe is an important reason why in 2007, 75 percent of Dutch exports went to other EU-countries, as shown in graph B1.3.

Our findings are in line with other researchers (Castellani, Serti and Tomasi, 2008; Muûls and Pisu, 2007) who also found a negative correlation between the number of destinations serviced by an enterprise and the number of firms that exported to those destinations. In addition, enterprises that (also) exported in 2007 had a larger portfolio of trading partners than importers, which provides support for the notion that exporting is a more specialised activity than importing. Physical distribution of commodities, assembly of parts or transport of products abroad is a specific activity and is not always easy or efficient to combine with production or manufacturing. As such, exporting could be left to 'experts' that operate for many clients. Enterprises that export are more likely to be specialised in this activity, while importing can be done by 'any' enterprise that wants or needs to import irrespective of size or economic activity.

Country extensive margin: The number of geographical markets an enterprise trades in, i.e. the number of partner countries that are involved in the trading process.

B1.5 Concentration of exports by enterprise type, 2007

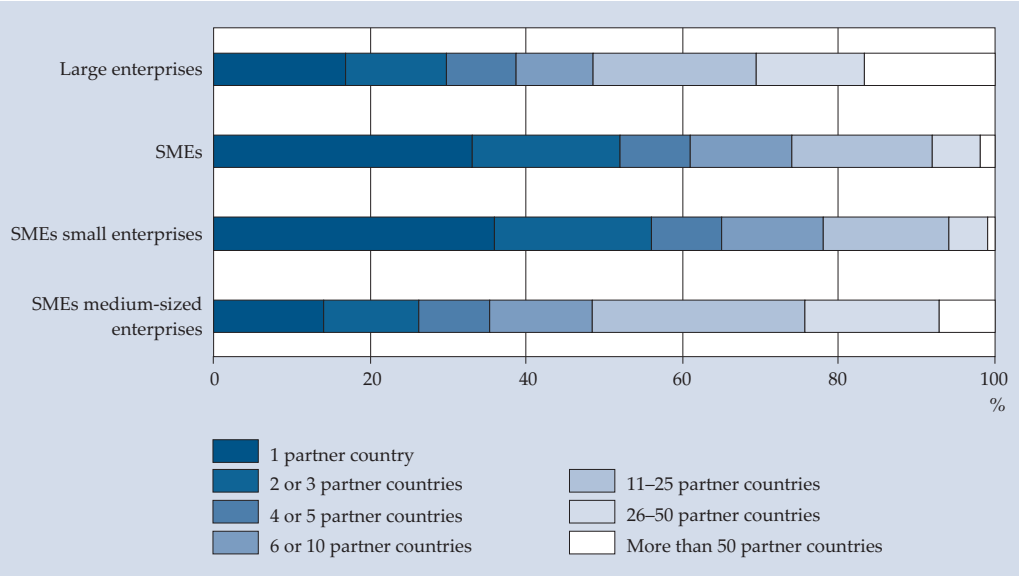


Table B1.5
Concentration of exports by enterprise type, 2007

	Large enterprises	SMEs		
		total	small enterprises	medium-sized enterprises
	%			
1 partner country	17	33	36	14
2 or 3 partner countries	13	19	20	12
4 or 5 partner countries	9	9	9	9
6–10 partner countries	10	13	13	13
11–25 partner countries	21	18	16	27
26–50 partner countries	14	6	5	17
More than 50 partner countries	17	2	1	7
Average number of partner countries	23.8	8.4	7.0	17.7

B1.6 International trade in goods per industry

Table B1.6 shows the Dutch import and export values in 2007, broken down per economic activity (ISIC rev. 3.1). Subsequently a division is made between large enterprises and SMEs. Those trade flows that could not be assigned to an enterprise are depicted in the column 'Unknown'.

In 2007 the largest share of trade was carried out by enterprises in the wholesale, retail, repair, hotels and restaurants sector, of which wholesalers form the majority. This industry imported 48 percent of all commodities and accounted for almost 44 percent of the total export value.

Also a large share of trade took place in the manufacturing industry. Within this industry, the largest share of trade was carried out by enterprises that produce cokes, refined petroleum products, chemicals and chemical products.

SMEs are relatively well represented in the wholesale industry. Wholesale trade mainly consists of commodities not produced by the wholesale industry. The fact that a large share of Dutch international trade was carried out by wholesalers can for a significant part be explained by the large share of re-exports in Dutch trade. Wholesalers are well equipped to facilitate such trade flows.

Another reason that a large share of trade is carried out by the wholesale sector is that some entrepreneurs prefer to trade via an intermediary rather than export themselves. Such export flows are called indirect exports. Whether or not an entrepreneur decides to trade via a wholesaler depends on for instance his/her knowledge of the foreign market, international experience and network, growth strategies, availability of financial means etc. (EIM, 2008; Onkelinx and Sleuwaegen, 2008). Both options have advantages and drawbacks, but generally speaking smaller enterprises are more likely to trade via an intermediary than large enterprises.

International trade flows are assigned to an industry according to the economic activity of the declaring enterprise, i.e. the enterprise that transports, delivers or owns the goods when they cross the border. Often this is the enterprise that actually produces the goods, but this is not always the case. Since some enterprises prefer to export indirectly, i.e. via an intermediary, trade is sometimes attributed to an enterprise (and an industry) unrelated to the production process. Another reason is that trade declarations to customs or Statistics Netherlands can be carried out by a third party, i.e. an expediter or a fiscal representative. This is inherent to the compilation of external trade statistics.

Table B1.6
Import and export of goods by economic activity; large enterprises versus SMEs, 2007

	Import value				Export value			
	total	large enter-prises	SMEs	un-known	total	large enter-prises	SMEs	un-known
ISIC rev. 3.1	*million euro*	*%*			*million euro*	*%*		
Total	307,266	36	46	19	347,475	34	42	24
Agriculture, hunting, forestry, fishing, mining and quarrying	2,971	4	37	59	5,271	7	54	39
Manufacturing	93,364	49	29	22	135,181	47	31	22
food products, beverages and tobacco products	12,867	54	37	9	24,780	51	33	16
textiles, wearing apparel, tanning and dressing of leather	1,702	13	70	16	2,305	17	72	11
paper, paper products; publishing, printing and reproduction of recorded media	3,457	37	41	22	4,821	42	37	21
coke, refined petroleum products, nuclear fuel, chemicals and chemical products	34,467	65	14	21	37,850	55	20	25
rubber and plastics products	2,431	20	66	13	4,243	22	67	11
basic metals and fabricated metal products	9,237	36	41	24	15,863	42	38	20
machinery and equipment	8,033	40	39	20	17,126	41	40	19
office, accounting and computing machinery, electrical machinery, radio television and communication equipment, medical precision and optical instruments, watches and clocks	10,232	31	27	42	13,407	42	19	39
motor vehicles, trailers and other transport equipment	7,200	53	21	26	11,241	59	18	23
wood and wood products, other non-metallic mineral products, furniture, manufacturing n.e.c. and recycling	3,738	22	51	28	3,547	28	57	15
Electricity, gas, water supply and construction	x	x	x	x	x	x	x	x
Wholesale and retail trade, repair, hotels and restaurants	149,206	23	59	18	153,551	20	52	29
Transport, storage and communications	33,023	59	41	1	19,746	38	61	1
Financial intermediation	1,863	4	90	6	x	x	x	x
Real estate, renting and business activities	16,614	21	35	44	18,136	28	32	40
Public administration, education, healthcare, social work and other services	x	x	x	x	x	x	x	x

B1.7 The goods imported by Dutch enterprises

In 2007, the total value of imported commodities amounted to 307 billion euro. Compared to 2006, the import value increased by 8 percent (see also table B1.1). In particular, the import of machinery and transport equipment, chemicals and manufactured goods grew rapidly compared to the previous year. Around 103 billion euro of such products were imported into the Netherlands, although a significant share was not destined for the Dutch consumer [5]. Other important commodity groups were mineral fuels, chemical products and manufactured goods such as products made of metal, rubber, paper or yarn.

Large enterprises were big importers of mineral fuels and machinery and transport equipment in 2007. Mineral fuels are often traded by large (multinational) enterprises that are part of a capital-intensive and heavily industrialised sector.

Both SMEs and large enterprises are well represented in the import of machinery and transport equipment. These commodities are re-exported quite frequently which is why the Dutch industry that manufactures motor vehicles and transport equipment is not of the same proportion.

The SME import share of food and live animals outweighed that of large enterprises in 2007, both in absolute figures as well as in relative terms. As table B1.8 shows, the same is found in terms of exports. In other words, a significant part of the internationally active agricultural and (wholesalers in) food companies were SMEs. EIM (2008) also concluded that SMEs represented the bulk of the exports of the agriculture, fishing and the wholesale of food products industry.

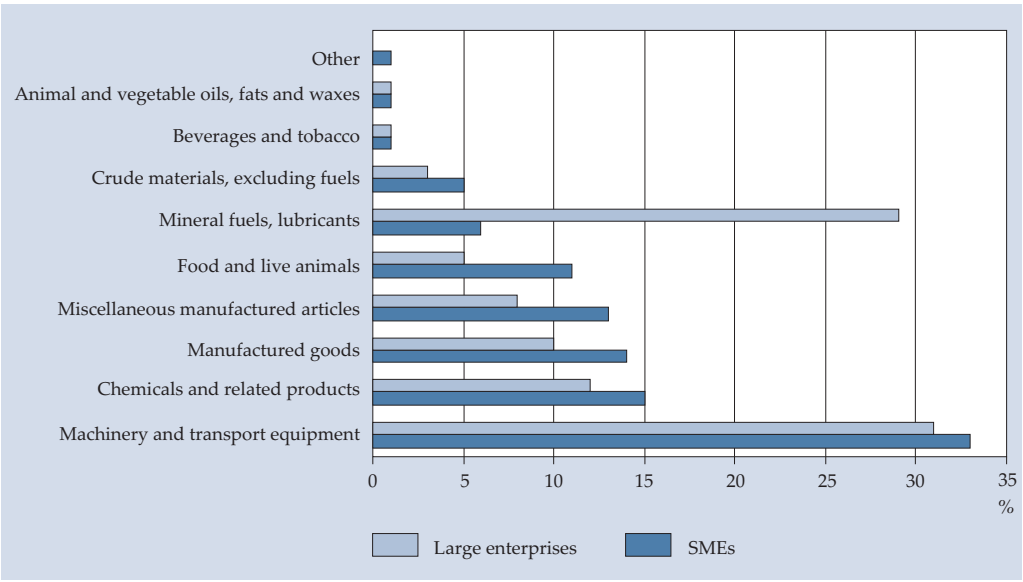
The motive of an enterprise to import goods has an impact on which type of commodity is imported. The most extreme example is in the case of re-exporting, where the commodities traded can be completely unrelated to the distributor. When a manufacturing enterprise decides to use imported semi-manufactures in its production process rather than produce them domestically, these imports are most likely closely associated to the manufacturing industry.

Table B1.7 shows the basket of commodities imported by Dutch enterprises in 2007. This is a different representation compared to table B1.6, which focused on the industry in which the trading enterprise is active. In most cases the type of products imported by a company is related to the industry the company belongs to. For instance, chemical products are most likely imported by a company active in the chemical industry. However this is not always the case; sometimes the imported materials and commodities are unrelated to the own industry (inter-industry imports).

Table B1.7
Imports by SITC; large enterprises versus SMEs, 2007

	Total		Large enterprises		SMEs	
	million euro	*%*	*million euro*	*%*	*million euro*	*%*
Total	307,274	100	109,127	100	140,132	100
Food and live animals	23,678	8	5,341	5	15,031	11
Beverages and tobacco	2,839	1	1,163	1	1,284	1
Crude materials, excluding fuels	12,731	4	3,447	3	7,372	5
Mineral fuels, lubricants	49,512	16	31,862	29	8,958	6
Animal and vegetable oils, fats and waxes	2,316	1	628	1	1,697	1
Chemicals and related products	41,092	13	13,101	12	21,273	15
Manufactured goods	38,729	13	10,836	10	19,014	14
Machinery and transport equipment	102,931	33	34,022	31	46,280	33
Miscellaneous manufactured articles	32,969	11	8,711	8	18,404	13
Other	477	0	17	0	819	1

B1.7 Goods imported by large enterprises and SMEs, 2007



B1.8 The goods exported by Dutch enterprises

In 2007, the total value of goods exported by the Netherlands was almost 348 billion euro (see also table B1.1). The export of machinery and transport equipment comprised a third of the total export value of commodities and represented a value of 113 billion euro. As shown by table B1.8a, chemicals and related products are important export products, as well as (products made from) mineral fuels, food and live animals and manufactured goods.

Yet, a significant share of these products were not produced in the Netherlands, but re-exported, as is shown in table B1.8b. In total, circa 45 percent of Dutch exports consisted of such re-exports in 2007.

In 2007, of total re-exports, approximately 40 billion euro was carried out by large enterprises and 58 billion euro by SMEs. As such, SMEs as a group seem to be significantly more active in re-exporting than large enterprises. Obviously this does not apply for each individual SME, since there are far more SMEs than large enterprises.

In chemicals and manufactured goods, SMEs had a higher re-export share in total exports than large enterprises. In contrast, the share of re-exports in exports of mineral fuels was higher for large enterprises. These products are usually traded by large (multinational) enterprises that are part of a heavily industrialised sector. As such, SMEs are relatively absent in the mineral fuel trade. A significant share of mineral fuels was subsequently re-exported, which was also mostly done by large enterprises.

SMEs were relatively active in the export of crude materials in 2007. This pattern was also observed for the imports of these materials and almost half of these exports consisted of re-exports. Due to the nature of the product, crude materials often enter the Netherlands via maritime transport. Subsequently they are transported through the Netherlands via inland shipping, which is often done by relatively small businesses.

Table B1.8a
Exports by SITC; large enterprises versus SMEs, 2007

	Total	Large enterprises	SMEs
	million euro		
Total	347,501	118,163	144,997
Food and live animals	38,093	10,683	22,853
Beverages and tobacco	6,376	1,040	1,711
Crude materials, excluding fuels	18,669	1,683	12,998
Mineral fuels, lubricants	42,214	22,814	10,062
Animal and vegetable oils, fats and waxes	2,664	878	1,561
Chemicals and related products	59,466	22,816	25,890
Manufactured goods	36,180	12,483	15,095
Machinery and transport equipment	113,396	38,125	38,287
Miscellaneous manufactured articles	28,996	7,565	15,435
Other	1,448	75	1,106

Table B1.8b
Re-exports by SITC; large enterprises versus SMEs, 2007

	Total	Large enterprises	SMEs
	million euro		
Total	155,273	40,203	58,172
Food and live animals	9,199	1,211	5,704
Beverages and tobacco	641	222	230
Crude materials, excluding fuels	6,669	902	3,673
Mineral fuels, lubricants	12,273	5,729	1,887
Animal and vegetable oils, fats and waxes	743	305	371
Chemicals and related products	20,576	3,294	11,397
Manufactured goods	13,617	2,501	5,206
Machinery and transport equipment	72,994	21,065	20,816
Miscellaneous manufactured articles	18,416	4,969	8,793
Other	144	5	94

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Notes in the text

1) In 2007, traders with intracommunity trade were obliged to report for Intrastat when their yearly import and/or export flow exceeded 400 thousand euro. Intracommunity trade below the threshold (which amounts to 3 percent of total trade, as is required by European legislation) is estimated based on information of the tax authority. More information on the survey methodology as well as the most recent trade figures can be found on www.cbs.nl/en-GB/menu/themas/internationale-handel/nieuws/default.htm
2) Source: CBS StatLine. Table: Bedrijven; grootte, rechtsvorm en economische activiteit; 2007–2008.
3) Approximately 3–5 percent of all SMEs can be characterised as dependent or affiliated to a large enterprise group. In terms of trade value, they represent approximately 20 percent of the imports and exports of all SMEs.
4) Western Europe is not synonymous for the EU-27 nor is it strictly confined to neighbouring countries. It is a country classification constructed by Statistics Netherlands. http://statline.cbs.nl/StatWeb/selection/?DM=SLNL&PA=37830&VW=T
5) At the moment it is only possible to specify the exact share of export destined for re-export, but this is not yet possible for the import flow. Research of CPB (2001) has shown that the total value added of re-exports for the Netherlands is approximately 10 percent. As such, decreasing the value of re-exported commodities by 10 percent, yields an approximate value of the re-exports at the time of import.

B2. International trade and emerging markets

Introduction and definitions

The key origins and destinations of Dutch trade remain other European Union countries and the United States. However, other trading partners are becoming increasingly important – in particular the so-called emerging markets, including countries like China and India. Emerging markets, with their market size and growth potential, present important opportunities for businesses in the Netherlands. This set of tables describes the Dutch trade relations with emerging markets. The results for the Netherlands are compared with those of other EU-15 countries wherever possible.

The set *emerging markets* includes Argentina, Brazil, Chile, China (excluding Hong Kong), Czech Republic, India, Indonesia, Israel, Malaysia, Mexico, Poland, Romania, Saudi Arabia, South Korea, Thailand and Turkey. The criteria for selecting these emerging markets are described in chapter A2.

Non-emerging markets are defined as all the countries in the world minus the Netherlands and minus the selected emerging markets.
EU-14 is defined as EU-15 minus the Netherlands.
EU-26 is defined as EU-27 minus the Netherlands.

Re-exports are defined as commodities which are imported into the Netherlands but subsequently re-exported to another country (often an EU-partner country). The Netherlands functions as a gateway to Europe so a significant share of the commodities entering the Netherlands is not destined for the Dutch consumer, but re-exported to the rest of Europe. Re-exports are part of Dutch international trade even though the commodities are not meant for the Dutch market and/or the transactions are carried out by a foreign enterprise.

Exports of Dutch products are defined as Dutch exports minus re-exports.

B2.1 Trade in goods with emerging markets

The share of emerging markets in the total trade value of the Netherlands is increasing. The annual growth rate of both exports to and imports from emerging markets is twice that of trade with non-emerging countries. This corroborates the rapid economic development of these countries.

In the 2002-2008 period, the average annual growth rate of import value from emerging markets was 14 percent. Imports from European emerging markets grew particularly fast. Imports from Poland and the Czech Republic already rose quickly before their membership of the European Union, but imports from Romania experienced a big boost after this country became a member of the European Union.

Imports from Asian emerging markets (with the exception of India and China) had lower growth rates. Yet, Asian emerging markets are the main suppliers of the Netherlands. In 2008 approximately 40 percent of all imports from emerging markets came from China. Recently, imports from Latin American emerging markets increased their growth pace, whereas those from China are slowing down (not shown in table). For example, the imports from Brazil grew 21 percent from 2008 on 2007, those from Argentina even 50 percent. However, imports from China increased only by 4 percent during this period.

Dutch exports to emerging markets have also risen during the 2002–2008 period. The average annual growth rate of exports to emerging markets was 15 percent, twice as much as the growth of exports to other countries in the same period (see also B2.3). Especially the exports to Mexico and Romania have grown quickly, over 20 percent a year.

Re-exports to emerging markets grew even faster than exports of products 'made in Holland'. This is partly driven by the fast growing re-exports of electronics. Growth of re-exports to Latin American emerging markets was slower than the growth of exports of Dutch products to these markets.

Most emerging countries bought more Dutch products than re-exported products. Especially South Korea and Mexico imported far more Dutch products than re-exported products. Respectively, they bought Dutch machines for the semi conductor industry and motor fuel. Yet, more than half of Dutch exports to Poland and the Czech Republic consisted of re-exports. These countries imported a lot of electronics that were manufactured outside the Netherlands.

Table B2.1
Trade in goods with emerging markets by country, 2008*

	Value				Annual growth rate in 2002–2008*			
	imports	exports			imports	exports		
		total	exports of Dutch products	re-exports		total	exports of Dutch products	re-exports
	million euro				*%*			
World	331,842	367,587	214,884	152,703	8	8	8	8
Emerging markets	62,886	34,272	20,283	13,990	14	15	13	19
Argentina	1,586	269	175	93	12	20	20	19
Brazil	4,624	1,231	873	358	13	9	10	7
Chile	969	221	128	93	16	4	5	2
China	25,375	3,846	2,729	1,117	19	17	15	24
Czech Republic	3,622	4,485	1,730	2,755	28	20	14	25
India	2,339	1,564	930	634	17	20	16	29
Indonesia	1,998	771	539	232	6	13	11	17
Israel	1,541	1,267	696	571	10	5	4	6
Malaysia	4,903	527	351	176	5	3	1	6
Mexico	1,210	2,421	2,003	418	14	24	28	12
Poland	3,982	7,298	3,531	3,767	17	18	13	23
Romania	876	1,723	928	794	17	21	16	29
Saudi Arabia	3,481	1,570	993	577	14	10	7	18
South Korea	2,211	2,463	1,957	505	3	12	12	13
Thailand	2,526	767	580	187	9	6	8	2
Turkey	1,642	3,852	2,139	1,713	6	15	14	18
Non-emerging markets	268,956	333,315	194,602	138,713	7	7	8	7
EU-26	185,981	279,464	155,280	124,184	8	7	7	7
Non EU-countries	145,862	88,123	59,604	28,518	9	10	10	11

B2.2 *Imports from emerging markets*

In 2008 the Netherlands imported goods with a total value of 63 billion euro from emerging markets. This is about one fifth of Dutch import value, while it was one seventh six years earlier. In many product categories, the group of emerging countries has a share in Dutch imports of 30 percent and more. Furthermore, in almost every product category the market share of emerging markets is rising - not only for products for which emerging markets were already large suppliers, such as *articles of apparel, accessories*, but also for products like *iron and steel*. This indicates the increasing importance of emerging markets as supplying countries for the Dutch economy.

Particularly in high value product categories such as *electrical, electronic equipment* and *nuclear reactors, boilers, machinery etc* - consisting for a large part of computers and copiers - emerging markets have doubled market shares to 29 and 36 percent respectively during the period 2002–2008. Together the imports in these two categories amounted to 40 percent of total imports from emerging markets.

However, the highest share of imports from emerging countries is for the chapter on *toys, games, sports requisites*, namely 67 percent. Emerging markets also have a large market share in *articles of apparel, accessories* and *footwear, gaiters and the like, parts thereof*, about 40 percent.

The value of imports showed double digit growth in almost every product category during the period 2002–2008. Imports of *toys, games, sports requisites* rose by 32 percent a year, thanks to a steep increase of imported computer games and video games. More than half of *mineral fuels, oils, distillation products etc.* consisted of crude oil from Saudi Arabia. Higher prices and an increase in the variety of imported products caused a high annual growth rate in this product category.

The market shares of emerging markets are climbing for almost every product category.

Table B2.2
Imports from emerging countries by chapter Harmonised System [1)]

	2002		2008*		Annual growth rate in 2002–2008*
	million euro	*% in imports*	*million euro*	*% in imports*	*%*
Total [2)]	28,550	14	62,886	19	14
84 Nuclear reactors, boilers, machinery etc	6,029	17	13,638	29	15
85 Electrical, electronic equipment	5,733	22	12,326	36	14
27 Mineral fuels, oils, distillation products etc	1,707	8	4,986	8	20
95 Toys, games, sports requisites	506	38	2,672	67	32
15 Animal, vegetable fats and oils, cleavage products etc	654	47	1,615	47	16
62 Articles of apparel, accessories, not knit or crochet	1,012	32	1,446	41	6
23 Residues, wastes of food industry, animal fodder	550	37	1,406	53	17
29 Organic chemicals	643	9	1,394	12	14
61 Articles of apparel, accessories, knit or crochet	822	35	1,356	44	9
94 Furniture, lighting, sign, prefabricated buildings	740	22	1,341	33	10
87 Vehicles other than railway, tramway	536	4	1,274	7	16
12 Oil seed, oleagic fruits, grain, seed, fruit, etc, n.e.s.	916	49	1,242	38	5
73 Articles of iron or steel	387	12	1,161	19	20
08 Edible fruit, nuts, peel of citrus fruit, melons	516	27	1,112	32	14
26 Ores, slag and ash	102	25	984	47	46
72 Iron and steel	120	3	950	9	41
90 Various instruments and apparatus	874	9	876	7	0
39 Plastics and articles thereof	446	6	831	9	11
64 Footwear, gaiters and the like, parts thereof	424	25	768	35	10

[1)] Product categories with imports from emerging markets below 750 million euro are not shown in this table.
[2)] Including other chapters of the Harmonised System.

B2.3 *Exports to emerging markets*

Exports to emerging countries grew two times faster than exports to non-emerging markets or the European Union. Yet, the emerging markets still have limited shares in Dutch exports. In 2008 the Netherlands exported goods with a total value of 35 billion euro to emerging markets. The exports of Dutch products amounted for 59 percent of total exports. This is in line with exports of Dutch products to non-emerging markets (see table B2.1). The share of emerging markets in total Dutch exports was 9 percent in 2008, which is less than half the share in Dutch imports (see table B2.2).

The share of emerging markets in total Dutch exports is between 5 and 15 percent for most product categories. This is different for Dutch imports, where the share of emerging markets varies far more between product categories. The emerging markets are important markets in the product categories *pulp of wood, fibrous cellulosic material, waste etc.* and *copper and articles thereof*, where they have export market shares of over 30 percent.

A sizeable part of exports to emerging markets consists of *electrical, electronic equipment* and *nuclear reactors, boilers, machinery etc.* The last product category consists for a large part of products such as computers and copiers. As can be seen in the table B2.2, the Netherlands also imports these products from the emerging markets. The explanation is that a large part of the goods is imported from Asian emerging markets and subsequently sold to European emerging markets.

Overall the value of re-exports grew faster than that of exports of Dutch products over the period 2002–2008: on average 19 versus 13 percent. A notable exception is the chapter on exports of *mineral fuels, oils, distillation products etc.*. These rose because of the increase in exports of motor fuels to Mexico.

In several product categories, exports consisted mostly of Dutch products. This was the case for *mineral fuels, oils, distillation products etc.* but also for typical Dutch products such as *live trees, plants, bulbs, roots, cut flowers etc.* A large part of the 1.4 billion euro worth of *vehicles other than railway, tramway* were exports of trucks to European emerging markets.

Table B2.3
Exports to emerging markets by chapter Harmonised System [1)], 2008*

	Value				Annual growth rate in 2002–2008*		
	total		exports of Dutch products	re-exports	total	exports of Dutch products	re-exports
	million euro	*% in exports*	*million euro*		*%*		
Total [2)]	34,272	9	20,283	13,990	15	13	19
84 Nuclear reactors, boilers, machinery etc	8,308	15	3,936	4,372	19	18	20
85 Electrical, electronic equipment	3,716	11	1,042	2,674	16	10	19
27 Mineral fuels, oils, distillation products etc	2,151	4	1,823	327	53	62	31
39 Plastics and articles thereof	1,666	10	1,360	305	10	9	14
30 Pharmaceutical products	1,634	12	890	743	13	20	7
87 Vehicles other than railway, tramway	1,615	12	1,378	237	14	13	19
90 Optical, photo, technical, medical, etc apparatus	1,529	12	492	1,037	3	–9	16
29 Organic chemicals	1,458	9	966	492	9	6	18
72 Iron and steel	1,304	12	750	554	28	22	39
38 Miscelleanous chemical products	761	13	487	274	15	13	22
73 Articles of iron or steel	470	8	286	184	17	14	25
06 Live trees, plants, bulbs, roots, cut flowers etc	459	6	433	26	17	17	16
48 Paper and paperboard, articles of pulp, paper and board	457	10	412	45	7	6	13
28 Inorganic chemicals, precious metal compound, isotope	437	12	346	91	19	19	20
74 Copper and articles thereof	377	30	232	145	33	27	48
04 Dairy products, eggs, honey, edible animal product n.e.s.	375	6	317	58	7	7	8
32 Tanning, dyeing extracts, tannins, derivs, pigments etc	347	12	216	131	2	0	6
21 Miscelleanous edible preparations	324	13	290	35	10	9	25
02 Meat and edible meat offal	324	5	274	50	23	21	37
76 Aluminium and articles thereof	321	9	212	109	14	9	34
47 Pulp of wood, fibrous cellulosic material, waste etc	312	37	295	17	24	25	13
07 Edible vegetables and certain roots and tubers	272	5	232	39	21	22	14
40 Rubber and articles thereof	269	10	176	93	16	15	19

[1)] Product categories with exports to emerging markets below 250 million euro are not shown in this table.
[2)] Including other chapters of the Harmonised System.

B2.4 *Comparative advantages: the Balassa index by chapter of the Harmonised System*

The Balassa index measures export specialisation. Here it is used to see whether exports of emerging countries compete with exports of Dutch products or not. Table B2.4 shows the Revealed Comparative Advantages (RCA) of the Netherlands and of emerging markets for the twenty major product categories in exports of Dutch products.

In 2007 by far the largest RCA for the Netherlands was in the category of *live trees, plants, bulbs, roots, cut flowers etc*. This reflects the unique position of the Netherlands on the global market for these goods.

In most of the product categories that have a large share in the total exports of Dutch products the Netherlands has a comparative advantage. Furthermore, in those product categories its comparative advantage is much larger than that of the emerging markets versus the world.

To distinguish between exports of goods produced or assembled in the Netherlands and re-exported goods, the table shows the share of Dutch products in each product category. One euro of exports of Dutch products adds far more to the Dutch GDP than a euro of re-exports.

The data are restricted to trade with OECD countries, since data on trade of emerging markets with the world is not available at the chapter level. About 86 percent of total Dutch exports were destined for OECD countries in 2007. So Dutch exports to the OECD may be considered a reasonable proxy for Dutch exports to the world.

The Balassa index (Revealed Comparative Advantage) is calculated as follows:

$$\frac{X^{i}_{NL} / X^{tot}_{NL}}{X^{i}_{world} / X^{tot}_{world}} \text{ and } \frac{X^{i}_{EM} / X^{tot}_{EM}}{X^{i}_{world} / X^{tot}_{world}}$$

where X represents the exports of, respectively, the Netherlands (NL), emerging markets (EM) or the world (world) to OECD countries in product category i (i) or in all product categories combined (total).
If the index for a given product group is larger than 1, the country has a comparative advantage and thus is relatively specialised in the exports of these goods compared to the world. If the index is smaller than 1, the country has a comparative disadvantage.

However, note that a large export does not automatically imply a high RCA. Exports of Dutch products to the OECD in the product category of *vehicles other than railway, tramway* amounted to 8 billion euro in 2007. In this product category, where Dutch exports consist mainly of trucks, the Netherlands has a comparative disadvantage with respect to the world. As a consequence the sector and the corresponding jobs might be at risk in the future.

Exports from the emerging markets do not form a major threat to exports of Dutch products. In product categories where exports of Dutch products are strong, the exports from emerging markets are not. This is true for products that make up a large part of exports of Dutch products (table B2.4) and for products where the Netherlands have a large comparative advantage (see chapter A2).

Table B2.4
The Balassa index: comparison of the Netherlands and emerging markets; top 20 Dutch export products, 2007

	RCA with respect to world		Exports of Dutch products to OECD-countries	
	emerging markets	the Netherlands		
			% in total exports to OECD	*million euro*
27 Mineral fuels, oils, distillation products etc	0.7	1.3	72	25,986
84 Nuclear reactors, boilers, machinery etc	1.1	1.1	33	15,017
39 Plastics and articles thereof	0.7	1.7	79	11,918
29 Organic chemicals	0.5	1.8	72	11,029
87 Vehicles other than railway, tramway	0.6	0.4	72	8,125
06 Live trees, plants, bulbs, roots, cut flowers etc	0.3	12.6	96	6,735
85 Electrical, electronic equipment	1.7	0.9	18	6,255
72 Iron and steel	0.8	1.9	53	5,430
02 Meat and edible meat offal	0.5	2.7	86	4,688
07 Edible vegetables and certain roots and tubers	1.0	3.7	83	3,693
90 Optical, photo, technical, medical, etc apparatus	0.8	1.1	33	3,325
04 Dairy products, eggs, honey, edible animal product nes	0.3	3.2	82	3,311
48 Paper and paperboard, articles of pulp, paper and board	0.5	0.8	77	3,175
73 Articles of iron or steel	1.2	1.1	65	2,970
24 Tobacco and manufactured tobacco substitutes	0.7	3.4	92	2,934
30 Pharmaceutical products	0.1	1.3	28	2,815
38 Miscellaneous chemical products	0.4	1.5	68	2,667
76 Aluminium and articles thereof	0.6	1.2	67	2,516
22 Beverages, spirits and vinegar	0.5	1.4	86	2,509
28 Inorganic chemicals, precious metal compound, isotope	0.7	1.7	72	2,398

Source: OECD (foreign trade emerging markets and world with OECD), adaption Statistics Netherlands; Statistics Netherlands (Dutch trade with OECD).

B2.5 *Dutch foreign direct investment position in emerging markets*

Foreign direct investment (FDI) is an important indicator to measure the built-up presence in foreign markets. Table B2.5 lists the outgoing FDI positions by country for the years 2000, 2005 and 2007 as well as the relative growth in the period 2005–2007.

The Dutch foreign direct investment (FDI) position in emerging markets was at least 47 billion euro in 2007. This amount is a lower limit, since data for Romania and Saudi Arabia are not available. Since 2005 the Dutch FDI position in emerging markets has increased by 35 percent, whereas investments in the rest of the world increased by a more modest 13 percent. For the past decade Brazil has had the largest share of Dutch direct investment stock. In 2007 almost a quarter of Dutch FDI position related to the emerging markets was invested in Brazil.

Although the Dutch FDI position in emerging markets is considerable, it is still only 8 percent of the total Dutch FDI in 2007. For comparison, Dutch FDI in the EU-14 area was 61 percent of total FDI. Also, the value of Dutch investments in the United States is higher than the investment stock in all emerging markets put together.

It is useful to compare the top five of this table with table B2.1. We see that Brazil has a modest 6 percent share in trade value, whereas China is responsible for 30 percent of the trade value related to emerging markets. Apparently Brazil is more of an investment market than a traditional market, whereas for China the emphasis is on trade rather than investment. At the same time for some countries, like Poland, trade and investments go together.

China has known the strongest growth between 2005 en 2007. FDI in China almost doubled from 2006 to 2007. This may be related to the 2006 changes in the Chinese policy on foreign investments. Until 2006 China had extensive and very strict regulations regarding foreign investments. FDI in Turkey, India, the Czech Republic and Malaysia have also increased strongly. Yet, the Dutch investment position in Israel has been halved.

FDI is defined as an international investment made by an entity resident in one economy (the direct investor) to acquire a lasting interest of at least 10 percent in an enterprise operating in another economy (direct investment enterprise). The FDI position denotes the value of the investment (stock) at the end of each year.

Table B2.5
Dutch direct investment position in emerging markets by country

	2000	2005	2007	Total growth in 2005–2007
	million euro			*%*
World	328,276	521,935	595,692	14
Emerging markets [1]	24,103	34,614	46,647	35
Argentina	1,466	1,240	1,109	–11
Brazil	4,886	8,228	11,146	35
Chile	709	548	473	–14
China	1,800	1,825	4,361	139
Czech Republic	2,254	2,520	4,272	70
India	531	1,251	2,198	76
Indonesia	916	756	655	–13
Israel	462	814	374	–54
Malaysia	749	686	1,111	62
Mexico	1,242	4,300	3,872	–10
Poland	3,972	6,604	8,679	31
Romania	244	.	.	.
Saudi Arabia	930	.	.	.
South Korea	2,172	3,416	4,461	31
Thailand	724	833	898	8
Turkey	1,046	1,593	3,038	91
Non-emerging markets	304,173	487,321	549,045	13
EU-14	165,161	299,914	363,654	21
United States	84,545	83,855	56,806	–32

Source: Eurostat, adaptation by Statistics Netherlands.

[1] Total for 2005 and 2007 without Romania and Saudi Arabia.

B2.6 Dutch economic relations with emerging markets: a comparison with EU-14

Table B2.6 shows the economic relationships of the Netherlands with the set of sixteen emerging countries, compared to the aggregated EU-14 average. The three economic relationships are outgoing foreign direct investment (FDI-stocks), imports and exports of goods. For each relationship, the share of emerging markets in the total of the Netherlands and in the total of the EU-14 is presented. For example, the share of Argentina in Dutch outgoing FDI was two per mille.

The stocks of Dutch FDI in emerging markets were relatively higher than the stocks of FDI of EU-14 in emerging markets. This was specifically the case for the FDI in Brazil, Poland and South Korea.

Emerging markets play a more important role in Dutch than in EU-14 imports. This is mainly due to the higher imports from Brazil and the Asian countries, notably China and Malaysia. Imports for re-exports might distort the picture. For example, a large part of imports from China and Malaysia is not destined for the Dutch domestic market, but for other European countries. This inflates the shares of these countries in Dutch imports. EU-14 countries mainly import for their own domestic market. Therefore the share of emerging markets in EU-14 imports will be relatively smaller.

The Netherlands imports much less from European emerging markets than the EU-14. Again, imports for re-exports might distort the picture. Since such imports inflate the share of Asian countries in Dutch imports, the share of other countries is deflated. Furthermore, EU-14 countries such as Germany and Austria are geographically closer to the emerging European markets.

The EU-14 exports relatively more to emerging markets than the Netherlands. This is especially true for the European emerging markets and for China. Zooming in on exports of Dutch products, disregarding Dutch re-exports, does not change this observation. This may be due to the composition of the basket of Dutch produced goods. Agricultural products and mineral fuels have a higher share in the exports of Dutch domestic products than in the exports of the EU-14, whereas the EU-14 exports far more machinery and transport equipment. Perhaps emerging markets have little need for agricultural products and mineral fuels. At the same time emerging markets may well need machinery and transport equipment from the EU-14 to help develop their economies.

Table B2.6
Economic relations with emerging markets; comparison with EU-14

	Share of outgoing FDI in 2007		Share of trade in goods in 2008*				
	the Netherlands	EU-14	imports		exports		
			the Netherlands	EU-14	the Netherlands		EU-14
					total	exports of Dutch products	
	per mille						
Total	78	61	190	158	93	94	136
Argentina	2	4	5	2	1	1	2
Brazil	19	12	14	8	3	4	8
Chile	1	2	3	3	1	1	2
China	7	5	76	56	10	13	23
Czech Republic	7	8	11	17	12	8	16
India	1	1	7	8	4	4	9
Indonesia	4	2	6	3	2	3	2
Israel	1	0	5	3	3	3	4
Malaysia	2	1	15	3	1	2	3
Mexico	7	6	4	4	7	9	6
Poland	15	10	12	19	20	16	26
Romania	.	.	3	4	5	4	8
Saudi Arabia	.	.	10	5	4	5	6
South Korea	7	3	7	8	7	9	7
Thailand	2	1	8	4	2	3	2
Turkey	5	6	5	11	10	10	14

Source: De Nederlandsche Bank (FDI) and Eurostat (European imports and exports), adaptation by Statistics Netherlands; Statistics Netherlands (Dutch imports and exports).

1) Total for outgoing FDI without Romania and Saudi Arabia.

B2.7 Trade openness of emerging markets

International trade in goods and services is a primary channel of economic integration. The significance of international trade is often measured by calculating the share of trade in Gross Domestic Product and is called the 'trade openness ratio'. Table B2.7 shows the trade openness of emerging markets and some reference countries for the years 1990, 2000 and 2007.

The trade openness of almost every emerging market has increased in the period of observation. This implies that for almost all countries foreign trade grew at a faster pace than the economy as a whole. The eastern European countries opened up very quickly after the fall of the Berlin Wall in 1989 and their subsequent accession to the European Union. This coincided with a large growth of Dutch exports to these countries. Brazil is still relatively less integrated into the world economy. Malaysia has already tapped into the world trade flow.

Trade openness is measured as the average value of imports and exports (in current prices) as share in gross domestic product.

Table B2.7
Trade openness of economies

	Trade openness			GDP in 2007, in current prices
	1990	2000	2007	
	%			*billion US dollar*
World	20	25	31	54,636
Argentina	7	11	22	262
Brazil	7	11	13	1,314
Chile	31	31	40	164
China	17	22	36	3,400
Czech Republic	41	65	78	172
India	8	14	24	1,141
Indonesia	23	36	27	433
Israel	33	38	44	162
Malaysia	71	110	100	187
Mexico	19	32	33	893
Poland	23	30	42	419
Romania	21	36	39	161
Saudi Arabia	36	34	49	377
South Korea	28	39	46	957
Thailand	38	62	70	245
Turkey	15	28	32	488
Germany	25	33	43	3,317
Japan	10	10	17	4,380
Netherlands	55	67	71	766
United Kingdom	25	29	28	2,768
United States	10	13	14	13,776
Americas	13	17	18	18,821
Asia	19	25	38	14,205
Europe	27	36	39	19,206

Source: United Nations, National Accounts Main Aggregates Database, adaptation by Statistics Netherlands.

B2.8 *Number of traders exploiting business with emerging markets*

Table B2.8 shows the absolute number of traders doing business with the sixteen selected emerging markets. The total number of traders dealing with emerging markets has risen with 14 percent in the 2005–2008 period. For China, India and Brazil the increase was even twice that figure.

Still, the most remarkable increase is the number of traders doing business with Romania, which grew four-fold since 2005. This is for a large part explained by Romania's accession to the European Union in January 2007. In 2007 the share of traders dealing with Romania was already 30 percent.

During the period 2005–2008 three quarters of traders with emerging markets did business with Poland and almost 60 percent dealt with the Czech Republic. These high shares may be explained by the relatively low transportation and information costs involved in serving a market close to the Netherlands. Also traders with these markets can benefit from the extensive subsidy scheme of the European Union.

When comparing these results with table B2.1 it appears that a large number of traders trading with a country does not imply a high total trade value for that market. For example, the many traders doing business with Poland generate just 12 percent of the total Dutch trade value related to emerging markets. The share of traders doing business with Romania is 33 percent, whereas the share of trade value is only 3 percent. China is the only country in our selection where a small number of traders generate a large share of the trade value. This could be explained by the type of goods traded with this market, or by the size and nature of the traders.

The number of traders is defined as all traders in goods with a Dutch VAT-number and an office in the Netherlands that are importing, exporting or both with at least one emerging market.
The number of traders is slightly underestimated since EU traders with small trade flows have no obligation to participate in the Dutch trade statistics.
A trader importing from China and exporting to the Czech is counted once for China and once for the Czech Republic. This number is also expressed as a percentage of the total number of traders with emerging markets for 2005 and 2008. Due to this method the last two columns in the table do not add up to a 100 percent. Finally, a trader may have (many) other trading relations with non-emerging markets, but these are not taken into account here.

Table B2.8
Traders exploiting business with emerging markets

	2005	2008*	2005	2008*
			%	
Total traders with emerging markets	7,335	8,375	100	100
Trading with:[1)]				
Argentina	395	420	5	5
Brazil	565	690	8	8
Chile	375	390	5	5
China	1,115	1,405	15	17
Czech Republic	4,345	4,785	59	57
India	700	865	10	10
Indonesia	555	580	8	7
Israel	730	765	10	9
Malaysia	655	690	9	8
Mexico	525	585	7	7
Poland	5,390	6,125	73	73
Romania	625	2,750	9	33
Saudi Arabia	515	510	7	6
South Korea	695	755	9	9
Thailand	655	745	9	9
Turkey	885	965	12	12

1) A trader can exploit business with more than one emerging market.

B3. International trade and transport flows

Introduction

Over the past two decades the spread of a global supply chain has allowed trade to grow exceptionally fast. Containerisation promotes globalisation by reducing the cost of shipping goods so sharply that manufacturers can afford to search the world for factories where costs are lowest. The result is that the amount of sea transport involved in manufacturing a given product has risen. Next, ongoing innovation and diffusion of technology in the transport sector has lowered transaction costs and increased the demand and supply for transportation capacity. The developments are most pronounced in the container trade, which had grown tremendously since the mid-1970s. Vessels become gigantic, with the latest capable of carrying 15 thousand standard containers. On a global scale, the Netherlands is an important link in the hub-and-spoke model of transport flows of goods to and from Europe feeding into other modes of transport and creating all kinds of related economic activities and network effects. Associated businesses and suppliers are benefiting from each others presence and competing with each other for share of the market.

The objective of statistics on transport flows is to provide a basis for the assessment of the impact of international allocation of resources. The data also facilitates the monitoring over-time of decreasing trade barriers and the gradual integration of economies and the increasing technological possibilities within the context of globalisation. Overall, the land, water, air and supporting activities generate nearly 23 billion euro of added value to the Dutch economy and employing over 360 thousand persons.

Definitions

For tables B3.1 and B3.2 *emerging markets* include Argentina, Brazil, Chile, China, Czech Republic, India, Indonesia, Israel, Malaysia, Mexico, Poland, Romania, Saudi Arabia, South Korea, Thailand and Turkey. The criteria for selection of the emerging markets are described in chapter A2.

Non-emerging markets are defined as all the countries in the world minus the Netherlands and minus the selected emerging markets.
EU-15 includes member states Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Portugal, Spain, Sweden, United Kingdom and the Netherlands.
EU-14 is defined as EU-15 minus the Netherlands.

New member states includes Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia.
EU-26 is defined as EU-27 minus the Netherlands.

Product groups are defined according to the NSTR classification:

0. Agricultural products; live animals
1. Food products and feed
2. Solid mineral fuels
3. Petroleum and petroleum products
4. Ores and metal residues
5. Metals, metal semi manufactures
6. Crude minerals and building materials
7. Fertilizers
8. Chemical products
9. Other goods and manufactures

B3.1 Average yearly growth of container transport between the Netherlands and emerging markets

Since its worldwide introduction in the mid sixties, the container has become crucial in the development of trade with (emerging) markets. In the 2000-2007 period, the average yearly growth of the container transport between the Netherlands and other countries was 4.2 percent. The emerging markets as a group had a growth rate of almost 15 percent. As a consequence, since 2000, the share of these countries in the total container transport grew from 10 to almost 25 percent. Overall, the emerging markets accounted for almost 62 percent of the growth in container transport between 2000 and 2007.

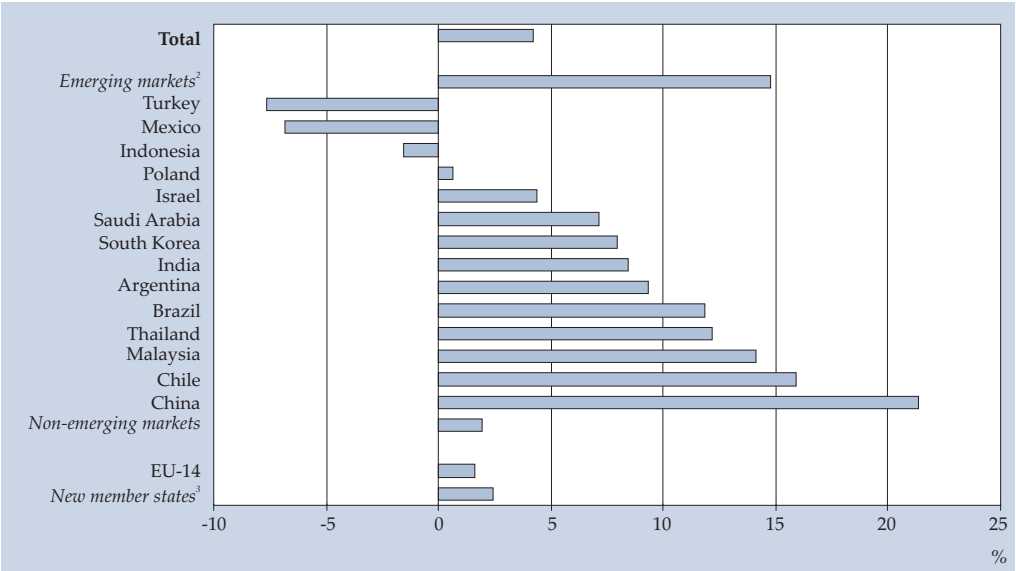
In particular the container transport between China and the Netherlands showed a high annual growth rate (21 percent). Also in absolute terms China is the largest partner country with over 1.3 million transported containers in 2007.

In 2007, Malaysia ranked as second largest partner country, surpassing Brazil and South-Korea. Nearly 20 percent of all containers, 1.7 million, are loaded or unloaded for the direction of China, Malaysia or South-Korea.

Some other countries show a decrease in container transport to and from the Netherlands. For example, for Turkey the 2007 figure was almost half of what it was in 2000.

Containers are registered according to the principle of loaded in NL and unloaded in NL.The data concern all modes of transport suitable for container transport. Data on foreign road transport companies are not included. Since 2006 data of some new railway companies are confidential. Therefore some countries are left out, but partial included in the totals. This does not disturb the picture of emerging markets. In terms of container transport, the countries overseas

B3.1 Container transport to and from emerging markets by country, annual growth rate in 2000–2007[1)]



[1)] In 2007 container transport by rail is not included.
[2)] Including Czech Republic and Romania.
[3)] Excluding Poland, Czech Republic and Romania.

Table B3.1
Container transport to and from emerging markets by country

	2000	2001	2002	2003	2004	2005	2006	2007 [1)]
Total (1,000 containers)	6,414	6,235	6,379	6,424	7,268	7,918	8,369	8,829
Emerging markets [2)]	691	751	865	1,026	1,352	1,549	1,658	2,180
China	239	266	335	444	645	837	971	1,316
Malaysia	54	88	120	133	173	152	178	234
Brazil	63	75	80	109	147	128	125	172
South Korea	117	98	104	106	129	131	147	160
India	33	34	37	41	36	49	47	75
Saudi Arabia	34	34	24	27	30	38	37	57
Argentina	23	25	22	30	31	40	36	40
Chile	12	16	13	18	23	36	36	39
Poland	19	16	18	17	20	20	17	33
Turkey	32	30	34	29	18	14	16	19
Mexico	11	5	6	8	9	5	8	17
Thailand	8	8	13	8	9	27	17	9
Israel	5	5	5	5	9	7	6	5
Indonesia	21	31	34	30	42	44	15	4
Non-emerging markets	5,723	5,484	5,513	5,398	5,915	6,369	6,711	6,649
EU-26								
EU-14	3,447	3,346	3,326	3,142	3,522	3,798	3,947	3,908
new member states [3)]	2,276	2,138	2,187	2,256	2,394	2,571	2,764	2,742
Total (%)	100	100	100	100	100	100	100	100
Emerging markets [2)]	11	12	14	16	19	20	20	25

[1)] In 2007 container transport by rail is not included. The estimated number of containers is 125 thousand to 150 thousand.
[2)] Including Czech Republic and Romania.
[3)] Excluding Poland, Czech Republic and Romania.

B3.2 Transport with emerging markets

In 2006 more than 1 billion tonnes of goods were loaded and unloaded in the Netherlands in the international freight transport.
The group of 16 emerging markets accounted for almost 10 percent of the goods flow towards the Netherlands, led by Brazil. Two thirds of the load consisted of iron ore – mostly for transit through the Netherlands (see part A3).

The tonnes of goods unloaded in emerging markets is four times as high as that of the goods loaded. Even excluding the iron ore from Brazil (25.5 million tonnes), the flow of goods from the emerging countries towards the Netherlands is still nearly 3 times larger than the flow towards these countries. The emerging countries have a 14 percent share in the flow towards the Netherlands and receive only 4 percent of the goods loaded in the Netherlands. Three quarters of the transport originates from Brazil, China, Malaysia and Indonesia.

For the three emerging countries on the European continent, inland modes of transport such as inland waterways, rail, road and pipelines are the most frequently used. The maritime sector is involved in bulk transport and container transport. Intercontinental transport takes place predominantly by sea (96 percent of the total inward and 80 percent of total outward flow).

Air transport is mostly suitable for high value goods and small consignments. The emerging markets are important in the freight transport by air: 30 percent of all air freight unloaded in the Netherlands originates from these markets. China, Malaysia, South Korea and Israel have a 75 percent share in this transport mode for the emerging markets.

Air transport is suited for high value goods and small consignments. The emerging markets are important in the freight transport by air: 30 percent of all air freight unloaded in the Netherlands originates from these markets. China, Malaysia, South Korea and Israel have a 75 percent share in this transport mode for the emerging markets.

Table B3.2
Transport of goods to and from emerging markets by mode of transport and country, 2006

	Unloaded in the Netherlands				Loaded in the Netherlands			
	total	sea	air	inland modes [1]	total	sea	air	inland modes [1]
	1,000 tonnes							
Total	556,818	373,309	838	182,672	468,919	131,409	744	336,767
Emerging markets	78,771	75,783	253	2,735	19,063	15,152	192	3,719
Argentina	3,596	3,594	2	–	370	366	4	–
Brazil	37,807	37,802	5	–	1,173	1,168	5	–
Chile	2,514	2,513	1	–	245	239	6	–
China	11,788	11,686	102	–	5,921	5,863	58	
Czech Republic	773	–	0	772	1,098	–	1	1,098
India	1,836	1,819	17	–	701	693	8	–
Indonesia	4,854	4,850	3	–	179	176	4	–
Israel	860	834	27	–	191	173	18	–
Malaysia	5,078	5,047	32	–	1,247	1,230	17	–
Mexico	288	277	11	–	1,238	1,215	23	–
Poland	3,004	1,506	0	1,498	2,821	808	0	2,013
Rumania	629	187	0	442	610	20	0	590
Saudi Arabia	2,459	2,458	1	–	941	937	4	–
South Korea	1,910	1,880	30	–	1,329	1,305	24	–
Thailand	199	185	15	–	142	134	7	–
Turkey	1,176	1,146	7	23	858	825	13	19
Other	478,046	297,525	585	179,937	449,856	116,257	552	333,048

[1] Road, inland waterways, rail and pipeline transport.

B3.3 International air passenger transport

In 2007, the Netherlands ranked sixth among the other EU-15 member states with respect to international air passenger transport, with 50.4 million passengers.

In the year 2000 aircrafts carried more than 600 million passengers to, from or between the EU-15 member states, national air transport not included. Seven years later close to 850 million passengers were carried - a 40 percent increase. Partly due to the liberalisation of air transport, which resulted in an explosively rise of the low-cost-carriers that made air transport increasingly competitive compared to other transport modes, air travel boomed in the 2000-2006 period (measured in passenger-kilometres). Since 2000 the same seven EU member states (United Kingdom, Germany, Spain, France, Italy, the Netherlands and Greece) have been leading air passengers transport. The absolute number one every year is the United Kingdom with 23 percent. In this period the Dutch air passenger market share dropped 1 percent point to 6 percent, indicating that a large part of the fast growth of air passengers in the EU since the year 2003 has been absorbed by other member states.

In terms of absolute number of international passengers handled in 2007, Amsterdam/Schiphol (48 million) is the third airport after London Heathrow (62 million) and Paris/ Charles de Gaulle (54 million); and just before Frankfurt/Main (47 million).

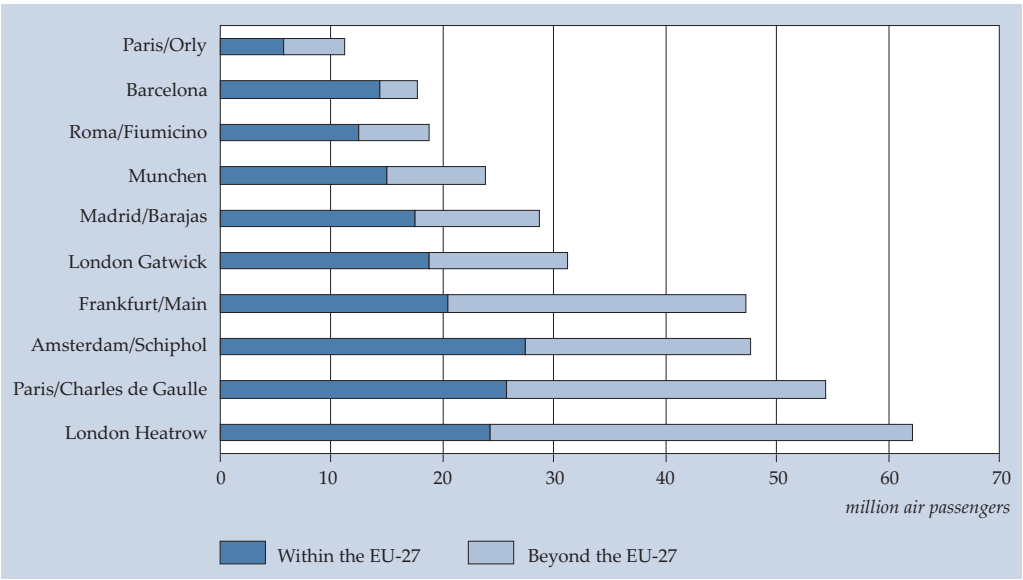
Moreover, Amsterdam/Schiphol with 230 destinations has the highest share of all international passengers handled in a specific country. 95 percent of all international air passengers to or from the Netherlands fly to or from Amsterdam. Paris/Charles de Gaulle with 227 destinations handled 59 percent of all the international passengers to France and London Heathrow with 168 destinations handled just 32 percent of all the international passengers to the United Kingdom. Note however that there are over 45 airports in the United Kingdom, nearly 60 airports in France, and just 5 airports in the Netherlands.

Information provided in this table primarily is based on On Flight Origin/Destination (OFOD) data. These were supplemented by Flight Stage (FS) data and airport declarations. Data is collected on the basis of the first origin/destination of passengers, and not the final origin/destination in case of

Table B3.3
International transport of passengers through EU-15 airports

	2000	2001	2002	2003	2004	2005	2006	2007
	million air passengers							
EU-15	605.2	603.7	602.7	630.3	694.1	747.0	794.2	847.7
United Kingdom	142.8	142.2	146.1	153.5	166.6	177.3	184.6	191.2
Germany	98.6	97.2	94.0	99.9	114.5	124.1	131.3	139.5
Spain	81.1	83.3	83.2	88.9	95.8	104.7	110.2	119.4
France	65.6	65.8	68.6	69.6	76.0	81.3	86.2	92.8
Italy	44.3	43.4	42.7	49.4	57.0	63.2	69.5	77.6
The Netherlands	40.4	39.4	40.6	41.0	44.4	46.4	48.5	50.4
Greece	24.6	24.9	24.8	23.2	24.0	25.0	26.6	28.1
Ireland	16.0	16.7	17.6	18.8	20.2	23.6	26.8	29.0
Austria	14.2	14.1	14.4	15.2	17.7	19.1	20.2	22.3
Denmark	17.1	18.0	18.2	17.8	19.4	20.5	21.2	22.1
Portugal	13.4	13.3	14.5	14.9	16.0	17.3	19.0	21.4
Belgium	21.6	19.8	14.3	15.1	17.5	17.8	19.1	20.7
Sweden	16.3	16.2	14.6	13.6	14.7	15.6	18.7	20.1
Finland	7.6	7.7	7.5	7.8	8.9	9.5	10.5	11.6
Luxembourg	1.7	1.6	1.5	1.4	1.5	1.5	1.6	1.6

B3.3 International transport of passengers through EU-27 airports; top 10 airports, 2007



B3.4 International air freight and mail transport

In 2007 the total volume of freight and mail exchanged between de EU-15 member states and the rest of the world increased 14.8 percent compared to 2005, reaching nearly 13 million tonnes. Over this period Dutch growth was 10 percent to 1.7 million tonnes. With this volume the Netherlands is the third-largest transporter of air fraight and mail among the 27 EU member states (a market share of 13 percent). The Netherlands, Germany and United Kingdom together accounted for over 50 percent of the total tonnage of air freight and mail handled by the EU-15 in 2007 (including intra-EU-15 double-counting).

Amsterdam (Schiphol Airport) is an important hub airport in transporting intercontinental goods. Most of the total volume of freight and mail handled by the Netherlands is destined to Asia and Australasia (53.5 percent of all Dutch transport of goods by air).

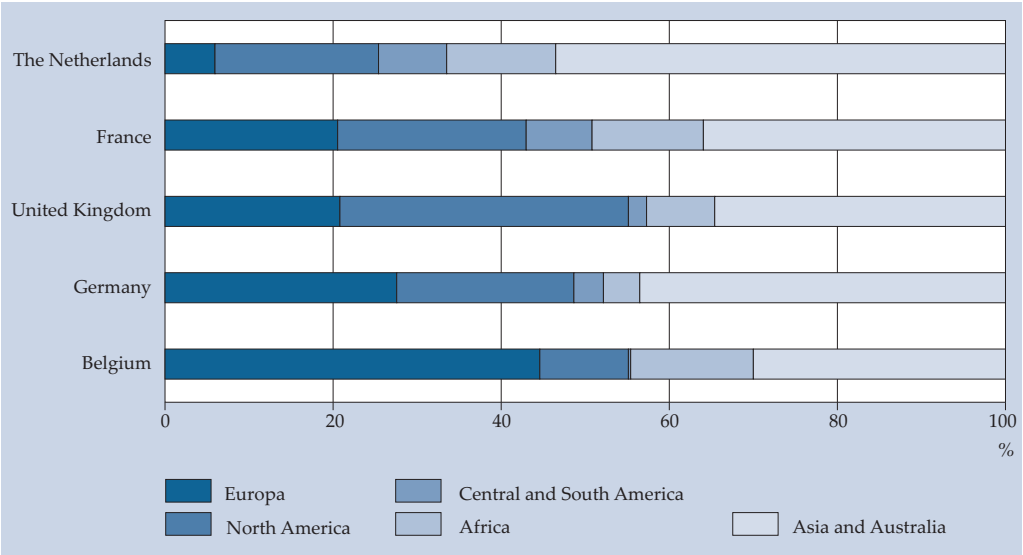
The volume of freight and mail between the Netherlands and the other European countries is relatively small. Only 6 percent of the total Dutch air transport has a European partner – compared to a European average of almost 26 percent.

The air freight and mail transport is registered according to the principle of loaded and unloaded by country, not including the national movements. The mail volume is less than 2.5 percent of the total Dutch air transport weight. Generally, the importance of air freight and mail transport grows with the distance covered. Since the same movement of goods is reported as a departure by one airport and as an arrival by the partner airport, the EU totals exclude double-counting for intra-EU international transport. Data collection is based upon the first origin/destination of freight, and not at the actual origin/destination in case of flight connections. In addition, data for France are underestimated since the two Paris airports, Charles de Gaulle and Orly, do not report all freight and mail handled. Sweden has not reported freight and mail data since 2005; data for Denmark do not include Copenhagen Kastrup airport, which explains why figures for Denmark are small.

Table B3.4
International transport of freight and mail through EU-15 airports by continent of origin or destination, 2007

	Total	Europe	North America	Central and South America	Africa	Asia and Australia
	1,000 tonnes					
Germany	3,312.2	909.2	701.7	119.8	136.0	1,445.5
United Kingdom	2,323.4	483.8	796.8	50.9	186.9	804.9
The Netherlands	1,709.2	102.4	329.6	141.7	221.5	914.0
France	1,545.2	316.1	349.7	120.8	204.6	554.1
Belgium	1,202.9	536.1	128.6	1.0	175.3	361.8
Italy	829.3	319.2	139.1	22.4	31.7	316.9
Luxembourg	702.6	86.0	127.9	30.2	71.6	386.9
Spain	400.9	180.1	66.5	107.9	14.7	31.8
Austria	205.8	68.5	20.0	0.1	1.3	115.9
Finland	141.7	74.8	7.6	0.0	0.2	59.2
Ireland	121.9	72.5	39.1	.	0.1	10.2
Portugal	108.5	64.1	6.0	25.1	12.8	0.4
Greece	89.5	65.6	7.4	.	1.9	14.5
Denmark	5.9	5.5	0.1	.	0.0	0.4
Sweden	.	.	.	.	.	.

B3.4 International transport of freight and mail through EU-15 airports by continent of origin or destination; top 5 member states, 2007



B3.5 Goods transport by nationality of the transporters

Except for a small decline in 2003, the transport of goods to and from the Netherlands has increased by 24.6 percent since 2000 to more than 1 billion tonnes in 2006. Both the transport flow of goods loaded as well as unloaded in the Netherlands grew at the same rate.

The majority of goods is transported by non-Dutch transport equipment enterprises. In 2006, 75 percent of the total unloaded weight in the Netherlands was transported by foreign transport-equipment enterprises. Of the total loaded weight more than 60percent is transported by non-Dutch transport-equipment enterprises.

Compared to all other modes of transport the Dutch participation in sea-shipping is very small. Just 3 percent of all goods to and nearly 10 percent of all the goods from the Netherlands is transported by sea ships flying the Dutch flag.

Transport of goods on inland waterways mostly uses Dutch transport-equipment. Two thirds of all carried goods loaded in the Netherlands were transported by a Dutch vessel. Over 70 percent of the goods on inland waterways unloaded in the Netherlands that passed the border (with Germany or Belgium) were shipped by inland vessels with the Dutch flag. Because of the geographical location of the Netherlands most foreign transporters in this mode of carrying goods had the Belgian or German nationality.

Transportation of goods over roads is for more than 62 percent dominated by vehicles with a Dutch registration number. The last few years we notice an increase of road transport by vehicles from Belgium, Germany and Poland. Especially the number of Polish registered vehicles is growing fast.

Goods transported by rail and pipeline, both modes of transport under 'other', are 100 percent Dutch business. Yet, about 50 percent of companies transporting air freight and mail, the third 'other' mode of transport, have the Dutch nationality. Air transport-equipment from the American or Asian air fleet makes up the other 50 percent.

Transporting goods to and from the Netherlands is not the exclusive domain of Dutch companies or Dutch transport equipment. Foreign companies with transport-equipment are competing for loading and unloading goods in the Netherlands as well.

The nationality of sea-going transport equipment is not specified by owner of a vessel, but the country of registration. A ship is said to be flying a flag of convenience if it is registered in a foreign country. Famously used flags of convenience as identified by the International Transport Workers' Federation (ITF) are those of Panama, Liberia, the Bahamas, and the Marshall Islands.

Table B3.5
Weight of transported goods by nationality of transport equipment, 2006

	Unloaded in the Netherlands					Loaded in the Netherlands				
	total	sea-shipping	inland waterways	roads	others [1]	total	sea-shipping	inland waterways	roads	others [1]
	1,000 tonnes									
Total (1,000 tonnes)	556,818	373,309	64,404	85,693	33,413	468,919	131,409	125,605	93,521	118,385
Dutch transport equipment	143,464	12,337	47,293	50,828	33,005	277,070	12,796	85,152	61,069	118,053
Foreign transport equipment	413,354	360,972	17,110	34,865	407	191,850	118,613	40,453	32,452	332
Europe	213,841	161,798	17,110	34,865	67	134,748	61,806	40,453	32,452	32
EU-14	141,930	96,460	16,280	29,150	38	107,898	43,317	38,724	25,845	9
among										
Belgium	19,277	1,710	8,405	9,160	2	23,099	1,112	14,722	7,262	3
Denmark	7,186	6,943	–	243	0	5,027	4,748	–	279	0
Germany	30,737	9,417	6,736	14,583	1	41,588	7,556	21,801	12,230	1
France	5,961	4,214	784	962	0	4,078	1,488	1,298	1,291	0
Greece	25,233	25,094	–	139	0	3,441	3,189	–	251	0
United Kingdom	31,074	30,371	1	702	1	17,178	15,987	1	1,189	1
Sweden	5,560	5,446	–	114	0	2,027	1,894	–	133	0
other European countries	71,911	65,338	830	5,715	29	26,850	18,489	1,729	6,607	23
among										
Cyprus	13,055	13,055	–	0	0	5,477	5,476	–	1	1
Malta	16,977	16,977	–	–	0	4,060	4,060	–	–	0
Norway	30,365	30,222	–	142	0	6,354	6,239	–	114	0
Poland	3,064	91	28	2,945	0	3,447	157	44	3,246	0
Russia	2,909	2,909	–	–	0	1,343	1,342	–	–	1
Africa	34,311	34,295	0	0	15	9,034	9,022	0	0	12
among										
Liberia	33,923	33,923	–	–	0	8,768	8,768	–	–	0
America	107,269	107,159	0	0	110	32,972	32,861	0	0	111
among										
Antigua en Barbuda	10,224	10,224	–	–	0	14,311	14,311	–	–	0
Bahama's	29,370	29,370	–	–	0	3,514	3,514	–	–	0
Panama	56,234	56,234	–	–	0	9,795	9,795	–	–	0
Asia	39,475	39,265	0	0	207	9,102	8,935	0	0	168
among										
Singapore	9,105	9,058	–	–	46	2,959	2,919	–	–	40
Hongkong	12,362	12,349	–	–	13	2,157	2,138	–	–	19
Oceania and others	18,457	18,453	0	0	4	5,990	5,986	0	0	4
among										
Marshall-Island	17,929	17,929	–	–	0	5,935	5,935	–	–	0
Total (%)	100	100	100	100	100	100	100	100	100	100
Dutch transport equipment (%)	26	3	73	59	99	59	10	68	65	100

[1] Transport by air, railway and pipelines.

B3.6 *Gross weight and value of Dutch import and export flows by continent of origin or destination and product group*

Dutch export largely relies on trade with the European hinterland. Globalisation is particularly noticeable when considering the import flows. In 2004, almost 40 percent of the gross weight and value of import comes from other continents than Europe. Regarding export, only 12 percent of the gross weight and 15 percent of the value is going to a non-European destination.

The gross weight of Dutch imports from Europe is dominated by petroleum and petroleum products (38 percent), crude minerals and building materials (17 percent) and chemical products (12 percent). The incoming products from other continents mainly fall in the categories petroleum and petroleum products (28 percent), solid mineral fuels (22 percent) and ores and metal residues (21 percent).

The value of import from Europe is chiefly determined by the 'other goods' including cars, electrical appliances, machines, footwear, cloths, etc. (51 percent) and chemical products (15 percent). The value of import from the farther continents is even more dominated by the other goods (65 percent). Other goods are often transported in containers (see table B3.1).

The share of non-European continents in import by product group gives an indication in what sectors of the economy globalisation is most important. Solid mineral fuels and ores are products that are particularly bought from far-away countries. For crude minerals and building materials, metals, fertilizers and chemical products the Netherlands heavily relies on other European countries.

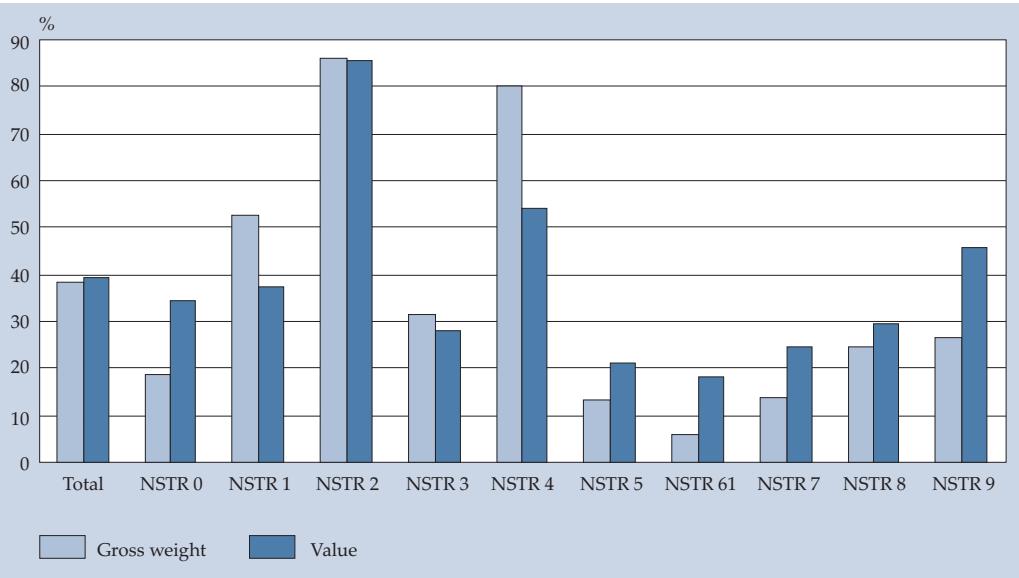
Imports and exports are expressed in gross weight (tonnes) and value (euros). This was made possible by the integration of the statistics of international trade and the statistics of transport for 2004. The integration also resulted in an estimate of transit through the Netherlands. Part A, chapter 3 contains a description of the integration research and a definition and analysis of transit flows. Together international trade and transit make up the total international transport.

Trade is defined according to the community concept: transit flows which are cleared for the EU through Dutch customs, the so-called quasi-transit flows, are part of trade. Re-exports are also considered trade.

Table B3.6
Import and export flows by product group and continent of origin or destination, 2004

	NSTR 0	NSTR 1	NSTR 2	NSTR 3	NSTR 4	NSTR 5	NSTR 6	NSTR 7	NSTR 8	NSTR 9
Gross weight (million tonnes)										
Import										
Africa	0.68	1.20	12.74	6.74	2.43	0.37	0.18	0.03	0.69	0.09
America	1.90	13.76	14.26	2.56	26.06	0.63	0.83	0.00	5.42	0.99
Asia	1.26	3.85	2.51	33.15	1.25	0.62	1.45	0.84	3.30	5.15
Europe	17.44	17.15	5.41	92.55	8.00	10.93	40.35	5.58	29.47	17.35
Oceania	0.12	0.18	4.40	0.00	2.53	0.08	0.14	0.00	0.18	0.01
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Export										
Africa	0.61	1.25	0.01	1.65	0.00	0.11	0.19	0.08	0.53	0.38
America	0.38	1.77	0.04	4.46	0.12	0.63	0.31	1.04	3.23	0.97
Asia	0.57	1.60	0.03	1.07	1.08	0.37	0.16	0.10	4.83	1.63
Europe	14.93	31.67	23.50	95.07	40.02	12.67	12.98	6.13	36.59	17.19
Oceania	0.02	0.07	0.02	0.00	0.00	0.01	0.01	0.02	0.11	0.11
Other	0.00	0.01	0.00	8.73	0.00	0.00	0.00	0.00	0.00	0.09
Value (billion euros)										
Import										
Africa	0.76	1.45	0.52	1.54	0.11	0.32	0.01	0.00	0.21	0.47
America	1.31	4.57	0.70	0.40	1.41	1.47	0.11	0.00	6.34	15.54
Asia	0.83	1.63	0.16	5.55	0.30	0.85	0.26	0.10	3.13	50.36
Europe	5.68	13.36	0.28	19.11	1.63	10.42	1.82	0.31	23.58	78.92
Oceania	0.11	0.28	0.27	0.01	0.09	0.11	0.02	0.00	0.08	0.14
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03
Export										
Africa	0.22	0.89	0.00	0.50	0.00	0.12	0.03	0.01	0.75	2.29
America	0.76	1.80	0.00	1.22	0.04	0.44	0.05	0.15	3.34	8.65
Asia	0.60	1.93	0.00	0.15	0.64	0.41	0.06	0.02	3.71	11.48
Europe	15.66	28.13	1.32	21.10	3.41	12.30	1.52	0.91	38.54	121.41
Oceania	0.03	0.13	0.00	0.00	0.00	0.01	0.01	0.01	0.22	0.74
Other	0.00	0.01	0.00	1.17	0.00	0.00	0.00	0.00	0.00	0.28

B3.6 Share of non-European continents in imports by product group, 2004



B3.7 Value-to-weight ratios for Dutch import and export flows by product group and continent in euro/kg

Table 3.7 shows the value-to weight ratios by product group and continent. The product group NSTR 9, i.e. 'other goods' including cars, electrical appliances, machines, footwear, cloths etc, contains the most valuable goods. Especially, the other goods from the distant continents Oceania, Asia and America have a high value per kilogram.

For most of the product groups, the ratios are lower for Europe than for the other continents. These results are consistent with figure B3.6, where we saw a difference between the share of non-European countries in the weight and in the value of imports.

Furthermore, the figure shows that the differences among continents are larger for imports than for exports of other goods. The other goods that are imported from distant non-European countries are more valuable than the other goods that are exported to distant countries.

Table B3.7
Value-to-weight ratios for import and export flows by product group and continent of origin or destination, 2004

	Africa	America	Asia	Europe	Oceania
	euro/kg				
Import					
NSTR 0	1.12	0.69	0.66	0.33	0.93
NSTR 1	1.21	0.33	0.42	0.78	1.52
NSTR 2	0.04	0.05	0.06	0.05	0.06
NSTR 3	0.23	0.16	0.17	0.21	7.03
NSTR 4	0.05	0.05	0.24	0.20	0.03
NSTR 5	0.87	2.33	1.39	0.95	1.37
NSTR 6	0.07	0.13	0.18	0.05	0.17
NSTR 7	0.07	0.61	0.12	0.06	7.50
NSTR 8	0.30	1.17	0.95	0.80	0.48
NSTR 9	5.46	15.75	9.77	4.55	24.23
Export					
NSTR 0	0.35	2.04	1.04	1.05	1.98
NSTR 1	0.71	1.02	1.21	0.89	1.73
NSTR 2	0.07	0.08	0.12	0.06	0.09
NSTR 3	0.30	0.27	0.14	0.22	0.89
NSTR 4	0.55	0.29	0.59	0.09	1.24
NSTR 5	1.02	0.70	1.09	0.97	1.22
NSTR 6	0.14	0.15	0.36	0.12	0.62
NSTR 7	0.18	0.14	0.22	0.15	0.33
NSTR 8	1.42	1.03	0.77	1.05	1.96
NSTR 9	5.95	8.89	7.05	7.06	6.77

B3.8 Gross weight of Dutch import and export flows by transport mode, continent of loading and product group

Two thirds of the gross weight of Dutch import is last loaded in a European country, whereas 14 percent is from America and 10 percent from Africa. About 65 percent of the imports is transported over sea. The rest is mainly shipped to the Netherlands by inland vessel (11 percent) or truck (17 percent).

The results show that most of the imported petroleum and petrochemical products (NSTR 3) arrives in the Netherlands by sea-going vessel from Europe and Africa or by pipeline from Europe. More than half of the imported ores and metal residues (NSTR 4) is transported over sea from America. Food products and feed arrive over sea from America or by truck from Europe: both are good for a share of about 30 percent.

Over 90 percent of all Dutch exports are unloaded in Europe. The transport modes used have roughly equal shares: inland shipping (24 percent), maritime transport (24 percent), pipelines (26 percent) and road transport (21 percent).

Petroleum and petrochemical products are mainly exported by pipeline (68 percent). The export of food products and feed (NSTR 2) mainly uses inland vessels (18 percent), trucks (40 percent) or sea-going vessels (22 percent). These are also the main transport modes for chemical products.

Comparing the transport patterns of trade and transit (see part A, chapter 4), we see that maritime transport from America has a larger share in incoming transit than in imports. Dutch imports consist of more agricultural and food products and less raw material like ores and crude minerals than incoming transit.

Relatively more road transport is involved in Dutch imports than in incoming transit. The same is true for exports in comparison with outgoing transit. Also pipeline transport is more often used in exports than in outgoing transit. Like imports, exports include more agricultural and food products and less raw materials than outgoing transit.

Table B3.8a
Import of goods by transport mode, continent of loading and product group, 2004

	Maritime transport					Inland shipping	Road transport	Rail transport	Pipeline transport
	Africa	America	Asia	Oceania	Europe	Europe	Europe	Europe	Europe
	1,000 tonnes								
NSTR 0	327	1,939	517	8	1,563	5,513	9,710	236	
NSTR 1	806	11,835	4,229	176	2,325	3,339	11,051	105	4,170
NSTR 2	7,584	9,936	4,843	4,149	10,058	915	1,145	6	
NSTR 3	25,397	2,075	4,617	0	73,656	5,718	668	37	14,547
NSTR 4	3,408	19,668	929	2,364	3,701	3,724	2,136	89	
NSTR 5	370	801	1,226	34	4,468	1,588	2,699	403	
NSTR 6	333	639	948	64	6,558	14,789	16,728	2,891	
NSTR 7	130	167	1,331	8	1,937	866	988	10	
NSTR 8	814	3,526	2,420	43	11,596	4,928	9,091	330	646
NSTR 9	255	2,276	4,535	115	6,789	1,550	10,193	85	

Table B3.8b
Export of goods by transport mode, continent of unloading and product group, 2004

	Maritime transport					Inland shipping	Road transport	Rail transport	Pipeline transport
	Africa	America	Asia	Oceania	Europe	Europe	Europe	Europe	Europe
	1,000 tonnes								
NSTR 0	187	257	585	23	1,541	1,373	9,109	164	
NSTR 1	408	1,025	1,620	144	7,754	6,398	14,026	537	2,916
NSTR 2	50	249	462	28	2,514	11,072	4,775	2,265	
NSTR 3	2,004	4,147	2,169	118	6,820	17,804	1,352	1,458	77,338
NSTR 4	156	1,176	2,293	100	6,221	16,059	426	2,601	
NSTR 5	44	251	90	3	2,118	2,074	5,835	2,328	
NSTR 6	63	265	271	12	2,025	10,491	6,509	165	
NSTR 7	67	943	514	33	2,983	2,482	1,539	1,634	
NSTR 8	343	2,068	3,129	94	9,154	7,069	10,372	2,011	518
NSTR 9	146	954	1,916	93	4,051	581	12,149	182	

B4. *Internationalisation of research and development (R&D)*

Introduction

This set with annotated tables on the internationalisation of R&D presents information on the input of foreign controlled enterprises to the R&D and innovation activities in the Dutch business sector. Data is based on the *R&D and Innovation Survey*, which is conducted every even year. The data are descriptive and categorised by sector and by size class. The survey makes it possible to make innovation profiles for specific types of enterprises and compare them. A second data source about internationalisation of R&D is the *Worldwide Patent Statistical Database* published by the *European Patent Office (EPO)*. This database contains data about the applicant of a patent and the inventor(s) who performed the underlying research. This makes it possible to monitor and describe the degree of (international) cooperation between inventors.

Definitions

Foreign controlled enterprises are defined based on the question in the *R&D and Innovation Survey* about the location of the enterprise's main office.

Classification
Three sectors are distinguished:
- Manufacturing: NACE Rev. 1.1 Section D
- Services: NACE Rev. 1.1 Sections G, H, I, J, K (excluding NACE class 73) and NACE classes 90 and 93
- Other: NACE Rev. 1.1 Sections A, B, C, E and F

Data for the sector 'other' are not shown separately because the number of enterprises in this category is too small.

B4.1 R&D expenditure of foreign controlled enterprises in the business sector

The share of R&D expenditures of foreign controlled enterprises in the total R&D expenditures of the Dutch business sector indicates the involvement of foreign multinationals or investors in R&D performed in the Netherlands.Over 20 percent of the R&D expenditures in the Dutch business sector was realised by foreign controlled enterprises. This is a stable proportion over the period 2000 – 2006. In the services sector the share is a little larger than in manufacturing.

In all size classes the contribution of foreign controlled enterprises to the R&D performed in the Netherlands is substantial. Over the years the share of R&D performed by foreign controlled enterprises seems to be the largest in the medium-sized enterprises (50–249 employees).

Graph B4.1 shows that almost half (46 percent) of the R&D performed by foreign controlled enterprises in the Netherlands is controlled by parent companies located in member states of the EU-26. The share of affiliates of parent companies located in North America (33 percent) and in the rest of the world (21 percent) are both smaller than the EU-26 share.

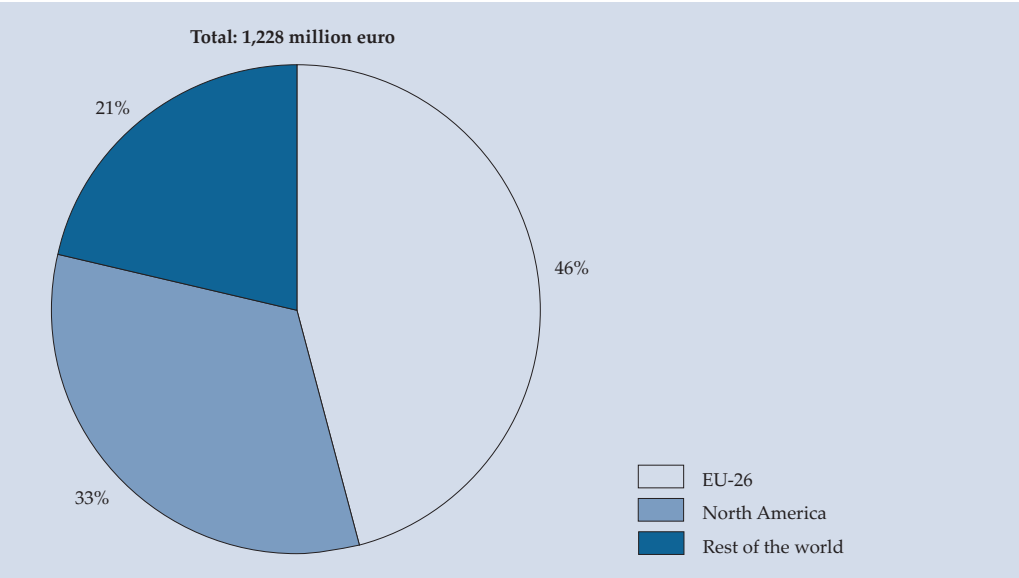
With almost 1.3 billion euro of investments in R&D activities by foreign controlled enterprises, they identify the Netherlands as a suitable location for performing R&D. This foreign controlled R&D may be the result of so called Greenfield investments (starting new R&D activities), which increases the R&D performed in the Netherlands, and has positive effects on the Dutch knowledge economy. Yet, it may also be the result of mergers and acquisitions, meaning that existing R&D activities of Dutch enterprises are taken over by foreign enterprises with the aim of getting access to certain knowledge or technologies. The latter does not increase the amount of R&D performed in the Netherlands: it just changes the ratio between R&D performed by Dutch controlled enterprises and R&D performed by foreign controlled enterprises.

The R&D performed by foreign enterprises is broken down by location of the enterprise's head office and categorised into international regions. EU-26 consists of the 27 European countries excluding the Netherlands. North America consists of the United States of America and Canada. The rest of the world consists of all other countries except EU-26, the Netherlands, and North America.

Table B4.1
R&D expenditure of foreign and Dutch controlled enterprises in the business sector

	2000		2002		2004		2006	
	million euro	*%*	*million euro*	*%*	*million euro*	*%*	*million euro*	*%*
Total	4,348	100	4,543	100	5,071	100	5,480	100
Dutch controlled	3,276	75	3,602	79	3,907	77	4,253	78
Foreign controlled	1,072	25	941	21	1,165	23	1,228	22
Industry								
Manufacturing	3,385	100	3,454	100	3,898	100	4,094	100
Dutch controlled	2,613	77	2,771	80	3,009	77	3,197	78
foreign controlled	772	23	684	20	889	23	897	22
Services sector	767	100	884	100	974	100	1,200	100
Dutch controlled	487	63	638	72	722	74	884	74
foreign controlled	280	37	246	28	252	26	316	26
Size class								
10–49 employees	222	100	422	100	431	100	421	100
Dutch controlled	180	81	378	90	381	88	361	86
foreign controlled	42	19	44	10	50	12	59	14
50–249 employees	524	100	704	100	934	100	992	100
Dutch controlled	360	69	510	73	686	73	723	73
foreign controlled	164	31	193	27	248	27	269	27
250 and more employees	3,602	100	3,417	100	3,707	100	4,068	100
Dutch controlled	2,736	76	2,713	79	2,840	77	3,168	78
foreign controlled	866	24	704	21	867	23	900	22

B4.1 R&D expenditure of foreign controlled enterprises in the business sector by origin of the parent company, 2006



B4.2 R&D of foreign controlled enterprises: structural or not?

The table B4.2 shows that in general R&D by foreign controlled enterprises is performed on a more regular basis than the R&D of Dutch controlled enterprises. The manufacturing sector shows the largest differences in this indicator. In manufacturing over 80 percent of the foreign controlled enterprises performing R&D claim to do this on a regular basis, against 70 percent of the Dutch enterprises. The difference in the services sector is negligible.

In general larger enterprises perform R&D on a more structural basis than smaller enterprises. When comparing enterprises of the same size class, it appears that foreign controlled enterprises perform in general slightly more R&D on a structural basis than Dutch controlled enterprises.

Overall, the preconception that R&D performed by foreign controlled enterprises is less commited cannot be confirmed. They even seem to perform more R&D on a structural basis than Dutch controlled enterprises.

One of the characteristics of R&D activities is that they can be performed on a structural basis or just occasionally. This matter is addressed in the R&D and Innovation Survey where enterprises claiming to perform R&D are asked if they do this on a regular basis, meaning more or less continuously, or only occasionally.

Table B4.2
Foreign and Dutch controlled enterprises performing R&D on a structural basis

	2002–2004	2004–2006
	% of enterprises performing R&D	
Total	72	69
Dutch controlled	67	68
Foreign controlled	72	76
Industry		
Manufacturing	72	72
Dutch controlled	70	70
foreign controlled	80	82
Services sector	66	71
Dutch controlled	66	70
foreign controlled	64	72
Size class		
10–49 employees	64	65
Dutch controlled	65	65
foreign controlled	60	70
50–249 employees	73	76
Dutch controlled	71	75
foreign controlled	78	79
250 and more employees	82	81
Dutch controlled	81	79
foreign controlled	85	85

B4.3 International cooperation in research

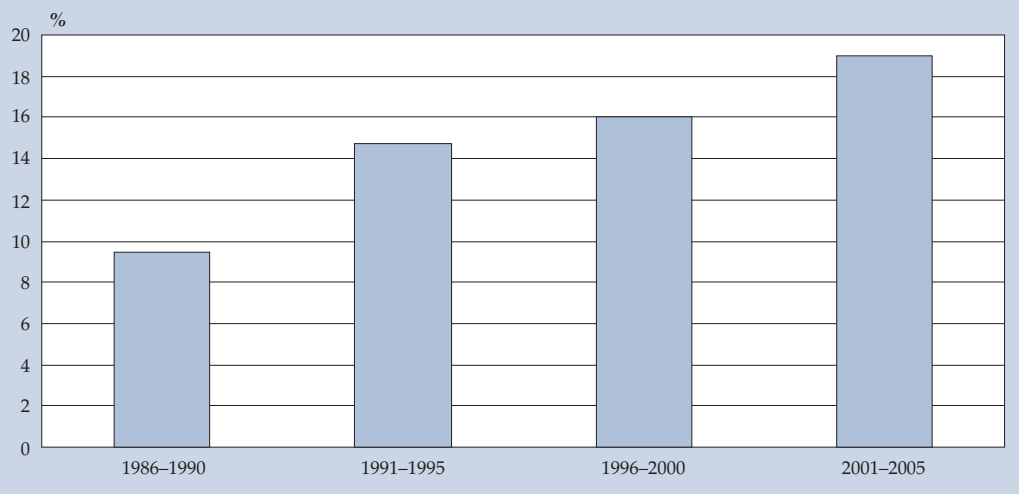
The analysis of inventions invented by inventors residing in the Netherlands reveals increasing involvement of inventors residing abroad as can be seen in table B4.3. More specifically, in 2001–2005 the share of co-invention amounted to 19.0 percent. In the period 1986–1990 this share was just 9.5 percent. The share of co-invention was on average 14.8 percent in 1986–2005.

The observed trend might be explained by the presence of large multinationals in the Netherlands. Multinationals have research facilities in several countries. More specifically, co-invention can originate from researchers working for these multinationals in research facilities located in different countries.

However, co-invention can also originate from collaboration between two inventors working for two different companies, thereby facilitating the exchange of technical skills or technological capabilities among partner firms

International cooperation in research is an indicator that represents the number of patent applications invented by an inventor residing in the Netherlands with at least one inventor located in a foreign country, divided by the total number of patents invented by inventors residing in the Netherlands. This phenomenon is also known as co-invention.

B4.3 Co-invention[1)]



Source: EPO Worldwide Statistical Database, April 2008.

[1)] Patent counts (EPO: Euro-direct and Euro-PCT) are based on the priority date and the inventor's country of residence, using simple counts.

B4.4 Technological innovation profile

Foreign controlled enterprises in the Netherlands are much more active in innovation than domestically controlled enterprises. Overall 23 percent of Dutch enterprises and 46 percent of the foreign controlled enterprises innovated in the period 2004–2006. Large enterprises innovate more frequently than small enterprises, and the manufacturing sector is more innovative than the services sector.

In the services sector, the percentage of innovative enterprises is twice as high among foreign controlled enterprises compared to domestic ones. The differences between Dutch and foreign enterprises diminish slightly as the enterprises are larger in terms of the number of employees.

The figures for product innovation tell a similar story. More than one in three foreign controlled enterprises came up with product innovations compared to only one in seven Dutch enterprises. The patterns for the sectors and size classes are similar to the overall figures on innovation. In the size class of 10–49 employees, 31 percent of the foreign enterprises came up with product innovations, compared to 13 percent of the Dutch enterprises.

There is a difference in the way enterprises develop their innovations. More than 40 percent of the innovative Dutch controlled enterprises worked together with other parties or had third parties develop the innovation.

Just over 20 percent of the innovating foreign controlled enterprises worked in partnership with external parties to develop innovation.

The concept of innovation can be split into technological innovation (product and process innovation) and non-technological innovation (organisational and marketing innovation). This table shows technological innovation.

Table B4.4
Technological innovation profile; foreign and Dutch controlled enterprises, 2004–2006

	Innovation	Product innovation	Product innovation with whom	
			internal	external
	% of enterprises		*% of innovators*	
Total	25	16	62	38
Dutch controlled	23	14	59	41
Foreign controlled	46	36	78	22
Industry				
Manufacturing	42	32	69	31
Dutch controlled	39	29	66	34
foreign controlled	66	54	81	19
Services sector	22	14	62	38
Dutch controlled	21	13	58	42
foreign controlled	40	31	75	25
Size class				
10–49 employees	21	14	60	40
Dutch controlled	20	13	58	42
foreign controlled	41	31	76	24
50–249 employees	38	26	66	34
Dutch controlled	35	23	60	40
foreign controlled	52	41	80	20
250 and more employees	56	43	68	32
Dutch controlled	54	38	62	38
foreign controlled	61	52	77	23

B4.5 Cooperation profile

Many innovative enterprises do not develop their innovations independently. Cooperation during the innovation process may be with others within the enterprise or enterprise group, or with external partners. More than 40 percent of the innovative foreign controlled enterprises actively worked together with a partner in order to innovate. Of the Dutch controlled enterprises, this was 35 percent.

Yet, in manufacturing industry, almost 60 percent of the foreign controlled enterprises cooperated with others, compared to 40 percent of the Dutch controlled enterprises. In the services sector, on the other hand, there was no difference between foreign and domestically controlled enterprises.

More than 80 percent of the innovating foreign controlled affiliates, in both manufacturing and services, worked together within the enterprise group. The percentages are lower, around 60 percent, for the Dutch enterprises. However, the group of large Dutch controlled enterprises behave in the same way as large foreign controlled enterprises.

Three quarters of the innovating and cooperating foreign controlled enterprises work together with their suppliers on innovations. This percentage is slightly higher in manufacturing and in the large enterprises. Nonetheless, the Dutch controlled enterprises innovate even more in cooperation with their suppliers.

Half of the cooperating innovators worked together with their customers. The percentages for the foreign controlled enterprises are slightly higher than for the Dutch companies. Cooperation with customers is a more common way of innovating in the manufacturing sector in comparison with the service sector.

The cooperation profile describes how many of the innovating enterprises cooperate and with whom they cooperate.

Partners in innovation in addition to the parent company or enterprise group itself include suppliers and customers. Other possible partners such as universities, other research institutes or governments play a less important role.

Table B4.5
Cooperation profile; foreign and Dutch controlled enterprises, 2004–2006

	Cooperation	Cooperation within the enterprise group [1]	Cooperation with	
			suppliers	customers
	% of innovators	*% of cooperating innovators*		
Total	36	65	80	49
Dutch controlled	35	58	81	49
Foreign controlled	41	81	75	52
Industry				
Manufacturing	44	66	80	59
Dutch controlled	40	56	81	58
foreign controlled	58	83	78	62
Services sector	32	67	78	45
Dutch controlled	32	61	80	45
foreign controlled	32	83	71	44
Size class				
10–49 employees	32	60	79	47
Dutch controlled	31	55	80	48
foreign controlled	33	78	72	44
50–249 employees	43	66	81	51
Dutch controlled	42	56	83	49
foreign controlled	45	83	75	55
250 and more employees	64	79	84	60
Dutch controlled	63	76	85	57
foreign controlled	66	84	82	65

[1] As percentage of cooperating innovators actually being part of an enterprise group.

B4.6 Non-technological innovation

Foreign controlled enterprises in the Netherlands are much more active in non-technological innovation than Dutch controlled enterprises. Overall, the pattern of non-technological innovations is quite similar to the pattern of technological innovations (see the first column of table B4.4).

Overall 22 percent of Dutch controlled enterprises and 42 percent of the foreign controlled enterprises innovated in the 2004–2006 period. Both in manufacturing and services, foreign controlled enterprises are much more innovative. Yet, for large enterprises, measured by the number of employees, the difference between Dutch and foreign enterprises vanishes.

The figures found for organisational innovations tell a similar story. One in three foreign controlled enterprises created organisational innovations compared to one in five Dutch controlled enterprises. The pattern for the sectors and size classes is similar to the overall figures on non-technological innovations. The foreign controlled enterprises also had a higher percentage of changes in organisational or management structure, which are a part of organisational innovations.

Also in marketing innovations, the percentage of enterprises creating marketing innovations is twice as high for the foreign affiliates in most size classes and sectors,. 17 percent of the foreign affiliates implemented marketing innovations, against 8 percent of the Dutch enterprises. Of the largest enterprises, one in five Dutch companies implemented marketing innovations, against one in four foreign affiliates.

Non-technological innovations can be divided into organisational and marketing innovations. Organisational innovations are major changes in the company structure or management methods. A marketing innovation is the implementation of new or significantly improved product designs or sales methods.

Table B4.6
Non–technological innovation; foreign and Dutch controlled enterprises, 2004–2006

	Non-technological innovations	Organisational innovations	Marketing innovations
	% of enterprises		
Total	24	22	9
Dutch controlled	22	20	8
Foreign controlled	42	37	17
Industry			
Manufacturing	31	27	12
Dutch controlled	29	25	11
foreign controlled	48	42	22
Services sector	24	22	9
Dutch controlled	22	20	8
foreign controlled	41	36	16
Size class			
10–49 employees	21	19	7
Dutch controlled	20	18	7
foreign controlled	37	32	15
50–249 employees	36	32	12
Dutch controlled	33	30	11
foreign controlled	47	41	19
250 and more employees	54	50	22
Dutch controlled	54	51	20
foreign controlled	54	48	26

B4.7 Barriers to innovation

Enterprises often experience difficulties during or even before the actual start of the innovation process. The two problems mentioned most often are a lack of financial means to innovate, and difficulties of hiring qualified employees. Among innovative enterprises, 42 percent of all Dutch controlled enterprises have a lack of qualified employees. Yet, 33 percent of the foreign controlled enterprises were facing lack of qualified employees as the most prevalent factor that hampered their innovative activities during the period 2004–2006.

Lack of funds within the enterprise or enterprise group was a problem for 36 percent of Dutch controlled enterprises. And again, 26 percent of foreign controlled enterprises faced this barrier.

However, foreign controlled enterprises with more than 50 employees reported financial problems as often as Dutch controlled enterprises did.

The reason *not* to innovate among enterprises without any innovative activities was usually lack of qualified personnel. This motivation was reported as a barrier for not being an active innovator by 44 percent of non-innovating Dutch controlled enterprises and 32 percent of non-innovating foreign controlled enterprises.

The second reason not to innovate among enterprises without any innovative activities was usually lack of financial means within the enterprise or group. The difference between Dutch and foreign controlled enterprises is much smaller for this barrier than for lack of qualified personnel. Nonetheless, financial constraints was most prevalent among both Dutch and foreign controlled non-innovating enterprises in the manufacturing industry.

The CIS survey included a list of factors that may hamper innovation Enterprises could indicate the importance of these factors (high, medium, low or 'not experienced'). The statistics listed in table B4.7 are the number of enterprises that have experienced these factors, summed over high and medium importance.

Table B4.7
Barriers to innovation; foreign and Dutch controlled enterprises, 2004–2006 [1)]

	Innovators		Non-innovators	
	lack of qualified personnel	lack of financial means within enterprise or group	lack of qualified personnel	lack of financial means within enterprise or group
	% of innovators		*% of non-innovators*	
Total	41	34	43	28
Dutch controlled	42	36	44	28
Foreign controlled	33	26	32	26
Industry				
Manufacturing	42	38	30	50
Dutch controlled	43	38	30	51
foreign controlled	37	38	25	41
Services sector	40	32	28	42
Dutch controlled	42	35	28	42
foreign controlled	31	17	25	34
Size class				
10–49 employees	40	36	27	44
Dutch controlled	42	38	27	44
foreign controlled	28	19	21	30
50–249 employees	41	30	33	40
Dutch controlled	42	29	32	40
foreign controlled	39	32	40	39
250 and more employees	40	32	23	19
Dutch controlled	44	31	22	14
foreign controlled	33	33	28	34

[1)] The survey included a list of factors that may have hampered innovation, or that may have been reasons not to innovate. Enterprises could indicate the importance of these factors (high, medium, low or 'not experienced'). The statistics included here are the number of enterprises that have experienced these factors, summed over high and medium importance.

B5. Globalisation and employment

Introduction

The advent of globalisation has come with intense debates among policymakers and academics about its consequences for a range of social issues related to employment, labour conditions, income equality and overall human wellbeing. On the one hand, the growing international connectiveness may lead to economic growth, increased employment and higher wages. On the other hand, fears are often expressed that economic growth may become separated from job creation, partly due to increased competition from low-wage countries, or through outsourcing and off-shoring activities of enterprises.
The aim of chapter B5 is to describe the consequences of economic globalisation for employment for the Dutch context, or, more specifically, about the extent to which firm characteristics related to globalisation – such as foreign ownership – affect the employment, labour conditions and careers of employees. By linking business and social data from various surveys and registers at the micro level, thus creating integrated information on employers and employees, Statistics Netherlands is able to shed some light on these questions. This chapter is supporting the chapter A5 'Effects of Globalisation: wage differences between employees at Dutch and foreign controlled enterprises in the Netherlands' in part A of this publication.

The indicators presented in this chapter are based on the integration of a variety of registered and survey data. This resulted in a sample of approximately 20 thousand enterprises from the General Business Register (GBR) included each year (2000–2005 period) for which the locus of control (Dutch versus foreign) is known from either the Financial Statistics of Large Enterprise Groups (SFGO) or the Community Innovation Survey (CIS) and for which the Social Statistics Database (SSB) employment data are available.

Tables B5.1 up to and including B5.7 are based on the integrated employer-employee dataset. The micro data integration occurred at the enterprise level with the unique enterprise identifier (BEID) as key variable. While the size of the final sample of enterprises available for analysis is quite modest, it includes a disproportionate share of large enterprises that together account for nearly 3 million jobs (full-time equivalents. This represents 55 percent of the total number of jobs (fte) in the Netherlands, and 75 percent of the jobs (fte) in the private sector. Although the results should be interpreted with caution – in particular with respect to the sample of enterprises – the data give a clear perspective on the consequences for employees of working for foreign versus Dutch controlled enterprises. More details on the matching methodology are available in Fortanier and Korvorst (2009, 'Employment

consequences of globalisation: methodological considerations for integrating data on employers and employees').

Table B5.8 is based on a different dataset. The integrated employer-employee dataset (see tables B5.1–B5.7) was merged with The Netherlands Working Condition Survey (Nationale Enquête Arbeidsomstandigheden, NEA), resulting in a sample of approximately 8 thousand employees working in the Netherlands in 2005, for which the locus of control (Dutch versus foreign) was known from either the Financial Statistics of Large Enterprise Groups (SFGO) or the Community Innovation Survey (CIS). The NEA is an annual survey which is carried out in a joint effort by TNO Quality of Life and Statistics Netherlands (SN) in cooperation with the Dutch Ministry of Social Affairs.

For tables B5.2, B5.4 and B5.7, totals were calculated on a selection of industry sectors. However, due to low observations per cel, the breakdown for the sector of electricity, gas and water supply is not listed.

B5.1 The linked employer-employee dataset

The number of enterprises in the six year time window (2000–2005) is quite stable, consisting of approximately 20 thousand cases each year.

Table B5.1 gives an overview of the share of Dutch and foreign controlled enterprises in our sample. The share of foreign controlled enterprises is about 15 percent of the total number of enterprises included.

The linked employer-employee dataset complements existing SN data by distinguishing between foreign and Dutch controlled enterprises in the Netherlands. Foreign controlled enterprises have a centre of control outside the Netherlands. Dutch controlled enterprises are nationally owned and do not have affiliates abroad. The distinction enables an analysis of the consequences of inward foreign direct investments (FDI) in the Netherlands at the micro level.

Furthermore, foreign controlled enterprises are not equally represented in each size group distributed across the sample. Data on Dutch controlled enterprises are mainly available for small to medium (< 250 employees) sized enterprises, whereas foreign controlled enterprises are relatively more represented at larger size classes in our sample.

Table B5.1 provides an overview of the enterprises included in the employer-employee integrated dataset for the Netherlands. This sample of approximately 20 thousand enterprises forms only a relatively small part of the total population of approximately 600 thousand enterprises in the Netherlands.
While the dataset does not form a balanced panel, the largest enterprises are automatically included each year. Hence a subset of the largest enterprises could be analysed in the future as a panel structure.

Table B5.1
Enterprises in the linked employer-employee dataset by size class

	2000	2001	2002	2003	2004	2005
Total	18,865	17,681	19,077	17,837	18,481	17,469
Foreign controlled	2,716	2,614	2,933	2,757	2,841	2,671
0– 4 employees	209	209	204	200	189	185
5– 9 employees	165	156	158	156	131	134
10– 19 employees	294	265	308	248	324	303
20– 49 employees	525	471	527	509	548	494
50– 99 employees	522	497	627	546	512	460
100– 149 employees	273	261	296	293	319	310
150– 199 employees	192	170	181	192	192	202
200– 249 employees	118	128	142	126	122	112
250– 499 employees	222	240	259	263	274	246
500– 999 employees	123	124	141	139	141	145
1,000–1,999 employees	49	64	60	51	49	44
2,000 and more employees	24	29	30	34	40	36
Dutch controlled	16,149	15,067	16,144	15,080	15,640	14,798
0– 4 employees	2,161	2,225	1,796	1,740	1,642	1,617
5– 9 employees	1,669	1,603	1,123	1,251	1,043	1,226
10– 19 employees	2,997	2,734	3,368	2,711	3,455	3,204
20– 49 employees	3,597	3,258	3,665	3,605	4,073	3,757
50– 99 employees	3,010	2,536	3,251	2,857	2,495	2,276
100– 149 employees	927	913	1,079	1,097	1,070	948
150– 199 employees	451	467	496	504	536	486
200– 249 employees	257	255	270	266	255	252
250– 499 employees	551	547	552	524	523	520
500– 999 employees	304	308	290	277	306	268
1,000–1,999 employees	127	121	153	148	140	138
2,000 and more employees	98	100	101	100	102	106

B5.2 Employment in foreign and Dutch controlled enterprises

A substantial effect on employment can be observed in our linked employer-employee data for the Netherlands. As shown in graph B5.2 foreign controlled enterprises have a larger workforce than Dutch controlled enterprises. In terms of mean number of employees foreign enterprises are 40 to 60 percent larger than Dutch controlled enterprises.

Furthermore, foreign enterprises in the Netherlands have shown an increase in employment from 2002 onwards, whereas Dutch controlled enterprises have shown a small decline in terms of average number of employees. While this trend may be caused by foreign takeovers of (or mergers with) Dutch controlled enterprises of medium to large size, in terms of total number of employees and the creation of jobs, foreign controlled enterprises have a positive impact on the labour force situation in the Netherlands.

Table B5.2 gives an overview of the employment situation at foreign and Dutch controlled enterprises for the years 2000 and 2005, broken down by sector of activity. The sectors that showed the highest growth in employment at foreign controlled enterprises in the Netherlands were concerned with agriculture, forestry and fishing, mining, and quarrying, construction, trade and repairs, transport, storage and communication and financial intermediation.

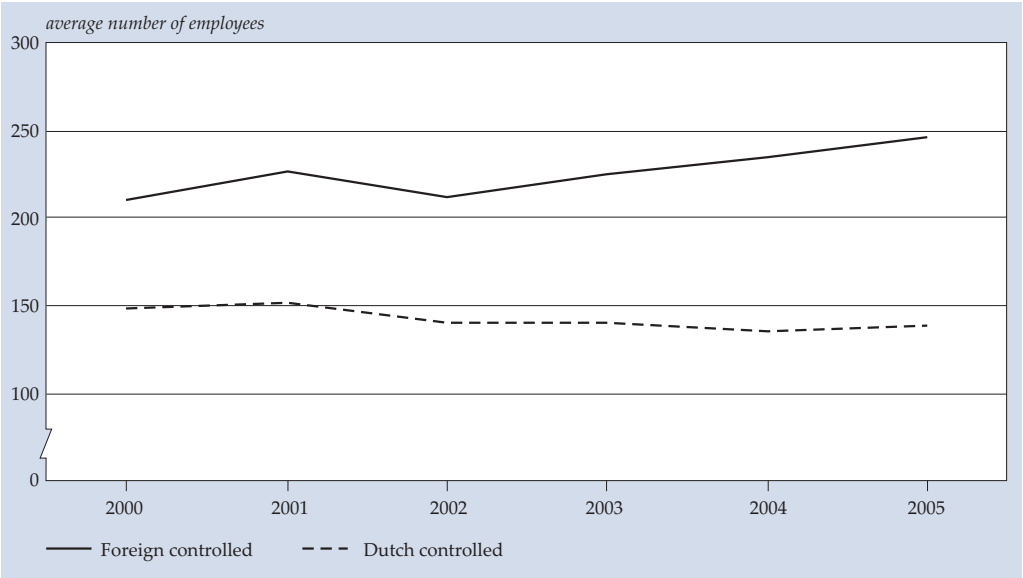
In contrast, at Dutch controlled enterprises small increases in average number of jobs were only realised in the food and beverages and chemicals and plastic products industries, whereas all other sectors showed a decline.

Inward investment by foreign enterprises may affect employment in host countries. In setting up affiliates and hiring workers, multinational enterprises (MNEs) directly affect employment, wages, and the labour conditions in these countries. Empirically, the studies on the effects of inward investment have generally indicated that foreign enterprises in fact create employment (see for some recent contributions e.g. Driffield, 1999; Fu and Balasubramanyam, 2005; Görg, 2000; Radosevic et al., 2003).
In table B5.2 the average employment was calculated as the (unweighted) average number of jobs per year, by locus of control (foreign vs. Dutch) and industry of the enterprise.

Table B5.2
Average employment in foreign and Dutch controlled enterprises by industry

	2000		2005	
	foreign controlled	Dutch controlled	foreign controlled	Dutch controlled
	average number of employees			
Total	211	149	247	138
Agriculture, mining and quarrying	76	66	155	56
Food and beverages	288	119	306	126
Paper, paper products and publishers	202	100	203	97
Chemicals and plastics products	202	115	200	126
Metal products	143	59	135	49
Machinary and equipment	159	79	139	77
Other manufacturing	286	157	281	190
Construction	202	95	255	92
Energy	.	.	.	.
Trade and repairs	133	135	166	125
Hotels and restaurants	469	86	515	64
Transport, storage and communication	257	230	431	187
Financial intermediation	115	355	287	295
Real estate, renting and business services	285	158	315	148
Other services	198	242	222	204

B5.2 Average employment in foreign and Dutch controlled enterprises



B5.3 Share of high and low-paid employees in foreign and Dutch controlled enterprises

Whereas Dutch controlled enterprises have an equal share in their workforce, graph B5.3a shows that foreign enterprises have more high than low-paid employees. This difference in share of high versus low-paid workers is stable over time (2000–2005).

Foreign enterprises in the Netherlands paid substantially higher wages in 2005 than Dutch controlled enterprises, across all size classes, as is shown in graph B5.3b.

The highest share of high-paid workers is observed in very small businesses, consisting of the owner and/or one or two employees. This might be explained by the fact that owners pay out part of the firm's profit as their own salary and that they are in general more highly educated.

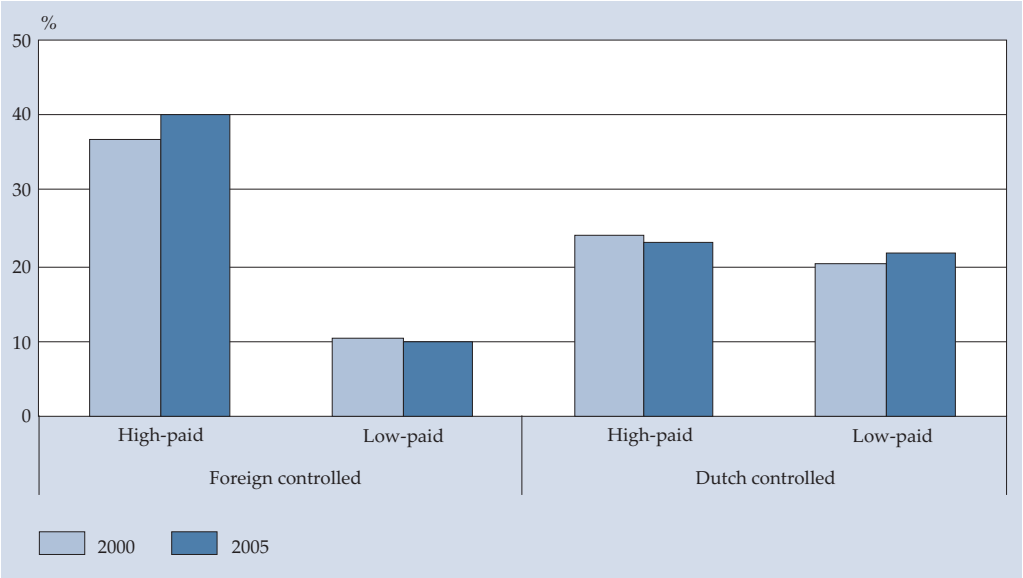
The prominence of high-paid workers is negatively correlated with size class: Both foreign and Dutch controlled enterprises tend to have fewer highly paid workers as they become larger, in terms of number of employees. Enterprises employing more than 500 people often involve production plants and the like with a large share of low-skilled labour. An S-shaped pattern is observed at Dutch controlled enterprises, with small to medium sized enterprises employing the fewest highly paid workers.

Furthermore, both foreign and Dutch controlled enterprises have the highest share of high-paid workers in the mining and quarrying, chemical and plastic products and financial intermediation industries.

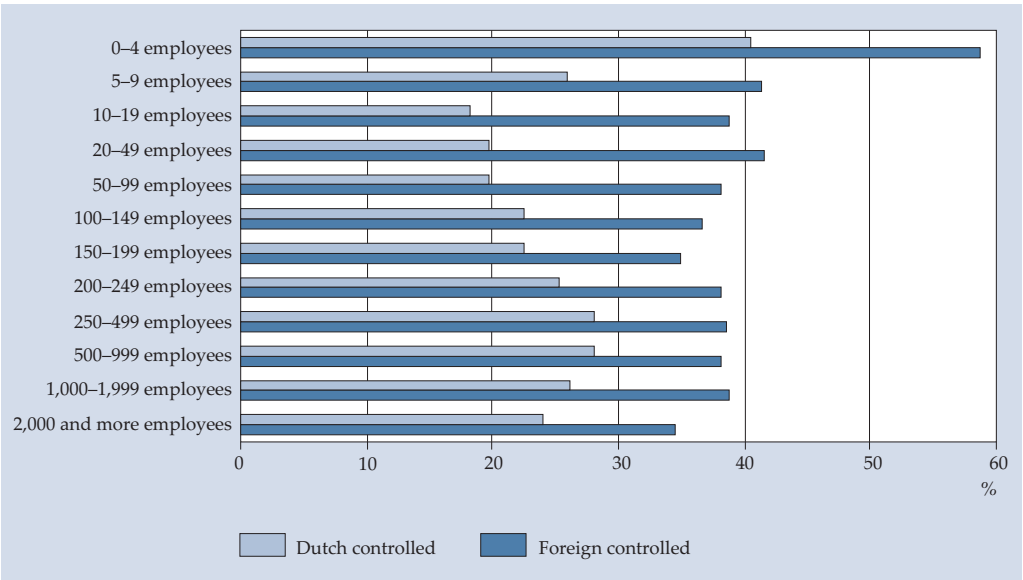
The ratio of skilled versus unskilled wage is called the relative wage, and may serve as a proxy for overall income inequality. Most models assume that foreign enterprises hire relatively highly skilled labour, making it scarcer and thereby indirectly increase wage inequality (e.g. Wu, 2000). Foreign enterprises tend to pay higher wages, to attract more highly educated employees and at the same time prevent labour migration to nearby (domestic) enterprises or prevent people from setting up their own enterprises. Furthermore, foreign enterprises may be more productive in general, substantiating a higher wage level.

Employees are classified as high-paid if their wage belongs to the 81st percentile or higher of all registered jobs in the Netherlands. Jobs are classified as low-paid if they belong to the 30th wage percentile or lower. The mean share of high-paid employees per enterprise was calculated as the (unweighted) average percentage of high-paid jobs in total jobs at the end of the year, by locus of control and size class.

B5.3a Share of high and low-paid employees at foreign and Dutch controlled enterprises



B5.3b Share of high-paid employees at foreign and Dutch controlled enterprises by size class, 2005



B5.4 Share of high and low-paid employees by industry in foreign and Dutch controlled enterprises

Foreign enterprises employ more high-paid workers than Dutch controlled enterprises, across all sectors of activity. Yet, the relative differences by industry are most pronounced in the agriculture, forestry and fishing, mining and quarrying, food and beverages, paper, paper products and publishers and trade and repair sectors. Foreign enterprises have an about 20 to even 30 percent larger share of high-paid workers in these industries than Dutch controlled enterprises. Moreover, their share at foreign controlled enterprises steadily increased, across all industrial sectors, from 2000 to 2005, whereas a mixed picture arises for the share of high-paid employees at Dutch controlled enterprises.

The opposite holds for low-paid employees, with Dutch controlled enterprises having a share twice as large than foreign controlled enterprises. Exceptions are the mining and quarrying and construction sectors.

Furthermore, the industry of hotels and restaurants has a disproportionate share of low-paid workers, and very few highly paid workers, both in foreign and Dutch controlled enterprises.

The difference between foreign and Dutch controlled enterprises in terms of high-paid workers might be a result of FDI demanding more managerial capacity and other highly skilled functions to coordinate the new foreign venture in the Netherlands. Another reason why foreign enterprises pay higher wages might be to attract highly educated employees and at the same time preventing labour migration to nearby (domestic) enterprises or preventing people from setting up own enterprises. Furthermore, foreign enterprises may be more productive in general, while operating in new, innovative sectors, substantiating a higher wage level.

As shown in the previous section (B5.3), foreign enterprises in the Netherlands have a higher share of high-paid employees, whereas Dutch controlled enterprises have an equal share of high- and low-paid employees in their workforce. Table B5.4 provides for an overview (2000/2005) by industry.

Employees are classified as high-paid if their wage belongs to the 81st percentile or higher of all registered jobs in the Netherlands. Jobs are classified as low-paid if they belong to the 30th wage percentile or lower. The mean share of high-paid employees per enterprise was calculated as the (unweighted) average percentage of high-paid jobs in total jobs at the end of the year, by locus of control and industry.

Table B5.4
Share of high and low-paid employees working at foreign and Dutch controlled enterprises by industry[1)]

	2000		2005	
	high-paid	low-paid	high-paid	low-paid
	%			
Total	25.9	18.8	25.7	19.7
Foreign controlled	36.9	10.4	39.9	9.7
Agriculture, mining and quarrying	58.0	11.6	58.7	5.5
Food and beverages	36.4	6.6	40.1	6.2
Paper, paper products and publishers	35.3	4.6	35.3	8.3
Chemicals and plastics products	41.0	5.8	44.5	4.6
Metal products	22.4	5.7	24.6	5.5
Machinary and equipment	29.9	6.8	32.5	6.2
Other manufacturing	27.4	6.4	32.3	5.9
Construction	31.2	8.3	34.4	9.4
Energy	.	.	.	.
Trade and repairs	38.1	10.7	39.3	11.2
Hotels and restaurants	5.6	34.6	8.7	43.0
Transport, storage and communication	34.1	10.7	36.0	9.8
Financial intermediation	51.7	10.0	58.1	6.7
Real estate, renting and business services	44.3	13.8	49.7	9.6
Other services	25.0	19.8	31.2	15.2
Dutch controlled	24.1	20.3	23.1	21.5
Agriculture, mining and quarrying	18.1	26.0	17.1	26.3
Food and beverages	15.6	26.4	17.7	24.0
Paper, paper products and publishers	23.4	15.9	21.9	15.5
Chemicals and plastics products	25.0	14.4	27.2	11.3
Metal products	18.1	11.7	17.2	12.1
Machinary and equipment	21.7	10.7	24.4	10.0
Other manufacturing	16.0	15.6	16.9	13.3
Construction	18.3	8.4	21.1	8.6
Energy	.	.	.	.
Trade and repairs	19.8	25.4	17.1	28.2
Hotels and restaurants	4.6	57.7	2.8	57.8
Transport, storage and communication	32.0	16.3	22.7	18.2
Financial intermediation	49.8	14.0	46.4	13.8
Real estate, renting and business services	32.3	22.5	34.2	20.9
Other services	21.0	25.6	16.0	31.4

1) Totals were calculated on a selection of industry sectors. However, due to low observations per cell, the breakdown for the sector of electricity, gas and water supply is not listed.

B5.5 *Labour force composition in foreign and Dutch controlled enterprises*

In 2005, foreign and Dutch controlled enterprises did not differ dramatically with respect to the make-up of their workforce. Graph B5.5 shows that, on average, foreign and Dutch enterprises have an equal share of female and older workers.

Yet, the workforce at foreign controlled enterprises in the Netherlands consists of substantially fewer employees of native Dutch origin. They have a traditionally larger share of international western and non-western employees and incoming expatriate workers acquired through take-overs and offshoring. As the international orientation of foreign enterprises is reflected in the ethnicity of their workers, nevertheless the share of native Dutch workers is relatively high, around 80 percent.

A positive, somewhat U-shaped correlation is observed between share of women in an enterprise and size class (number of employees). This applies to both foreign and Dutch controlled enterprises (see table B5.5). At medium (50–250 employees) to large sized enterprises (250 employees and more) Dutch enterprises have an even higher share of female employees than foreign enterprises in the Netherlands. Overall, the share of female workers is highest in the hotels and restaurants, financial intermediation, real estate, renting and business services sectors, for foreign and Dutch controlled enterprises alike.

In contrast, older workers are less represented as enterprises become larger, both foreign and Dutch controlled. Furthermore, workers of 50 years of age and older have a slightly larger share at Dutch than foreign controlled medium to large size enterprises (250 employees and more).

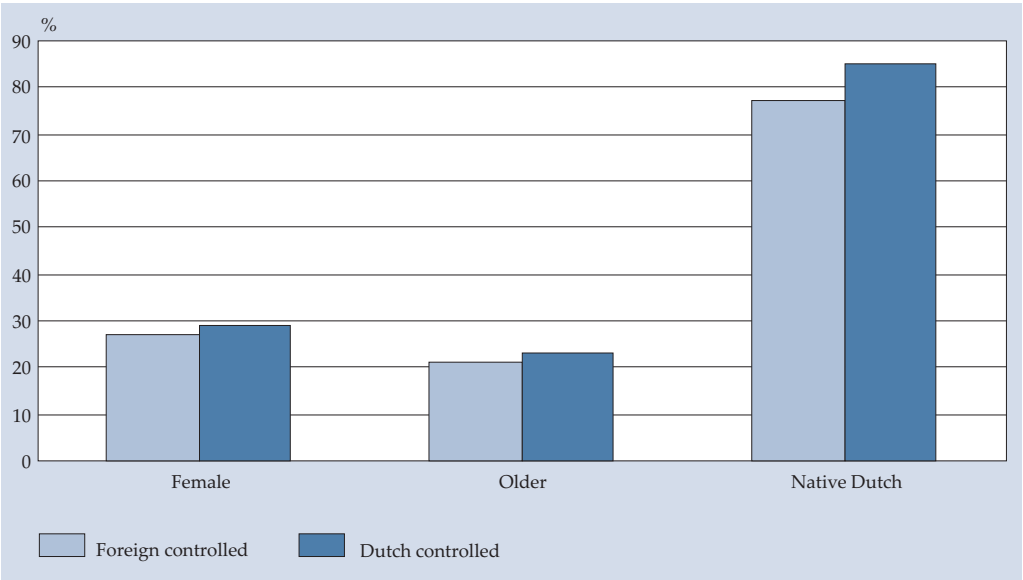
The compilation of the workforce describes the characteristics of employees within an enterprise. By linking characteristics of employees in the employer-employee dataset useful information is gathered about different (more or less homogeneous) groups of employees. From the perspective of globalisation it is of interest whether these groups differ depending on the ownership of the enterprise.

Table B5.5 demonstrates the sample of enterprises and their workforce in 2005. Jobs are full-time equivalents, not the number of employed people. The mean share of female employees per enterprise was calculated as the (unweighted) average percentage of women in the total workforce at the end of the year, by locus of control and size class. Similar calculations were made for the share of older (50 years and more) and native Dutch employees.

Table B5.5
Share of female, older (50+) and native Dutch employees working at foreign and Dutch controlled enterprises by size class

	2000			2005		
	female	older	native Dutch	female	older	native Dutch
	%					
Foreign controlled	26.8	18.5	77.9	26.8	20.8	77.2
0– 4 employees	30.2	25.0	70.2	25.7	29.5	70.4
5– 9 employees	27.1	19.5	76.0	35.0	22.9	79.8
10– 19 employees	27.0	20.0	81.7	31.0	20.2	78.1
20– 49 employees	28.1	16.7	80.0	26.7	18.8	79.0
50– 99 employees	26.5	16.5	77.5	24.4	19.4	77.5
100– 149 employees	25.9	18.1	77.3	25.4	20.4	76.4
150– 199 employees	24.9	18.5	77.8	24.5	19.8	76.8
200– 249 employees	22.6	18.3	77.8	21.8	21.8	80.1
250– 499 employees	25.0	18.6	77.2	25.5	21.6	76.9
500– 999 employees	24.0	19.6	79.0	28.9	21.7	76.6
1,000–1,999 employees	30.6	18.3	79.7	31.7	19.0	75.5
2,000 and more employees	35.5	16.3	77.2	32.9	20.6	77.7
Dutch controlled	27.5	19.9	85.1	28.9	22.9	85.0
0– 4 employees	29.2	27.6	86.1	26.9	30.7	86.2
5– 9 employees	30.8	19.4	86.3	30.8	22.7	86.9
10– 19 employees	28.5	18.3	86.3	30.4	21.2	86.5
20– 49 employees	25.1	18.1	85.8	27.8	21.8	85.4
50– 99 employees	25.8	18.3	84.2	28.4	21.6	83.7
100– 149 employees	24.9	19.1	83.2	27.8	21.8	82.9
150– 199 employees	26.9	20.2	82.7	27.2	21.9	82.0
200– 249 employees	26.2	18.7	81.8	27.8	23.6	82.1
250– 499 employees	28.9	20.2	82.1	30.9	22.7	81.7
500– 999 employees	31.8	20.8	82.0	34.0	25.5	82.7
1,000–1,999 employees	31.0	21.4	83.6	32.1	25.4	83.7
2,000 and more employees	39.5	18.7	77.8	41.8	23.7	79.1

B5.5 Share of female, older (50+) and native Dutch employees working at foreign and Dutch controlled enterprises, 2005



B5.6 Job dynamics at foreign and Dutch controlled enterprises

In 2005, around 80 percent of employees who worked at the same enterprise in 2004 had stayed at the same enterprise. Yet, table B5.6 shows that foreign enterprises in the Netherlands had a slightly higher retention rate than Dutch controlled enterprises, possibly due to more options of inter-firm education and job mobility.

Differences in retention are largest for medium sized (50–250 employees) enterprises. Foreign enterprises also show less job switchers to other enterprises than Dutch controlled enterprises in the medium size range.

In contrast, the share of new entrants to the job market is highest at Dutch controlled enterprises, see graph B5.6 for an illustration. This inflow is a result of job replacement by employees who switch to other enterprises within that year. Exceptions are very small (less than 4 employees) foreign enterprises which showed a large inflow of workers in the year 2005.

General indicators of labour dynamics are the creation and destruction of jobs. Labour dynamics involve jobs changes between two enterprises and the transition from and to work. In the linked employer-employee dataset for the Netherlands (2000–2005) a distinction can be made between new entrants to the job market (inflow), employees who remain within their job and those who switch jobs between enterprises (on the preceding year). Table B5.6 provides an overview of the job dynamics at foreign and Dutch controlled enterprises broken down by size class.

The share of new entrants per enterprise was calculated as the (unweighted) average percentage of entrants (employees in their first jobs and new to the labour market) in the total workforce at the end of the year, by locus of control and size class.

The share of job switchers per enterprise was calculated as the (unweighted) average percentage of job switchers (employees that in the preceding year worked at another organization) in the total workforce at the end of the year, by locus of control and size class.

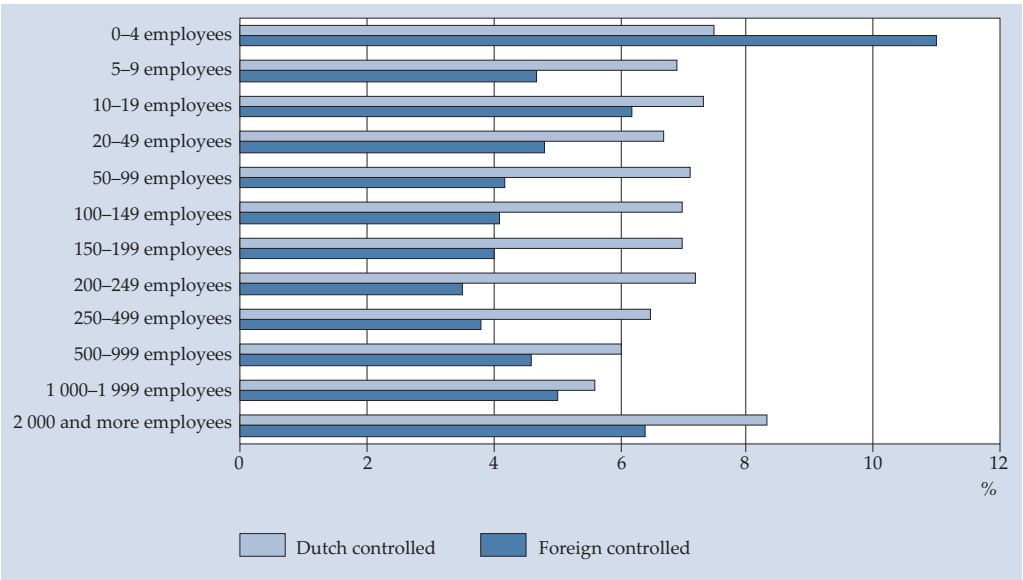
The sum of new entrants and job switchers gives the total share of newly hired employees at the enterprise in a particular year.

The share of stayers per enterprise was calculated as the (unweighted) average percentage of retained employees (employees that in the preceding year worked at the same enterprise) in the total workforce at the end of the year, by locus of control and size class.

Table B5.6
Job history at foreign and Dutch controlled enterprises by size class

	New entrants		Switchers		Stayers	
	foreign controlled	Dutch controlled	foreign controlled	Dutch controlled	foreign controlled	Dutch controlled
	%					
2000	5.8	7.8	16.2	16.4	78	75.8
0– 4 employees	5.1	8.4	18.3	18.1	76.6	73.6
5– 9 employees	7.2	8.7	18.2	18.6	74.6	72.7
10– 19 employees	6.4	7.7	17.5	16.8	76.1	75.5
20– 49 employees	6.2	7.4	18	16	75.7	76.6
50– 99 employees	6.3	7.9	16.3	15.7	77.5	76.4
100– 149 employees	4.7	7.2	14.6	15.4	80.8	77.4
150– 199 employees	5.3	7.7	14.5	14.8	80.2	77.5
200– 249 employees	4.8	6.7	13.8	14.8	81.4	78.5
250– 499 employees	4.7	6.8	13.5	14.5	81.8	78.6
500– 999 employees	5	7.1	12.8	13.2	82.2	79.6
1,000–1,999 employees	8.4	8.7	14.4	13.1	77.2	78.1
2,000 and more employees	10.3	10.4	16	15.1	73.7	74.5
2005	5	7	10.7	12.6	84.3	80.4
0– 4 employees	11	7.5	14.9	20.6	74	71.9
5– 9 employees	4.7	6.9	13.9	14.4	81.4	78.7
10– 19 employees	6.2	7.3	12.9	12.2	80.9	80.6
20– 49 employees	4.8	6.7	11.8	11.2	83.4	82.2
50– 99 employees	4.2	7.1	9.7	10.9	86.2	82
100– 149 employees	4.1	7	9.3	11.3	86.6	81.7
150– 199 employees	4	7	9.9	11.6	86	81.4
200– 249 employees	3.5	7.2	9.1	11.6	87.4	81.1
250– 499 employees	3.8	6.5	7.7	10.9	88.5	82.6
500– 999 employees	4.6	6	8.6	10.2	86.8	83.8
1,000–1,999 employees	5	5.6	8.7	7.9	86.3	86.4
2,000 and more employees	6.4	8.3	10.3	10.3	83.3	81.4

B5.6 New entrants to the job market employed at foreign and Dutch controlled enterprises by size class, 2005



B5.7 Labour turnover at foreign and Dutch controlled enterprises

Dutch controlled enterprises show a larger labour turnover, such as outflow of jobs, than foreign controlled enterprises, as shown in table B5.7.

Furthermore, for the 2000–2005 period, a steady decline in labour turnover is observed in our linked employer-employee dataset for the Netherlands, both in foreign and Dutch controlled enterprises (see graph B5.7). Driven by changes in the business cycle, with unemployment rates increasing from 3 to almost 7 percent, employees were thus more willing to stay with their employer. This applies especially to employees at foreign controlled enterprises, resulting in an increasing retention rate (see table B5.6).

The sectors in which labour turnover is highest are the hotels and restaurants industries, real estate, renting and business sectors, as shown in table B5.7. This is likely due to short-term work contracts and seasonal employment at both foreign and Dutch controlled enterprises in these sectors, leading to a large outflow of jobs per year.

An important indicator of labour dynamics is labour turnover, or the job separation rate per enterprise, determined by the outflow of jobs as a share of the average number of jobs per year. Information on labour turnover is valuable in the proper analysis and interpretation of labour market developments and as a complement to the unemployment rate.

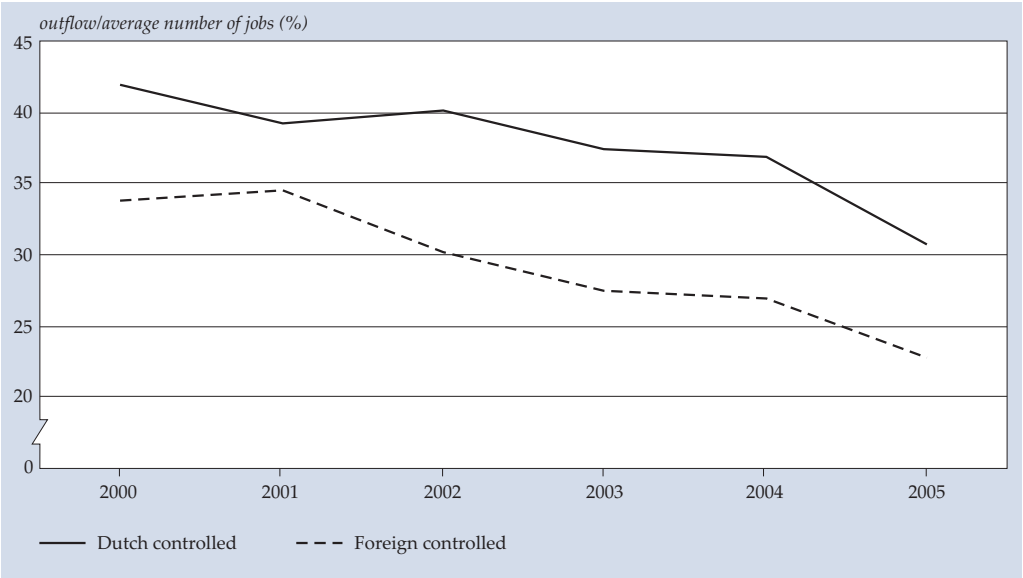
Labour turnover gives an indication of employees' willingness or ability to change jobs. Outflow might be caused by involuntary firing or layoffs, termination of seasonal jobs, discharges resulting from mergers or downsizing. Additionally, outflow of jobs within an enterprise may be driven by retirement or voluntary job changes.

The share of labour turnover per enterprise (labour turnover) was calculated as the (unweighted) average of the number of outgoing employees (during the year) as percentage of the average number of jobs, by locus of control and industry.

Table B5.7
Labour turnover at foreign and Dutch controlled enterprises by industry

	2000		2005	
	foreign controlled	Dutch controlled	foreign controlled	Dutch controlled
	outflow / average number of jobs (%)			
Total	33.8	42.0	22.8	30.7
Agriculture, mining and quarrying	33.2	62.5	18.1	34.3
Food and beverages	22.9	42.2	16.0	23.1
Paper, paper products and publishers	20.9	34.3	18.6	23.1
Chemicals and plastics products	21.8	31.0	13.0	15.8
Metal products	20.8	27.0	13.8	17.2
Machinary and equipment	21.2	24.4	15.6	17.9
Other manufacturing	21.5	29.1	17.6	16.1
Construction	31.0	28.5	24.9	18.4
Energy	.	.	.	.
Trade and repairs	32.9	39.0	21.2	27.4
Hotels and restaurants	74.0	106.2	51.8	68.6
Transport, storage and communication	35.9	39.2	20.0	26.3
Financial intermediation	29.3	32.1	20.6	21.2
Real estate, renting and business services	50.3	55.8	33.2	45.3
Other services	58.2	42.6	32.3	33.2

B5.7 Labour turnover at foreign and Dutch controlled enterprises



B5.8 Labour conditions at foreign and Dutch controlled enterprises

Table B5.8 highlights the differences in labour conditions at foreign and Dutch controlled enterprises for 2005. Employees at foreign controlled enterprises report a substantially higher amount of contract hours. In addition, employees at foreign enterprises also put in more private hours in terms of overtime per week than their counterparts at Dutch controlled enterprises.

Work at foreign enterprises is also perceived as somewhat more demanding than at Dutch controlled enterprises. These differences in labour conditions at foreign and Dutch enterprises are most prominent in small (< 50 employees) to medium-sized (<250 employees) enterprises. Exception to this finding of more demanding labour conditions at foreign controlled enterprises is the amount of heavy work involved: employees working at Dutch controlled enterprises report a higher incidence than employees at foreign controlled enterprises.

Underlying these differences in labour conditions between foreign and Dutch controlled enterprises concerns the educational attainment of employees. Overall, employees are more highly educated in small to medium-sized foreign controlled enterprises. This might lead to more demanding career trajectories including longer work weeks and more overtime, with accompanying higher wages (see also chapter A5).

In contrast, Dutch controlled enterprises of small to medium size employ more workers of low to medium attainment, with corroborates the higher reported incidence of heavy work. Most strikingly, however, overall evaluation of labour satisfaction turns out quite similar for employees at foreign and Dutch controlled enterprises. On the whole, employees value their labour conditions, irrespective of enterprise size.

Table B5.8 shows differences in labour conditions at foreign and Dutch controlled enterprises for 2005. Labour conditions are of importance not only to employees but also to employers. Improved labour conditions might reduce absence due to sickness and in the long run lead to higher productivity and higher job and employee retention. Factors such as contract hours, overtime, perceived work pace and autonomy, the degree of heavy work involved and overall satisfaction are some examples which together give a good indication of the labour conditions within an enterprise.

The integrated employer-employee dataset (see Table B5.1) was merged with The Netherlands Working Condition Survey (Nationale Enquête

Arbeidsomstandigheden, NEA), resulting in a sample of approximately 8 thousand employees working in the Netherlands in 2005.

An adapted weighting procedure was carried out which enables the outcomes concerning labour conditions at foreign and Dutch controlled enterprises to be generalized to the total population of employees working in the Netherlands. However, a more sophisticated weighting procedure might allow inferences that are more detailed.

Table B5.8
Labour conditions at foreign and Dutch controlled firms by size class, 2005 [1)]

	Foreign controlled	Dutch controlled
Small enterprises (0–49 employees)		
Age (years)	38	37
Level of education (%)		
low (%)	22	32
medium (%)	48	49
high (%)	30	19
Contract hours per week (hours)	37	31
Overtime per week (hours)	7	5
Perceived work pace [2)]	2	2
Perceived autonomy [3)]	3	2
Perceived heavy work [4)]	1	2
Satisfaction with labour conditions (1–4)	4	4
N	116,000	501,000
Medium enterprises (50–249 employees)		
Age (years)	39	39
Level of education (%)		
low (%)	26	33
medium (%)	39	44
high (%)	35	23
Contract hours per week (hours)	36	34
Overtime per week (hours)	6	5
Perceived work pace [2)]	2	2
Perceived autonomy [3)]	3	3
Perceived heavy work [4)]	1	2
Satisfaction with labour conditions (1–4)	4	4
N	288,000	1,040,000
Large enterprises (>250 employees)		
Age (years)	40	40
Level of education (%)		
low (%)	26	27
medium (%)	44	39
high (%)	30	34
Contract hours per week (hours)	33	31
Overtime per week (hours)	6	5
Perceived work pace [2)]	2	2
Perceived autonomy [3)]	2	2
Perceived heavy work [4)]	2	2
Satisfaction with labour conditions (1–4)	4	4
N	948,000	3,517,000

Source: TNO/CBS.

1) Weighted to population of employees working in the Netherlands.
2) Scale of 11 items; 1(low) – 4 (high); Cronbach's alpha = 0,87.
3) Scale of 5 items; 1 (little) – 3 (much); Cronbach's alpha = 0,73.
4) Scale of 8 items; 1 (never) – 4 (very often); Cronbach's alpha = 0,95.

B6. FATS and enterprise operational statistics

Introduction

The data in the tables B6.1 and B6.2 are part of the inward-foreign affiliate trade statistics. Inward FATS describe the activities of foreign controlled enterprises resident in the compiling country (in our case the Netherlands). Control means the ability to determine the general policy of an enterprise by choosing appropriate directors, if necessary. The Ultimate Controlling Institutional Unit (UCI) is defined as the institutional unit, proceeding up a foreign affiliate's chain of control, which is not controlled by another institutional unit. Foreign controlled means that the resident country of the UCI is a different country than the Netherlands.

The variables are categorised in countries groups and in branches. EU-26 consists of the 27 European countries excluding the Netherlands. North America consists of the United States of America and Canada. The rest of the world consists of all other countries.

The branches are categorised according to the NACE classification (Revision 1.1). 'Industry and construction' consists of NACE codes 10–45 or section C–F. This means that mining and quarrying, manufacturing, electricity, gas and water supply as well as construction are part of this category. 'Trade, repair, hotels and restaurants' consists of NACE codes 50–55 or section G and H. This means that wholesale and retail trade, repair of motor vehicles, motorcycles, personal and household goods, hotels and restaurants are part of this category. 'Transport, storage and communication' consists of NACE codes 60–64 or section I. 'Real estate, renting and business activities' consists of NACE codes 70–74 or section K. All other NACE codes (for example financial intermediation and government) are not included in the tables. The figures for the year 2006 are preliminary.

The graphs and tables in B6.3 to B6.6 are part of the Structural Business Statistics (SBS). The SBS describe the economy through the observation of units engaged in an economic activity, which in SBS is generally the enterprise. An enterprise carries out one or more activities at one or more locations and may comprise one or more legal units. Operational data of enterprises is gathered together with information on the breakdown of both on income and expenses. In this section several aspects of conduct of manufacturing enterprises are presented for four sectors broken down by kind of industrial activity.

– Chemical industry (sections DF, DG, DH), including oil, chemical, rubber and synthetic products industry;

– Metal and machinery industry (sections DJ, DK, DL, DM) including metal, electro technical and transport industry.
– Food industry (DA);
– Other (sections DB, DC, DE, DI, and DN), among which: textile industry and printing industry.

The groups are categorised according to the NACE classification (Revision 1.1). Enterprises are divided in the dataset, according the principle of *control* using UCI or Ultimate Controlling Institutions (UCI) to differentiate between Dutch and foreign controlled enterprises against the sector mean over time. The size of enterprises is determined by the number of employees, and divided into two groups; small enterprises from 20 to 99 employees and large enterprises with 100 employees and more. The period 2001 to 2007 is covered. The effect of foreign control was subjected to a general linear model analysis and checked for different population characteristics (enterprise size, industry sector). The findings presented in this table set are subject to further analysis, and may be adjusted as a result.

B6.1 Foreign enterprises in the Netherlands: number of enterprises and employees by origin of the parent company

In 2007 the total number of enterprises in the Netherlands in the observed branches is over 540 thousand. The number of domestically controlled enterprises grew by over 32 thousand from 2006 to 2007, while the number of foreign controlled enterprises decreased. Although the number of foreign controlled enterprises is relatively small in the Dutch economy, the share of employees working in foreign controlled enterprises was 15 percent in 2007. This means that foreign controlled enterprises are on average larger in terms of employees than domestically controlled enterprises.

Most of the foreign controlled enterprises are controlled by enterprises originating in the EU (60 percent) and enterprises from the rest of the world (18 percent), followed by North-American enterprises (22 percent). For the employees working in foreign controlled enterprises are these shares for the EU 61 percent, for North America 22 percent and for the rest of the world 17 percent.In EU controlled enterprises most employees work in trade and repair. In enterprises controlled by parent enterprises from North America or the rest of the world most employees work in the manufacturing industry and construction. In domestically controlled enterprises most employees work in the real estate, rentingand business activities.

The number of enterprises controlled by parent enterprises from emerging countries increased from 2006 to 2007. The same is happening to the number of employees working for these enterprises. Yet, the numbers are still relative small. The acquisition of Corus by Tata Steel is clearly visible in the data. Corus was controlled by a UK based enterprise and hence part of EU controlled enterprises, while Tata Steel is an Indian enterprise and therefore now part of the rest of the world.

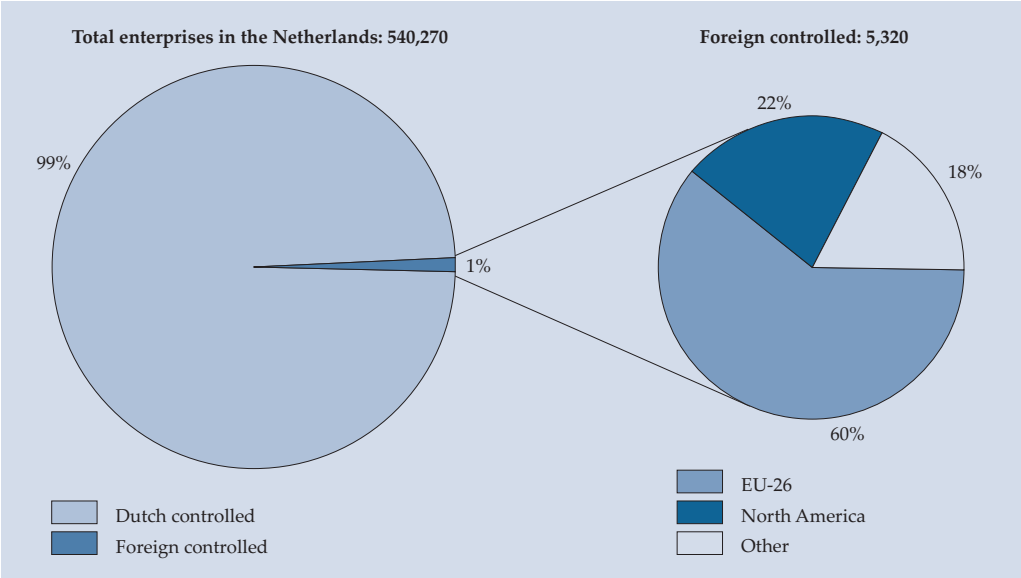
Number of enterprises: this variable describes all units active during at least a part of the reference period. An enterprise is the actual transactor in the production process characterised by independence in decisions about the process and by providing products to others.

Number of employees: this variable is defined as those people who work for an employer who have a contract of employment and receive compensation in the form of wages, salaries, fees etc. The number of employees is calculated as the number of jobs and is measured as an annual average.

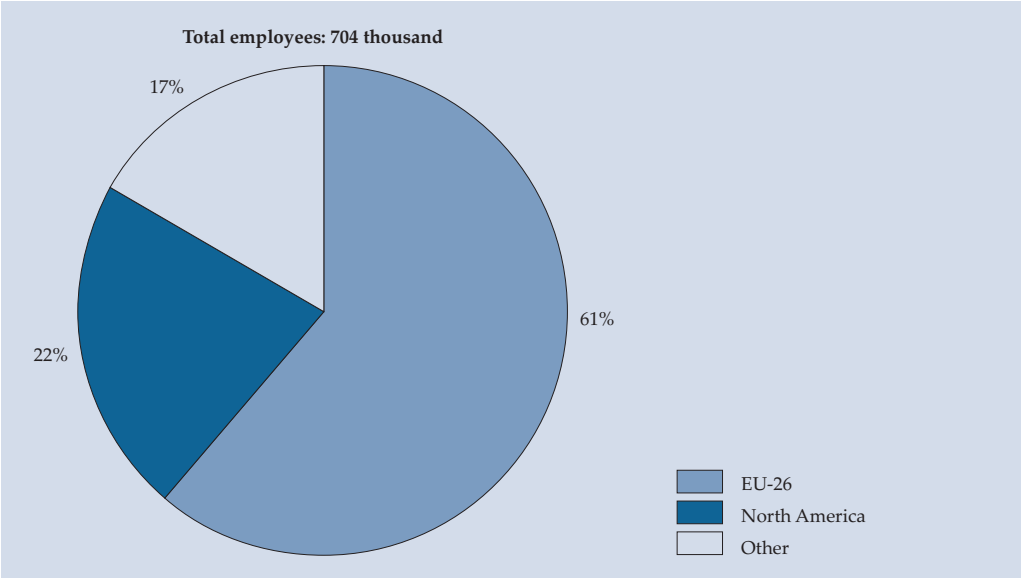
Table B6.1
Foreign enterprises in the Netherlands: number of enterprises and employees by origin of the parent company

	Enterprises		Employees	
	2006*	2007	2006*	2007
			x 1 000	
Total	508,495	540,270	4,589	4,734
Dutch controlled	502,790	534,955	3,873	4,031
manufacturing and construction	122,675	131,985	920	937
trade, hotels, restaurants and repair	188,105	194,055	1,306	1,363
transport, storage and communication	26,765	27,755	348	352
real estate, renting and business activities	165,245	181,160	1,299	1,378
Foreign controlled	5,705	5,320	716	704
of which emerging countries	85	120	6	20
EU-26	3,225	3,200	440	430
manufacturing and construction	815	850	124	105
trade, hotels, restaurants and repair	1,505	1,425	140	142
transport, storage and communication	290	295	78	78
real estate, renting and business activities	615	630	98	105
North America	1,235	1,165	167	157
manufacturing and construction	355	340	68	63
trade, hotels, restaurants and repair	510	485	44	42
transport, storage and communication	70	60	11	9
real estate, renting and business activities	300	280	44	43
Other	1,245	950	109	117
manufacturing and construction	565	235	31	42
trade, hotels, restaurants and repair	445	460	34	33
transport, storage and communication	110	105	9	9
real estate, renting and business activities	125	150	35	33

B6.1a Foreign enterprises in the Netherlands: share of enterprises by origin of the parent company, 2007



B6.1b Share of employees working for foreign controlled enterprises by origin of parent company, 2007



B6.2 Foreign enterprises in the Netherlands: turnover, value added and investments by origin of the parent company

Total turnover of foreign controlled enterprises amounted to 366 billion euro in 2007. Foreign controlled enterprises add up to 29 percent of total turnover in the Netherlands.

The share of foreign controlled enterprises in total value added amounted to 22 percent and for total enterprise investments this share was 21 percent. This is considerable, taking into account the share of foreign controlled enterprises was only 1 percent of the total number of enterprises in the Netherlands.

While 61 percent of the employees working for a foreign controlled enterprise work for an EU controlled enterprise (table B6.1), less than half of the turnover of foreign controlled enterprises is realised by EU controlled enterprises. This indicates that the revenue of EU controlled enterprises is generated with relatively more employees than other foreign controlled enterprises.

Whereas domestically and EU controlled enterprises generate the highest *turnover* in trade, repair, hotels and restaurants, enterprises controlled in North America and the rest of the world generate most *value added* in the manufacturing industry and construction. Domestically controlled enterprises *invest* most in real estate, renting and business activities, while foreign controlled enterprises in general invest most in the manufacturing industry and construction.

The value added-turnover ratio is higher for EU controlled enterprises (20 percent) than for the enterprises controlled by parent enterprises from other regions. However, domestically controlled enterprises have the highest ratio (25 percent).

Turnover. Turnover comprises the totals invoiced by enterprises during the reference period, and this corresponds to market sales of goods and services supplied to third parties. It includes all duties and taxes on the goods and services invoiced by the unit with the exception of the VAT and other similar deductible taxes directly linked to turnover.

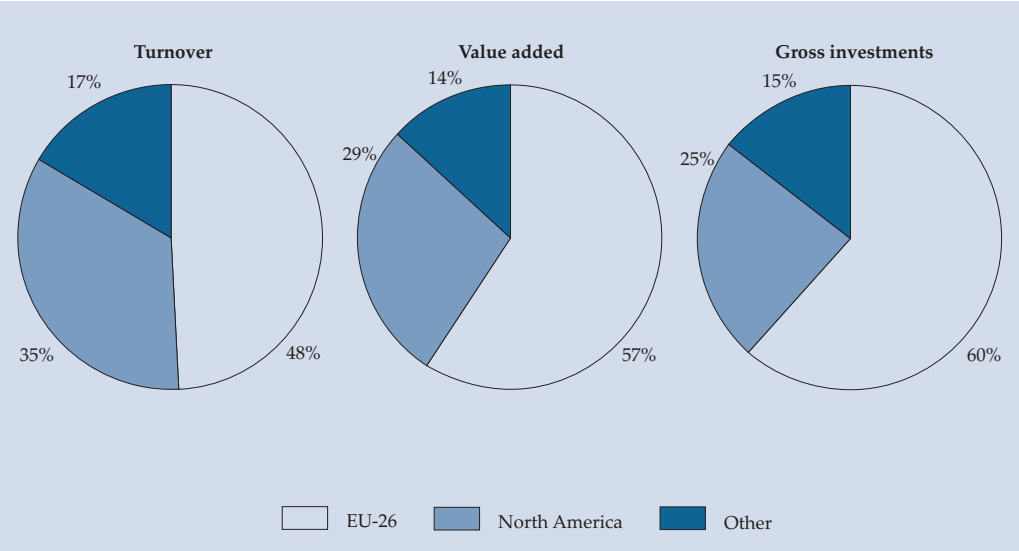
Value added at factor cost. The income formed in the production process. The value added equals the production (in basic prices) minus intermediate consumption (in purchasing prices).

Gross investment in tangible goods. This variable describes investments in all tangible goods during the reference period. Included are new and existing tangible capital goodshaving a useful life of more than one year including non-produced tangible goods such as land.

Table B6.2
Foreign enterprises in the Netherlands: turnover, value added and gross investments by origin of the parent company

	Turnover		Value added		Investments	
	2006*	2007	2006*	2007	2006*	2007
	million euro					
Total	1,129,882	1,243,153	259,947	282,348	38,507	38,732
Dutch controlled	784,357	877,123	195,238	219,313	30,063	30,759
manufacturing and construction	279,198	306,501	64,368	74,283	7,656	9,157
trade, hotels, restaurants and repair	324,521	372,623	49,279	55,957	4,899	5,927
transport, storage and communication	60,289	64,939	24,334	25,587	5,808	5,721
real estate, renting and business activities	120,349	13,306	57,257	63,487	11,699	9,955
Foreign controlled	345,524	366,030	64,708	63,036	8,444	7,973
of which emerging countries	10,350	19,735	872	2,707	151	409
EU-26	154,558	176,699	37,923	35,567	5,507	4,768
manufacturing and construction	60,512	59,526	17,518	13,314	2,681	1,941
trade, hotels, restaurants and repair	60,115	80,069	8,721	9,432	648	666
transport, storage and communication	22,645	24,841	6,591	7,487	1,015	995
real estate, renting and business activities	11,285	12,263	5,093	5,334	1,163	1,176
North America	125,229	127,940	18,410	18,462	1,980	2,010
manufacturing and construction	61,485	63,158	10,369	10,615	1,353	1,158
trade, hotels, restaurants and repair	55,022	56,488	4,469	4,503	283	247
transport, storage and communication	3,609	3,253	1,365	1,155	188	370
real estate, renting and business activities	5,113	5,041	2,207	2,189	155	235
Other	65,737	61,391	8,375	9,006	957	1,195
manufacturing and construction	28,861	28,249	4,194	5,506	598	854
trade, hotels, restaurants and repair	31,435	27,942	2,671	1,967	179	148
transport, storage and communication	2,989	2,779	723	690	130	143
real estate, renting and business activities	2,452	2,421	788	843	51	50

B6.2 Foreign enterprises in the Netherlands: turnover, value added and gross investments of foreign controlled enterprises by origin of the parent company, 2007



B6.3 Manufacturing enterprises in the Netherlands: circulation time of inventory stocks in days

Table 6.3 shows that the mean circulation time of the sample manufacturing enterprises is relatively stable in the 2001–2007 period. The circulation time was only lower in the year 2003, indicating that producers of manufacturing goods have low amounts of inventory stock. In the feedback of business cycle surveys, enterprises indicated limited demand for their products. This period coincides with a second year of marginal growth (0.3 percent) of Gross Domestic Product in the Netherlands. Moreover, on average producer confidence in 2003 was the lowest in the period 2001–2007.

Dutch enterprises have a longer circulation time of stocks (corrected for population differences) than foreign controlled enterprises. Large enterprises have a shorter circulation time of stock than small enterprises. As a result large foreign controlled enterprises on average have the lowest circulation time of stocks for manufacturing products in the Netherlands, but the difference with large Dutch enterprises is small.

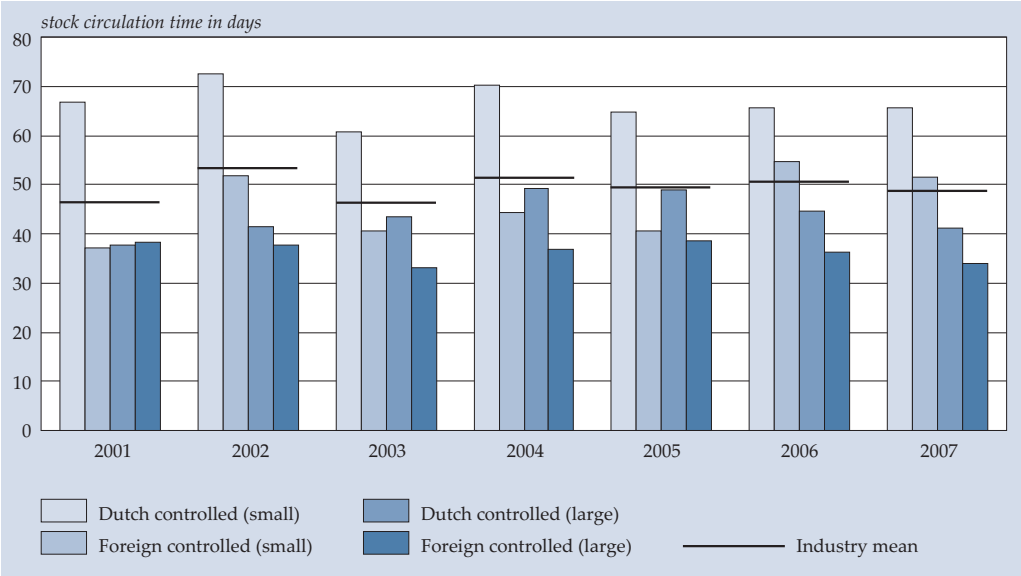
B6.3a shows the circulation time of inventory stocks for the chemical industry. Again there is the ranking of large foreign controlled enterprises with the shortest circulation time and the small Dutch enterprises with the longest
B6.3b shows a different position for the food branch. Large Dutch enterprises have the shortest circulation time of stocks followed by small Dutch enterprises. Foreign controlled enterprises, both large and small, are above the industry mean.

Average inventory stocks values are computed by taking stock value at the beginning of the year and at the end of the year. This average is expressed as fraction of the total direct costs of turnover and multiplied by 365 to obtain de circulation time of the inventory stock in days. Main elements of total direct costs of turnover include purchase value of raw materials and costs of industrial services provided by third parties. Fewer days of circulation time of inventory stock indicates that, on average, there is less stock present at any time in the enterprise and as a consequence less financial means have to be allocated for inventory stocks. This improves, by reducing operational costs, the return on investment of an enterprise.

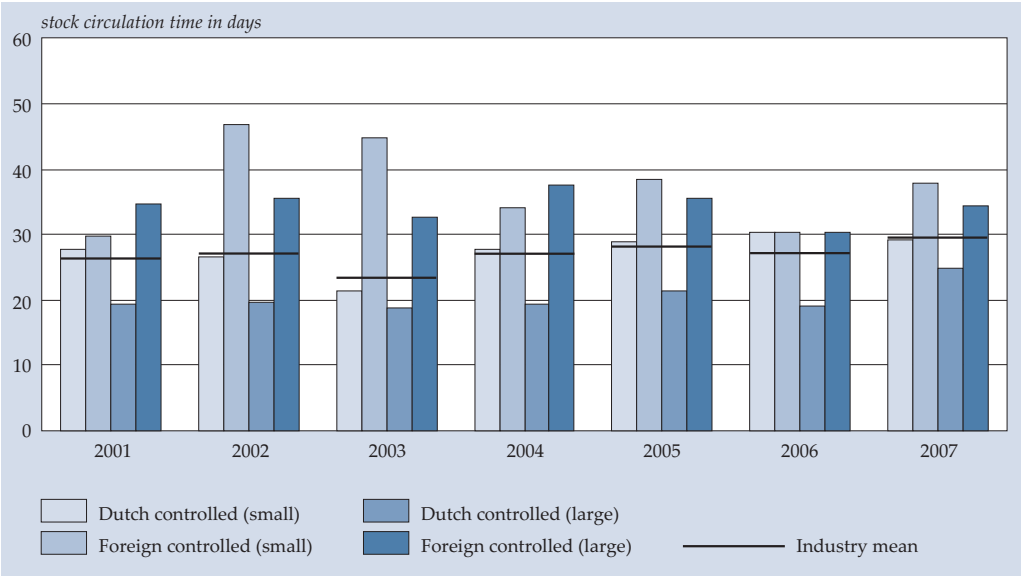
Table B6.3
Manufacturing enterprises in the Netherlands: circulation time of inventory stocks by origin of the parent company

	Small enterprises		Large enterprises		Industry mean
	Dutch controlled	foreign controlled	Dutch controlled	foreign controlled	
	stock circulation time in days				
Chemicals					
2001	66.8	37.1	37.7	38.2	46.3
2002	72.6	51.7	41.4	37.6	53.6
2003	60.6	40.5	43.6	33.1	46.3
2004	70.2	44.2	49.2	36.8	51.4
2005	64.8	40.6	48.8	38.6	49.6
2006	65.7	54.6	44.7	36.3	50.7
2007	65.5	51.5	41.0	33.8	48.7
Food					
2001	27.8	29.8	19.3	34.7	26.2
2002	26.5	46.7	19.7	35.5	27.1
2003	21.3	44.8	18.8	32.6	23.3
2004	27.8	34.1	19.3	37.7	27.0
2005	28.9	38.4	21.3	35.5	28.2
2006	30.4	30.4	19.2	30.3	27.1
2007	29.2	37.7	24.7	34.3	29.3
Metals and machinery					
2001	60.7	64.5	56.8	49.6	58.7
2002	66.3	70.9	62.7	48.2	63.5
2003	51.5	53.9	56.0	47.4	52.0
2004	69.2	68.4	52.9	47.8	62.7
2005	69.7	76.8	51.8	48.2	64.0
2006	64.1	71.6	48.7	41.6	58.7
2007	64.3	70.8	50.9	48.9	60.4
Other					
2001	56.4	35.8	44.0	37.4	48.8
2002	63.4	39.3	38.3	33.3	52.1
2003	46.1	34.5	32.5	29.2	40.3
2004	60.4	40.3	41.4	33.6	50.5
2005	60.5	48.4	43.4	28.4	50.9
2006	54.8	50.3	37.0	26.4	46.4
2007	54.6	47.8	40.3	25.8	46.3

B6.3a Circulation time of inventory stocks in days in the chemicals industry by origin of the parent company



B6.3b Circulation time of inventory stocks in days in the food industry by origin of the parent company



B6.4 Flexibility of labour costs of manufacturing enterprises by origin of the parent company

The increasing globalisation of the economy and the rapid technological and organisational changes require more labour cost flexibility in manufacturing. Table B6.4 shows this ratio for the period 2001–2007 for four industries in manufacturing. After 2001 the industry mean decreased slightly until 2004. This ratio started increasing in 2005, reaching the highest value in 2007. This period coincides with the peak of growth (3.5 percent) of Gross Domestic Product in the Netherlands. The upward trend is consistent with data obtained from turnover index numbers for temporary employment agencies in the Netherlands.

In 2001 the share of flexibility of labour costs in Dutch controlled enterprises was one percent point lower than foreign controlled enterprises, but the difference disappeared towards the end of the period. Large enterprises have a higher percentage of flexible labour costs than small enterprises. But, corrected for population differences, there is almost no difference between large Dutch or large foreign controlled enterprises in manufacturing products in the Netherlands.

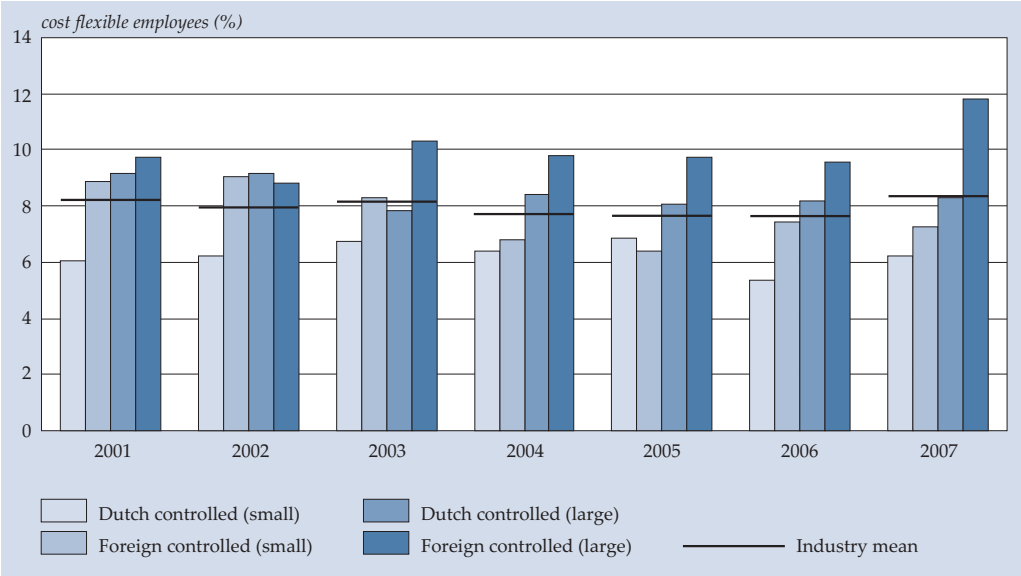
B6.4a shows the share of labour cost flexibility in the chemical industry. Large foreign controlled enterprises have the highest share of flexible labour costs with 14 percent, while small Dutch enterprises have the smallest share of flexible labour costs for producing in the Netherlands. In B6.4b the share of labour cost flexibility is shown for the metal and machinery industry. Large enterprises have a higher share of labour cost flexibility than small enterprises and Dutch controlled large enterprises have the highest share (14 percent) of this industry.

The flexibility of an enterprise with respect to costs of personnel is determined as the ratio of costs associated with flexible workers (which are not on the payroll of the enterprise) and the total cost of labour. Flexible workers not on the payroll are provided by third party suppliers such as temporary employment agencies. Total cost of labour includes labour costs of the enterprise's own personnel (including social security and pension premiums) and the costs of flexible workers hired from third party suppliers.

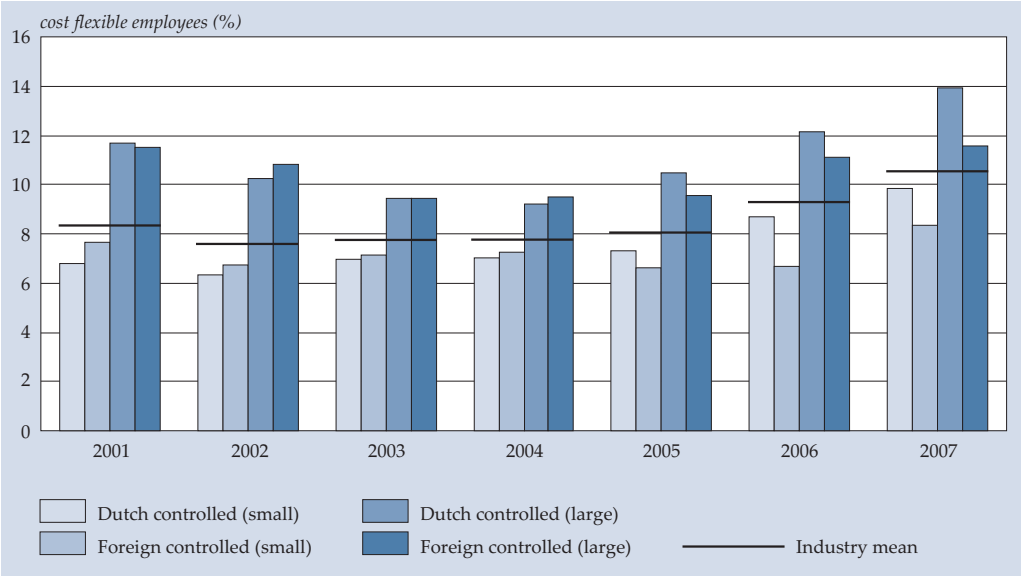
Table B6.4
Manufacturing enterprises in the Netherlands: flexibility of labour costs by origin of the parent company

	Small enterprises		Large enterprises		Industry mean
	Dutch controlled	foreign controlled	Dutch controlled	foreign controlled	
	cost flexible employees (%)				
Chemicals					
2001	6.1	8.9	9.2	9.7	8.2
2002	6.2	9.1	9.2	8.8	7.9
2003	6.7	8.3	7.8	10.3	8.2
2004	6.4	6.8	8.4	9.8	7.7
2005	6.8	6.4	8.0	9.7	7.6
2006	5.4	7.4	8.2	9.6	7.6
2007	6.2	7.2	8.3	11.8	8.3
Food					
2001	10.3	10.0	16.7	10.8	12.3
2002	9.3	13.1	16.6	11.1	12.0
2003	10.1	10.9	14.8	11.5	11.8
2004	10.2	10.7	15.4	8.8	11.5
2005	11.3	12.1	15.8	9.0	12.4
2006	11.1	11.4	17.1	12.4	13.0
2007	13.6	12.9	17.5	11.6	14.4
Metals and machinery					
2001	6.8	7.7	11.7	11.5	8.4
2002	6.3	6.7	10.2	10.8	7.6
2003	7.0	7.1	9.4	9.4	7.8
2004	7.0	7.3	9.2	9.5	7.8
2005	7.3	6.6	10.5	9.6	8.0
2006	8.7	6.7	12.1	11.1	9.3
2007	9.8	8.3	13.9	11.6	10.6
Other					
2001	5.4	9.4	6.8	8.9	6.5
2002	4.8	6.9	6.2	7.6	5.6
2003	5.4	5.8	6.2	7.4	5.8
2004	4.8	6.7	5.9	7.3	5.6
2005	5.1	6.3	6.5	7.7	5.8
2006	6.0	6.9	7.1	8.6	6.7
2007	7.1	6.8	8.2	9.4	7.6

B6.4a Flexibility of labour costs in the chemicals industry by origin of the parent company



B6.4b Flexibility of labour costs in the metals and machinery industry by origin of the parent company



B6.5 Choice of production factors of manufacturing enterprises by origin of the parent company

The ever-increasing internationalisation of the economy and brisk technological and organisational changes put pressure on enterprises to adjust the choice of production factors in manufacturing. Table B6.5 shows the ratio for the period 2001–2007 for four industries in manufacturing. From 2001 to 2004 the ratio remains almost constant at 28 percent. Starting in 2005, the ratio gradual decreases to lower levels (26.5 percent) in 2007. This period coincides with the 3.5 percent peak of GDP growth in the Netherlands. Moreover, from the feedback of business cycle surveys, enterprises indicate strong domestic and foreign demand for their products, indicating that the ratio may be influenced by additional turnover done by the employees in the manufacturing sector. Indeed, labour productivity increased more than 6 percent in the manufacturing sector in this period.

On average, Dutch manufacturing enterprises had five percent point higher labour cost share of total operational costs than foreign controlled manufacturing enterprises. Large enterprises have a lower labour cost share of total operational costs than small enterprises.
In B6.5a the ratio of total labour versus total operating costs is shown for the chemical industry. Large Dutch controlled enterprises and small foreign controlled enterprises are almost on par. This puts pressure on the economies of scale argument. However, small Dutch controlled enterprises have the highest ratio in this industry.

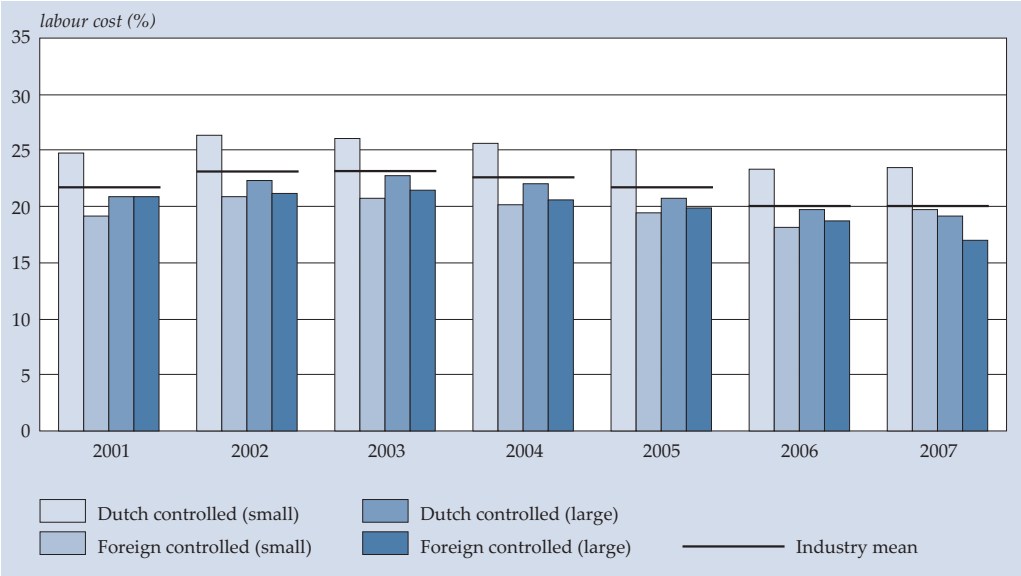
In the metal and machinery industry (B6.5b) large foreign controlled enterprises have the lowest ratio. Again, large Dutch controlled enterprises and small foreign controlled enterprises are almost on par, while small Dutch controlled enterprises have the highest ratio in this industry.

The 'wages to total cost ratio' is computed by expressing total cost of labour (wages, social security and pension premiums of employees on the enterprise's payroll and costs of labour obtained from flexible working agencies) as a percentage of total operating costs which includes purchase value of turnover, costs of housing, energy, labour and depreciation of assets. A high percentage indicates that total labour costs are high compared to non labour operational expenses of the enterprise. In other words, wages form a relatively important expense category.

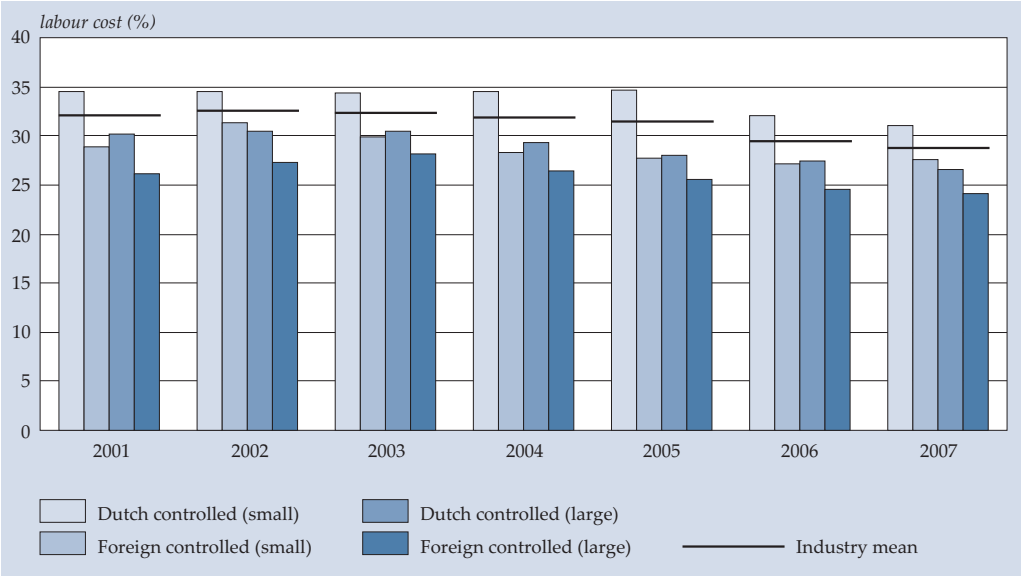
Table B6.5
Manufacturing enterprises in the Netherlands: choice of production factors by origin of the parent company

	Small enterprises		Large enterprises		Industry mean
	Dutch controlled	foreign controlled	Dutch controlled	foreign controlled	
	labour costs (%)				
Chemicals					
2001	24.7	19.2	20.8	20.9	21.8
2002	26.3	20.9	22.2	21.1	23.2
2003	26.1	20.7	22.7	21.5	23.2
2004	25.6	20.1	22.0	20.6	22.5
2005	25.1	19.5	20.7	19.9	21.7
2006	23.3	18.1	19.7	18.7	20.0
2007	23.5	19.7	19.2	17.0	20.0
Food					
2001	23.7	15.7	16.0	15.9	19.7
2002	24.6	18.6	16.5	15.2	20.6
2003	23.5	19.5	18.0	15.5	20.5
2004	25.2	17.0	17.1	15.3	21.0
2005	25.0	17.4	16.6	14.9	20.6
2006	22.7	14.6	15.9	13.7	18.3
2007	22.7	15.9	16.7	13.7	19.0
Metals and machinery					
2001	34.4	28.8	30.1	26.2	32.1
2002	34.6	31.4	30.5	27.2	32.6
2003	34.3	29.9	30.4	28.2	32.4
2004	34.4	28.3	29.3	26.5	31.9
2005	34.6	27.7	28.0	25.6	31.5
2006	32.0	27.2	27.5	24.6	29.4
2007	31.0	27.6	26.6	24.2	28.8
Other					
2001	29.8	24.4	28.3	24.8	28.3
2002	30.7	23.5	29.0	25.1	29.1
2003	31.0	22.7	29.2	25.7	29.2
2004	31.1	25.2	29.8	24.7	29.4
2005	30.6	26.0	28.9	23.8	28.8
2006	28.2	25.4	28.0	23.0	27.1
2007	27.6	24.1	27.6	22.0	26.4

B6.5a Choice of production factors in the chemical industry by origin of the parent company



B6.5b Choice of production factors in the metals and machinery industry by origin of the parent company



B6.6 Operating profit margin of manufacturing enterprises by origin of the parent company

Table B6.6 shows the ratio for the period 2001–2007 for four industries in manufacturing. On average, the operational profit margin decreased from 2001 to 2003 to 2.6 percent and increased again to 5.4 percent in 2007. There is no distinction between Dutch and foreign controlled, nor by industry. This period coincides with the development of Gross Domestic Product in the Netherlands. Moreover, from the feedback of business cycle surveys, enterprises also indicate a period of feeble demand until 2003. After 2005, there was strong domestic and foreign demand for their products, indicating that the ratio may be influenced by turnover developments outside the scope of control of enterprises. But enterprises do have influence on operational costs in response.

On average, foreign controlled enterprises have a higher operating profit margin than Dutch controlled industrial enterprises. The difference became smaller towards the end of the period. In contrast to the previous sections there were no significant dissimilarities observed between enterprises with 20–99 employees and enterprises with 100 employees or more. Operating profit margins fluctuated most in the industry metal and machinery and 'other industry'.

B6.6a shows the operating profit margin for the chemical industry. Small foreign controlled enterprises seem to be most cost effective in this industry. Being part of a larger foreign controlled enterprise network could play a role in faster executing operational cost control measures in response to turnover changes.

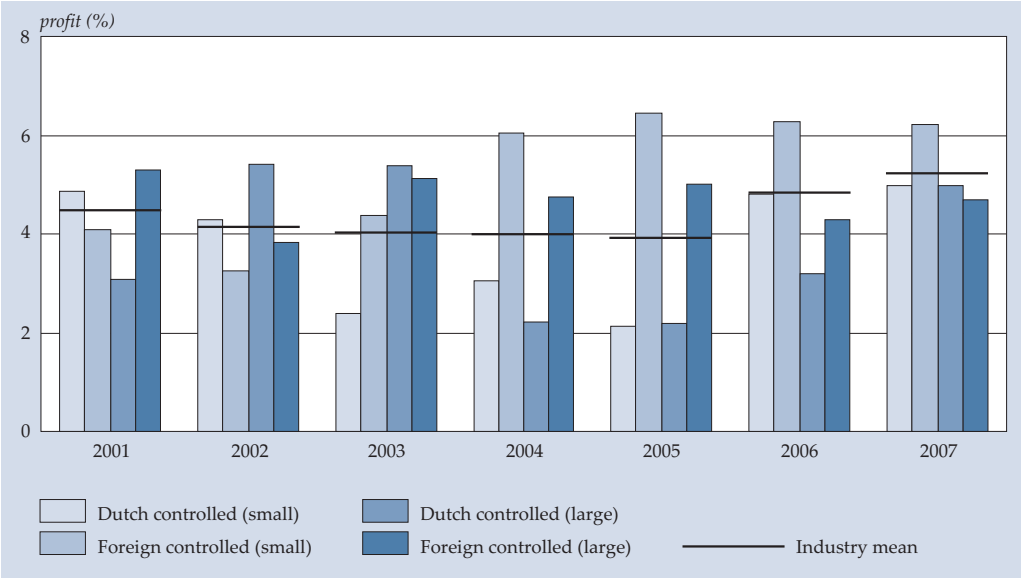
B6.6b shows the situation for the metal and machinery industry. Also in this industry small foreign controlled enterprises had higher operational margin until 2005. In 2007, the ranking was different. Now, large foreign controlled enterprises and small Dutch controlled enterprises beat the industry mean. Small foreign controlled enterprises have the lowest operational profit. Although small foreign controlled enterprises improved on earlier years, the large Dutch and foreign controlled enterprises and small Dutch enterprises have improved the operational profit margin much faster.

Operating profit margin is defined as net profit before tax divided by value of turnover. Net profit is turnover less operational expenses. It measures how much out of every euro of sales an enterprise actually stashes in earnings, as a result of routine business activities. A higher operation profit margin indicates a more profitable enterprise, which has a better control over its operational costs compared to its competitors within the same defined industrial activity.

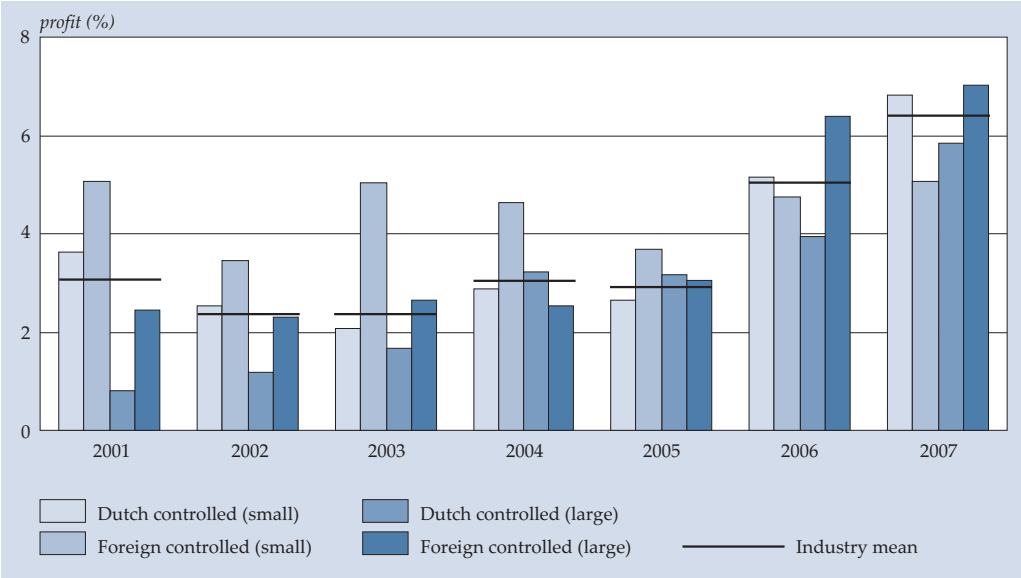
Table B6.6
Manufacturing enterprises in the Netherlands: operating profit margin by origin of the parent company

	Small enterprises		Large enterprises		Industry mean
	Dutch controlled	foreign controlled	Dutch controlled	foreign controlled	
	profit (%)				
Chemicals					
2001	4.9	4.1	3.1	5.3	4.5
2002	4.3	3.3	5.4	3.8	4.1
2003	2.4	4.4	5.4	5.1	4.0
2004	3.0	6.0	2.2	4.8	4.0
2005	2.1	6.5	2.2	5.0	3.9
2006	4.8	6.3	3.2	4.3	4.8
2007	5.0	6.2	5.0	4.7	5.2
Food					
2001	3.6	3.2	2.1	6.3	3.5
2002	3.7	5.6	2.3	5.9	3.7
2003	2.4	9.4	2.2	5.7	3.2
2004	3.4	7.9	3.1	5.8	3.9
2005	3.4	5.9	3.3	8.3	4.2
2006	3.1	3.5	3.7	6.4	4.0
2007	3.3	2.7	4.1	6.9	4.0
Metals and machinery					
2001	3.6	5.1	0.8	2.4	3.1
2002	2.5	3.5	1.2	2.3	2.4
2003	2.1	5.0	1.7	2.7	2.4
2004	2.9	4.6	3.2	2.5	3.1
2005	2.6	3.7	3.2	3.0	2.9
2006	5.1	4.8	3.9	6.4	5.1
2007	6.8	5.1	5.8	7.0	6.4
Other					
2001	3.6	4.2	4.5	4.3	4.0
2002	3.1	4.0	3.8	3.7	3.4
2003	1.4	3.0	2.7	3.5	2.0
2004	1.8	4.3	3.1	3.8	2.6
2005	1.8	4.0	3.0	3.4	2.5
2006	4.0	4.6	4.0	5.9	4.3
2007	4.4	3.8	3.8	5.6	4.4

B6.6a Profit margin in the chemical industry by origin of the parent company



B6.6b Profit margin in the metals and machinery industry by origin of the parent company



Nederlandse Samenvatting Internationaliserings Monitor 2009

In 2007 en 2008 zijn verschillende projecten van start gegaan om bestaande data van het CBS samen te voegen om relevante informatie over globalisering te verkrijgen. De resultaten hiervan zijn gepubliceerd in de *Kerncijfers Internationalisering 2007* en de *Internationaliserings Monitor 2008*. In de Internationaliserings Monitor 2009 worden bestaande en nieuwe gegevens verder in samenhang geanalyseerd en gepubliceerd. Hierbij wordt tegemoet gekomen aan de wens om inzicht te krijgen in de effecten van het brede en complexe fenomeen globalisering voor Nederland.

Globalisering is een multidimensionaal proces dat economische, technologische en sociale dimensies en effecten omvat. Het beantwoorden van vragen van beleidsmakers en de samenleving vereist het opsplitsen van deze dimensies in relevante thema's van internationalisering, zoals economische groei, welvaart, werkgelegenheid en milieu. De Internationaliserings Monitor 2009 geeft een beschrijving van de trends in deze onderwerpen, gebruikmakend van indicatoren en geïntegreerde (micro) databestanden. Op deze manier levert het CBS een bijdrage aan een evenwichtige en op statistische feiten gebaseerde maatschappelijke discussie over globalisering en de rol die het Nederlandse bedrijfsleven daarin speelt. In deze samenvatting worden de voornaamste trends en conclusies weergegeven.

Het meten van internationalisering: statistische innovatie

Het nauwkeurig en consistent meten van het globaliseringsproces is een grote uitdaging voor statistici. Bestaande raamwerken, zoals de nationale rekeningen, worden steeds moeilijker om samen te stellen en te interpreteren. De gestage uitbreiding van activiteiten in het buitenland van bedrijven (en personen) is voor statistische bureaus die alleen een mandaat op nationaal niveau hebben moeilijk waar te nemen. Bovendien is het een uitdaging om de vele dimensies en effecten van globalisering samen te voegen op een manier die recht doet aan de intrinsieke en methodologische nuances van de afzonderlijke indicatoren en aan de onderlinge verbondenheid van de dimensies.

In de Internationalisation Monitor 2009 is een aanzet voor deze statistische innovatie gegeven met beschrijvende artikelen en een groot aantal geannoteerde tabellen met verscheidene indicatoren over globalisering. De statistische innovatie omvat twee verschillende activiteiten:

1. Het samenvoegen van microdata uit verschillende bronnen om de gevolgen van globalisering te analyseren. Dit veronderstelt het koppelen van gegevens op het

niveau van individuele microdata. Voor analyses in de Internationalisation Monitor is dat gedaan voor de koppeling van bedrijfsgegevens met individuele gegevens over banen (werknemer – werkgever dataset), de koppeling van gegevens van internationale handel met het Algemeen Bedrijven Register, en de koppeling van microdata uit de internationale handel met vervoersstatistieken.
2. Het operationaliseren van het concept internationalisering van een bedrijf. In deze publicatie baseren we onze beschrijvingen en analyses op het kenmerk eigenaar en volgen daarbij de internationale standaard over eigenschap van ondernemingen (Ultimate Controlling Institute).

Resultaten

Elk hoofdstuk (A) heeft een set met geannoteerde tabellen (B). De eerste drie hoofdstukken beschrijven de structuur van internationale handel in goederen. Kort samengevat gaat het over wie handelen (bedrijven naar grootte klasse en bedrijfstak), met wie wordt er gehandeld (geografisch verdeling met een verbijzondering naar 16 opkomende markten) en hoe de handel wordt getransporteerd.

Het koppelen van Nederlandse handelsstatistieken aan het algemeen bedrijfsregister, maakt het mogelijk om precies aan te geven welke bedrijven verantwoordelijk zijn voor Nederlandse import en export van goederen (hoofdstuk A1 en B1). Bijna 42 procent van de Nederlandse export komt voor rekening van het Midden- en Kleinbedrijf. Grote ondernemingen zijn goed voor 34 procent van de export (het overige deel van de export gebeurt door buitenlandse bedrijven die niet gevestigd zijn in Nederland).

In toenemende mate zijn de opkomende markten, zowel binnen als buiten Europa, van belang voor de Nederlandse economie. Dit geldt zowel voor import, export en buitenlandse directe investeringen in opkomende markten. De 16 opkomende markten, waaronder China en India (hoofdstuk A2 en B2), zijn goed voor bijna 19 procent van de Nederlandse import en 9 procent van de export in goederen in 2008.

Globalisering in een open Nederlandse economie genereert toenemende stromen van goederen en personen. Dit is niet alleen te zien in de sterke groei van het volume getransporteerde goederen maar ook in de vervoersmodaliteiten. Zowel container als bulktransport vanuit opkomende landen groeit bovengemiddeld snel. De handel en transportstromen door Nederland hebben niet alleen betrekking op import en export; 42 procent van de Nederlandse export bestaat uit wederuitvoer (hoofdstuk A3 en B3). Nederland is ook een belangrijk knooppunt in het vervoer van- en naar het achterland en de overige continenten. Mede vanwege deze ligging was in 2004, de doorvoer 127 miljoen ton, met een waarde van 98 miljard euro.

In de volgende drie hoofdstukken worden de effecten van internationalisering behandeld. Hierbij kijken we vooral naar verschillen in werkgelegenheid, innovatie en operationele gegevens tussen het wel of niet in buitenlands bezit zijn en gecontroleerd worden door een buitenlandse onderneming. Op het totaal aantal bedrijven in Nederland is het aantal buitenlandse bedrijven klein (1 procent). Maar het effect is groter op de Nederlandse economie is groter. Zo staan deze bedrijven voor 30 procent van de omzet, 24 procent van de toegevoegde waarden en 21 procent van de totale bedrijfsinvesteringen in Nederland (hoofdstuk B6).

De analyse van onderzoek en ontwikkeling (hoofdstuk A4 en B4) laat zien dat het in buitenlands bezit zijn van een onderneming alléén niet de hoofdoorzaak is van het feit dat buitenlandse ondernemigen vaker aan R&D en innovatie doen. Bedrijfsgrootte, internationale verkopen en het onderdeel zijn van een ondernemingengroep zijn hiervoor mede bepalend (bedrijven scoren wel relatief hoger op deze variabelen).
De effecten van internationalisering op werkgelegenheid en lonen worden geanalyseerd en beschreven in A5 en B5. Buitenlandse bedrijven zorgen niet alleen voor een substantieel aandeel in de werkgelegenheid (15%), maar betalen ook significant hogere salarissen dan binnenlandse bedrijven. Deze hogere salarissen kunnen worden verklaard vanuit productiviteitsverschillen en door de hogere opleiding van werknemers bij buitenlandse bedrijven. Daarnaast vonden we ook bewijs voor de stelling dat buitenlandse bedrijven meer betalen om te voorkomen dat werknemers naar lokale concurrenten overstappen (tegengaan kennisverspreiding). Tenslotte zijn er ook verschillen in werkomstandigheden (langere werkweken, meer overtijd) die hogere salarissen kunnen verklaren.
In hoofdstuk A6 tenslotte wordt er naar de gevolgen van globalisering voor het milieu beschreven. De Nederlandse bijdrage aan de klimaatverandering hangt samen met de CO2 emissie. Er vind een relatieve (maar niet absolute) ontkoppeling plaats tussen de groei van de CO2 uitstoot en die van het BBP, zonder dat dit samengaat met een 'export van vervuiling' naar landen met lagere milieustandaarden.

De Internationalisation Monitor 2009 is de tweede in een serie van publicaties over globalisering en internationalisering en verschijnt voor het eerst in het Engels. De Internationalisation Monitor 2009 is te downloaden van de website van het CBS. (http://www.cbs.nl/en-GB/menu/themas/dossiers/globalisering/nieuws/default.htm?Languageswitch=on).

Verdere ontwikkelingen

Veel onderwerpen die centraal staan in het debat over globalisering en internationalisering zijn nog niet beschreven. Bijvoorbeeld effecten van globalisering op regionale verdeling van welvaart en welzijn, arbeidsomstandigheden en internationale

migratie, de relatie tussen handel in goederen en diensten, ondernemerschap en outsourcing.

Het CBS is al met een aantal nieuwe projecten van start gegaan die tot een verbreding en verdieping van onderzoek naar globalisering moet leiden. Vele van deze projecten gaan opnieuw gebruik maken van het samenvoegen van bestaande datasets op microniveau. Ook worden diverse strategische partners, zoals het Ministerie van Economische Zaken, de Nederlandse Bank, het Centraal Planbureau, het Economisch Instituut voor het Midden en Kleinbedrijf en universiteiten betrokken bij het onderzoek.

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In addition, the comments and suggestions of the following people are gratefully acknowledged:

Bram Edens
Cor Graveland
Brigitte Hermans
Hans Kolfoort
Chantal Lemmens-Dirix
Wiel Packbier
Rita Gircour
Peter van Bergeijk (Institute of Social Studies)
Henk Kox (CPB Netherlands Bureau for Economic Policy Analysis)
Harry Oldersma (Ministry of Economic Affairs)
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