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Import duty incidence

Using National Accounts data and static input-output analysis we assess the extent of shifting the incidence of Dutch import duties to foreign customers and global tariff incidence on final demands. About 70% of the tariffs collected in the Netherlands are paid by foreign customers, mainly those in other EU-countries. While the Dutch export the incidence of most of the import duties that they collect, they also import duties levied elsewhere in the EU. Assessing tariff incidence globally we conclude that Dutch tariff incidence is in line with the incidence in the other member states of the European Union. We extensively explain the computational procedures followed.

1   Introduction

The purpose of this memorandum is to assess the extent to which import duties collected in the Netherlands are borne by customers abroad and to assess tariff incidence on final demand in the Netherlands vis-à-vis incidence elsewhere. The analysis shows that through trade the incidence of the duties is shifted to customers in other countries and that tariff incidence is more evenly spread over member states than tariff collection.

International trade is in general more important for small member states than it is for larger ones. This is illustrated in table 1.1, which lists the member states that are also OECD-members (EU-19) in decreasing order of their ratios of external goods imports with respect to GDP in 2001. In small member states, such as Belgium, Luxembourg, the Netherlands, the Czech Republic, Slovakia and Hungary, trade is relatively important (total commodity imports as a percentage of GDP ranging from 68% in Belgium to 41% in the Netherlands). With the exception of land-locked Luxembourg, imports from non-member states are relatively important as well, its value ranging from 19% of GDP in the Slovak Republic to 15% in Hungary. Hence, the value of import duties collected in these smaller EU-countries is likely to be relatively large as well.

Table 1.1   External and internal goods trade of the member states of EU-19, as a percentage of GDP, 2004

| | Imports | | Exports | | Balance | |
	External	EU-19	External	EU-19	External	EU-19
Slovakia	19	40	9	47	-10	7
Belgium	18	49	17	56	-1	6
Netherlands	17	23	10	36	-7	12
Czech Republic	15	37	8	44	-7	6
Hungary	15	35	10	35	-5	1
Ireland	12	16	18	30	6	14
Poland	10	20	6	19	-4	-1
Finland	10	13	13	15	3	2
Germany	9	13	10	17	1	5
United Kingdom	8	10	6	8	-2	-2
Austria	8	24	10	22	2	-2
Greece	8	10	3	3	-5	-8
Sweden	8	16	13	16	5	0
Spain	7	13	4	11	-3	-3
Italy	7	10	7	10	0	0
Denmark	7	16	8	18	2	1
France	7	11	6	11	-1	0
Portugal	6	20	4	14	-3	-7
Luxembourg	4	40	4	28	0	-12
EU-19 average	9	14	8	16	-1	1

Source: OECD International Trade Statistics; OECD National Accounts; rearrangement CPB

To some extent, the table shows the importance of geographical location. A relatively large importer as Luxembourg, for example, hardly imports from outside EU-19. Belgium and the Netherlands with their huge seaports act as a gateway into the EU for external imports. They run a deficit in external trade (1% of GDP in Belgium, 7% in the Netherlands) and a surplus in internal trade (6% in Belgium, 12% of GDP in the Netherlands). The deficits in external trade and surpluses in internal trade of the Czech Republic, Slovakia and Hungary presumably indicate the importance of these countries as a production location for serving the EU-market. Thus, for these countries one may expect that a considerable part of the burden of paying import duties is shifted to customers in other states.

Our approach consists of a static input-output analysis. Using National Accounts data we assess the extent of shifting the incidence of import duties to foreign customers and tariff incidence on final demand by applying input-output techniques to the data these accounts provide. The analysis is a structural and static one and assumes that all variable trading and production costs (including tariffs on imports) are in the end borne by final customers. This is in agreement with micro-economic theory which tells us that firms will fully charge their customers for the variable costs they incur, irrespective of the nature of competitive circumstances. The techniques applied require assumptions of proportionality. Hence, the outcomes are of an indicative nature.

2 What are the destinations of Dutch imports and Dutch import duties?

In assessing the destinations of Dutch imports and Dutch import duties, we use the Dutch National Accounts for 2004 and the globally integrated national accounts for 2001 of the Global Trade Analysis Project (GTAP).[1] Most Dutch imports find their destination abroad. It is important to note that the import data of the Dutch National Accounts do not include transit trade that simply passes through the Netherlands without any ownership transfer to Dutch inhabitants. The imports that are covered by the Dutch National Accounts may reach foreign customers through two channels: either through direct re-export or through indirect re-exports. In the case of direct re-exports, the imported goods or services are re-exported almost without any transformation, whereas in the case of indirect re-exports the imports are used as intermediates in Dutch production and the produced goods are then exported.

In 2004, 36% of Dutch imports was directly re-exported while 25% indirectly got a foreign destination by being used up in the production of exported goods and services (see table 2.1). Hence, a major part (61%) of Dutch imports arrives at a destination abroad. Electro-technical and chemical products contribute in relatively large amounts through direct re-exports while indirect re-exports are relatively large for Commercial services and Other industries.

Table 2.1   Foreign destinations of Dutch imports, as a percentage of total non-transit imports by industry, 2004

	Direct re-exports	Indirect re-exports	Total	Idem, as % of Grand Total
Agriculture	39	29	68	3
Food and beverages	29	24	52	5
Chemical industry	46	32	79	15
Metal products	34	37	70	6
Machinery	36	19	55	3
Electro-technical products	76	5	82	28
Transportation vehicles	17	15	33	3
Other manufacturing	32	13	45	7
Commercial services	14	35	49	14
Other industries	10	42	52	14
Grand Total	36	25	61	100

Source: National Accounts 2004, Statistics Netherlands; calculations CPB

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[1] We use the GTAP-6 database (Dimaranan and McDougall, 2005).

About 20% of the import duties collected in the Netherlands is borne by transit trade. Assuming that the remaining duties would proportionally rest upon Dutch imports, we would conclude from table 2.1 that 69% of the import tariffs collected in the Netherlands in 2004 are in the end paid by foreign buyers. This percentage is arrived at as the sum total of 20% on transit trade, 29% (=0.8*36%) on direct re-exports and 20% (=0.8*25%) on indirect re-exports.

As the import duties on non-transit imports are directly available in the Dutch National Accounts this guesstimate can be improved. Using these data, we arrive at an aggregate figure that comes very close to it: about 70% of the incidence of import duties is shifted abroad, the share of duties on direct re-exports being somewhat higher than expected on the basis of import data only (see table 2.2).

Table 2.2	Foreign destinations of Dutch import duties, as a percentage of total import duties by industry, 2004			
	Transit export	Direct re-export	Indirect re-export	Total
Agriculture	9	35	27	71
Food and beverages	26	21	18	64
Chemical industry	16	39	27	82
Metal products	42	20	21	83
Machinery	12	31	17	60
Electro-technical products	16	64	4	85
Transportation vehicles	22	14	12	47
Other manufacturing	16	27	11	54
Commercial services	0	0	0	0
Other industries	32	15	36	82
Grand total	20	33	17	70

Source: National Accounts 2004, Statistics Netherlands; calculations CPB

Again, the contribution of direct re-exports of electro-technical products is relatively large; the chemical industry is also contributing relatively much through both direct and indirect re-exports while a considerable amount of duties is paid directly by foreigners on transit trade in food and beverages.

Figure 2.1   Percentage destinations of Dutch non-transit import duties, 2004
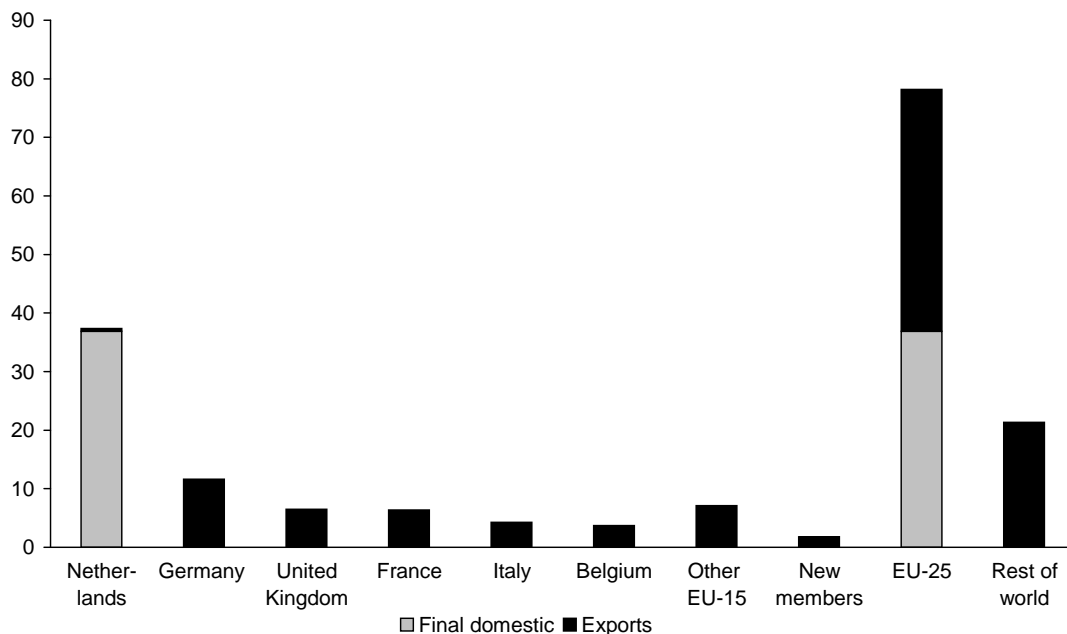
Source: GTAP-6 database, calculations CPB

Using the GTAP-6 database – and assuming that the duty exports are borne proportionally by the underlying bilateral export flows by industry – we can derive the geographical destinations of Dutch non-transit duty exports. Unsurprisingly, a major part (more than 40%) of Dutch non-transit duties is paid by final consumers in the other member states, notably in Germany (12%), the United Kingdom and France (both 6%), see figure 2.1. A considerable part is also re-exported to the rest of the world where final consumers pay more than 20% of Dutch tariffs on non-transit trade. A very small part (0.5%) re-enters the Netherlands embodied in final products. Assuming that the duties on Dutch transit exports are fully borne by final consumers in other EU-countries, final customers in other member states pay about 53% (=0.8*41 +20) of the total Dutch import duty bill, those in the rest of the world 17% and Dutch final buyers about 30%.

3 What is the incidence of import duties in the Netherlands?

Input-output analysis of the Dutch accounts shows the tariff incidence on Dutch demand (see table 3.1). The table brings to the fore two aspects of tariff incidence. First, although tariffs on commercial services imports do not exist, demands for services are not tariff-free, because in the process of producing services tariffs on non-service inputs are incorporated. Second, Dutch exports − bearing tariffs − obviously are a vehicle of shifting tariff incidence abroad. But by the same token Dutch import values themselves must contain tariffs, when they enter the Netherlands from other member states. Hence, the tariff incidences shown in the table underestimate the tariff contents of demand and an international analysis is needed to assess final Dutch tariff incidence.

Table 3.1   **Incidence of Dutch non-transit duties on domestic and foreign demands by industry, as a percentage of demands, the Netherlands, 2004**

|	Final domestic demand			Export demand		
	Directly imported	Domestically produced	Total	Direct re-exports	Indirect re-exports	Total
Agriculture	1,5	0,1	0,7	1,5	0,1	0,5
Food and beverages	1,2	0,3	0,6	1,2	0,3	0,5
Chemical industry	0,6	0,2	0,4	0,6	0,2	0,3
Metal products	0,5	0,2	0,3	0,5	0,2	0,3
Machinery	0,6	0,2	0,4	0,6	0,2	0,3
Electro-technical products	0,3	0,1	0,3	0,3	0,1	0,3
Transportation vehicles	0,4	0,2	0,4	0,4	0,2	0,2
Other manufacturing	0,9	0,2	0,5	0,9	0,2	0,5
Commercial services	0,0	0,0	0,0	0,0	0,1	0,1
Other industries	0,0	0,0	0,0	0,2	0,0	0,0
Total	0,5	0,0	0,1	0,5	0,1	0,2

Source: National Accounts 2004, Statistics Netherlands; calculations CPB

The GTAP-6 international accounts are a suitable data source for this assessment. These accounts include tariffs on bilateral trade flows for 2001. The tariffs still contain bilateral import duties and agricultural levies on trade between the member states of EU-15 and the new members that joined the EU on May 1st, 2004. To reflect the current situation, we replace these tariffs by estimates for 2004 by industry and member state. These estimates are arrived at by applying Dutch tariff rates (i.e. Dutch 2004 import duties and agricultural levies expressed as ratios of Dutch 2004 external imports by industry) to the external imports by industry of each

member state, scaling the tariffs afterwards to the sum total of 2004 tariff transfers to the European budget[2].

It then appears that final tariff incidence in the Netherlands comes very close to the EU-average (see figure 3.1). The figure shows relatively low incidence in Italy. This is caused by a relatively small share of imports in total demand. The figure also indicates a somewhat higher tariff incidence in the new member states (EU-10) compared to those of EU-15. The cause of this difference is the smaller relative size in the new member states of the services sector (which indirectly bears some duties but still has tariff rates that are much smaller than those on manufacturing sectors). Tariff incidence in the rest of the world is somewhat higher than in the European Union. The cause of this is higher tariffication of both manufactured products and services.

Figure 3.1   Tariff incidence as a percentage of final demand, 2004
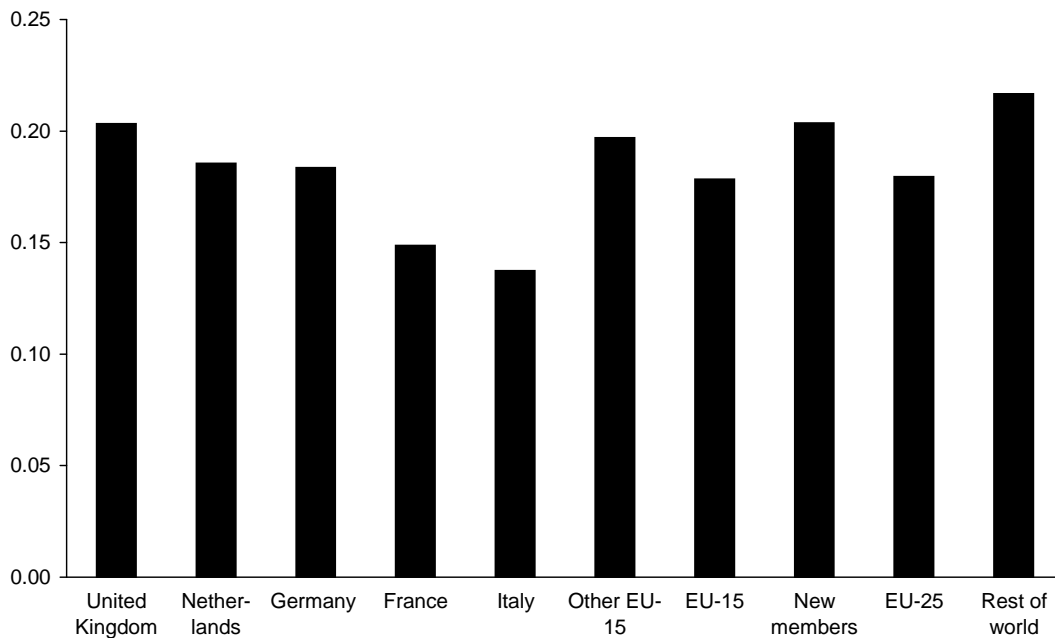
Source: GTAP-6 database, calculations CPB

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[2] The scaling is to the sum total of transfers of traditional own resources to the EU-budget raised by 33% to reflect collection costs. In arriving at the sum total the transfers of the new member states have been raised by 50% to reflect the date of their accession (cf. Table 4a in European Commission, 2005).

4 Conclusions

Our assessments are the result of static input-output analysis of National Accounts data. Using the Dutch National Accounts of 2004 to assess the extent of shifting the Dutch tariff burden abroad, we conclude that about 70% of the tariffs collected in the Netherlands are paid by foreign customers. Using detailed National Accounts data of the Global Trade Analysis Project (GTAP) for 2001 we assess the destinations of these tariffs. It turns out that other EU-countries pay the major part of the Dutch tariff bill. The bill passed on to customers in non-EU countries is also considerable.

While the Dutch export most of the import duties levied in the Netherlands, they also import duties levied elsewhere in the EU. Assessing total tariff incidence globally we conclude that Dutch tariff incidence is in line with the incidence in the other member states of the European Union.

5   Explanation of computational procedures

Dutch National Accounts

In the National Accounts gross outputs of the various branches of industry are delivered to other
sectors (as intermediates), to domestic consumers (as final products) and to foreign customers
(as either intermediates or final products):

$$x = S^x \iota + f^x + e^x \tag{5.1}$$

with x -   vector with gross output values by industry

             S^x -   matrix with intermediate deliveries, $S^x(i, j)$ denoting the delivery

                                  from industry i to industry j

             ι -   unit summation vector

             f^x -   vector with domestic final demands by industry

             e^x -   vector with foreign deliveries from domestic production by industry

In the Dutch National Accounts imports are also allocated to these destinations

$$m = S^m \iota + f^m + e^m \tag{5.2}$$

with m -   vector with imports by industry

             S^m -   matrix with intermediate deliveries of foreign origin,

                              $S^m(i, j)$ denoting the delivery from foreign industry i to domestic

                                  industry j

             f^m -   vector with final demands for imports by industry

             e^m -   vector with re-exports by industry

Similarly, we may denote the destinations of import duties on non-transit trade as

$$t - t^t = S^t \iota + f^t + e^t \tag{5.3}$$

with t -   vector with import duties by industry

             t^t -   vector with import duties on transit trade by industry

             S^t -   matrix with import duties on intermediate deliveries of foreign origin

                                  by industry

             f^t -   vector with import duties on final demands for imports by industry

e^t -   vector with import duties on re-exports by industry

Equation (5.3) implicitly shows the allocation of non-transit duties to intermediate deliveries, final demand and re-exports. This allocation is row wise and in proportion to the underlying values of S^m, f^m and e^m.

Letting y denote total value added (plus remaining domestic indirect taxes) and s^y represent value added by industry, we can complete the accounts with

$$y = s'^y \iota \tag{5.4}$$

and

$$x' = \iota'(S^x + S^m + S^t) + s'^y \tag{5.5}$$

Equation (5.5) shows the column sums of an input-output table and indicates that the sum total of production costs equals production value for each industry.

Next, we define A^x and A^m as the matrices with input coefficients for deliveries from domestic and foreign origin respectively and A^t as the matrix with import duty coefficients.

$A^x(i, j) = S^x(i, j)/x(j)$ denotes the input of the domestic industry i that is needed per unit of output in industry j, $A^m(i, j) = S^m(i, j)/x(j)$ represents the input needed from foreign industries and $A^t(i, j) = S^t(i, j)/x(j)$ gives the corresponding import duty per unit of output of industry j. We now can rearrange (5.1), (5.2) and (5.3) as follows

$$x = A^x x + f^x + e^x = (I - A^x)^{-1}(f^x + e^x) \tag{5.6}$$

$$m = A^m x + f^m + e^m = A^m (I - A^x)^{-1} f^x + f^m + e^m + A^m (I - A^x)^{-1} e^x \tag{5.7}$$

and

$$t = A^t x + f^t + t^t + e^t = A^t (I - A^x)^{-1} f^x + f^t + t^t + e^t + A^t (I - A^x)^{-1} e^x \tag{5.8}$$

The last two terms of the most right-hand side of (5.7) indicate direct re-exports e^m and indirect re-exports $A_m (I - A_x)^{-1} e_x$. Their values are shown – expressed as a percentage of total imports m – in the first two columns of table 2.1. Similarly, the last three terms of the most right-hand side of (5.8) indicate import duties on transit trade t^t, on direct re-exports e^t and on indirect re-exports $A^t (I - A^x)^{-1} e^x$. Their values are shown – expressed as a percentage of total import duties t – in the first three columns of table 2.2.

Finally, we define B^x as the matrix with intermediate delivery output shares, b^{f^x} as the vector with shares of domestic final demand in total output and b^{e^x} as the vector with export

shares. $B^x(i, j) = S^x(i, j) / x(i)$ denotes the share of intermediate deliveries from industry i to industry j in total output of industry i and $b^{f^x}(i) = f^x(i)/x(i)$ and $b^{e^x}(i) = e^x(i)/x(i)$ give the output shares of domestic final demand and export demand in total output. (5.5) can now be rearranged as

$$x' = x'B^x + \iota'S^m + \iota'S^t + s'^y = (\iota'S^m + \iota'S^t + s'^y)(I - B^x)^{-1} \tag{5.9}$$

Total final demand f equals by definition

$$f = f^x + f^m + f^t = diag\{b^{f^x}\}x + f^m + f^t \tag{5.10}$$

and total export demand e is equal to

$$e = e^x + e^m + e^t = diag\{b^{e^x}\}x + e^m + e^t \tag{5.11}$$

where $diag\{z\}$ denotes diagonalization of the vector z.
Hence, using (5.9), f may be decomposed as

$$f = diag\{b^{f^x}\}(I - B'^x)^{-1}(S'^m\iota + s^y) + f^m + f^t + diag\{b^{f^x}\}(I - B'^x)^{-1}S'^t\iota \tag{5.12}$$

and e as

$$e = diag\{b^{e^x}\}(I - B'^x)^{-1}(S'^m\iota + s^y) + e^m + e^t + diag\{b^{f^x}\}(I - B'^x)^{-1}S'^t\iota \tag{5.13}$$

The last two terms on the right-hand side of (5.12) denote the import duties on imported final deliveries f^t and the duties on final deliveries that are domestically produced $diag\{b^{f^x}\}(I - B'^x)^{-1}S'^t\iota$. Their values are shown – expressed as a percentage of f^m and f^x respectively – in the first two columns of Table 3.1. The third column of this table gives their sum total as a percentage of f. The last two terms on the right-hand side of (5.13) denote the import duties on direct re-exports e^t and the duties on exports that are domestically produced $diag\{b^{e^x}\}(I - B'^x)^{-1}S'^t\iota$. Their values are shown – expressed as a percentage of e^m and e^x respectively – in the fourth and fifth columns of Table 3.1. The last column of this table gives their sum total as a percentage of e.

Accounts of the GTAP-6 database
The supply-utilization accounts of the GTAP-database are as follows. Domestic output in region r, x_r, is used for intermediate deliveries to other industries, for final domestic demand,

for exports to other regions s, e_{rs} , and for transport and trading services in international trade, g_r^x .

$$x_r = S_r^x \iota + f_r^x + g_r^x + \sum_s e_{rs} \tag{5.14}$$

where the supply of trading and transportation services originates from one services sector only (*i.e.* g_r^x has only one nonzero entry).

Tariffs, t_{rs}, are added to the import flows from regions s, $\tilde{m}_{rs}$, and the sum total over regions of origin, $\tilde{m}_r + t_r$, is used for intermediate deliveries to domestic industries and for final demand

$$\sum_s (\tilde{m}_{rs} + t_{rs}) = \tilde{m}_r + t_r = \tilde{S}_r^m \iota + \tilde{f}_r^m \tag{5.15}$$

Bilateral import flows equal the export flows plus a trade and transportation margin g_{sr}

$$\tilde{m}_{rs} = e_{sr} + g_{sr} \tag{5.16}$$

We note, that these accounts differ in two respects from the Dutch National Accounts: re-exports are not recorded (these are allocated as imports in the receiving countries) and deliveries to the international trading sector are introduced. The latter are trade and transportation services that at the global level exactly cover the sum total of trade and transportation margins on international trade

$$\sum_r g_r^x = \sum_r \sum_s g_{sr} \tag{5.17)}$$

We allocate tariffs and transportation margins proportionally to intermediate and final destinations as

$$t_r = S_r^t \iota + f_r^t \tag{5.18}$$

$$\sum_s g_{sr} = g_r = S_r^g \iota + f_r^g \tag{5.19}$$

As in (5.3) the allocations of tariffs t_r and margins g_r to demand categories are row wise in proportion to the values of intermediate deliveries and final import demands. They allow us to relate margin-free (f.o.b.) import values, m_r , directly to bilateral export flows

$$m_r = \sum_s m_{rs} = \sum_s e_{sr} = S_r^m \iota + f_r^m \tag{5.20}$$

where

$$S_r^m = \tilde{S}_r^m - S_r^t - S_r^g \tag{5.21}$$

and

$$f_r^m = \tilde{f}_r^m - f_r^t - f_r^g \tag{5.22}$$

Domestic taxes may be imposed on import flows $\tilde{S}_r^m$ and $\tilde{f}_r^m$ before they reach domestic customers. We denote these by S_r^b and f_r^b respectively. Similar to (5.5) production costs exhaust production values as in

$$x_r' = \iota'(S_r^x + S_r^m + S_r^t + S_r^g + S_r^b) + s_r'^y \tag{5.23}$$

and similar to (5.10) total final demand is by definition

$$f_r = f_r^x + f_r^m + f_r^t + f_r^g + f_r^b \tag{5.24}$$

Defining import shares as

$$\mu_{rs} = diag\{m_r\}^{-1} m_{rs} \tag{5.25}$$

allows us to convert bilateral exports to imported intermediate deliveries and final import demands in the country of destination

$$e_{sr} = diag\{\mu_{rs}\}(S_r^m \iota + f_r^m) = \hat{\mu}_{rs} S_r^m \iota + \hat{\mu}_{rs} f_r^m \tag{5.26}$$

where the hat-sign in, for example, $\hat{z}$, is used as shorthand notation for $diag\{z\}$.

Letting $\breve{S}$ denote the global matrix of intermediate deliveries, $\bar{F}$ the global matrix of final demands, $\breve{W}$ the global matrix of additional inputs and $\breve{x}$ the global vector of outputs, adding to the latter as a last item the sum total of deliveries to the international trading sector. We then can summarize and consolidate the accounts (5.14), (5.19) and (5.20) as

$$\breve{x} = \breve{S}\iota + \bar{F}\iota \tag{5.27}$$

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and (5.23) as

$$\breve{x}' = \iota'\breve{S} + \iota'\breve{W} \tag{5.28}$$

Assuming that R regions are distinguished,

$$\breve{x}' = \left[x_1', \ldots, x_R', \sum_r g_r'^x \iota \right], \tag{5.29}$$

$$\breve{S} = \begin{bmatrix} S_1^x & \hat{\mu}_{21} S_2^m & \cdots & \hat{\mu}_{R1} S_R^m & g_1^x \\ \hat{\mu}_{12} S_1^m & S_2^x & \cdots & \hat{\mu}_{R2} S_R^m & g_2^x \\ \vdots & \vdots & & \vdots & \vdots \\ \hat{\mu}_{1R} S_1^m & \hat{\mu}_{2R} S_2^m & \cdots & S_R^x & g_R^x \\ \iota' S_1^g & \iota' S_2^g & \cdots & \iota' S_R^g & 0 \end{bmatrix}, \tag{5.30}$$

$$\breve{F} = \begin{bmatrix} f_1^x & \hat{\mu}_{21} f_2^m & \cdots & \hat{\mu}_{R1} f_R^m \\ \hat{\mu}_{12} f_1^m & f_2^x & \cdots & \hat{\mu}_{R2} f_2^m \\ \vdots & \vdots & & \vdots \\ \hat{\mu}_{1R} f_1^m & \hat{\mu}_{2R} f_2^m & \cdots & f_R^x \\ \iota' f_1^g & \iota' f_2^g & \cdots & \iota' f_R^g \end{bmatrix}, \text{ and} \tag{5.31}$$

$$\breve{W} = \begin{bmatrix} \iota' S_1^t & \cdots & \iota' S_R^t & 0 \\ \iota' S_1^b & \cdots & \iota' S_R^b & 0 \\ s_1'^y & \cdots & s_R'^y & 0 \end{bmatrix} = \begin{bmatrix} \breve{w}'^t \\ \breve{w}'^b \\ \breve{w}'^y \end{bmatrix}. \tag{5.32}$$

Defining output coefficients

$$B^{\breve{x}} = diag\{\breve{x}\}^{-1} \breve{S} \tag{5.33}$$

and

$$B^{\breve{F}} = diag\{\breve{x}\}^{-1} \breve{F} \tag{5.34}$$

we can express the outputs in terms of the other inputs

$$\breve{x} = (I - B'^{\breve{x}})^{-1}(\breve{w}^t + \breve{w}^b + \breve{w}^y) \tag{5.35}$$

The tariff content of $\breve{x}$, $t^{\breve{x}}$, can be arrived at as

$$t^{\breve{x}} = (I - B'^{\breve{x}})^{-1}\breve{w}^t \tag{5.36}$$

which allows us to compute the tariff content $T^{\breve{F}}$ of $\breve{F}$ as

$$T^{\breve{F}} = diag\{t^{\breve{x}}\}B^{\breve{F}} \tag{5.37}$$

Appropriately collecting the indirect tariff contents of the components of regional final demands from the columns of $T^{\breve{F}}$ yields t_r^f as the regional indirect tariff contents of f_r. Total tariff incidence is then arrived at as the sum total of indirect tariff imputations, t_r^f, and direct tariffs on final imports, f_r^t, expressed as a percentage of total final demands $100*diag\{f_r\}^{-1}(t_r^f + f_r^t)$.

Because we wish to keep our analysis of tariff incidence using the Dutch National Accounts consistent with the analysis based upon the GTAP-6 database, we derive tariff exports from the Dutch Accounts and their incidence on specific regions from the GTAP-6 Accounts. Figure 2.1 is arrived at by inserting Dutch import duties only in (5.36), deriving a percentage incidence destination matrix from t_r^f $(r = 1, \cdots, R)$ by industry and applying these to the tariff exports from the Dutch accounts. Similarly, for Figure 3.1, we use the Dutch data to assess the immediate incidence in the Netherlands of our tariff estimates for 2004 and allocate the incidence abroad to foreign destinations using the Dutch incidence destination matrix. Adding tariff incidence of tariffs levied elsewhere (obtained by inserting all tariffs, except those for the Netherlands, in (5.36)) yields the final incidences shown in Figure 3.1.

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