



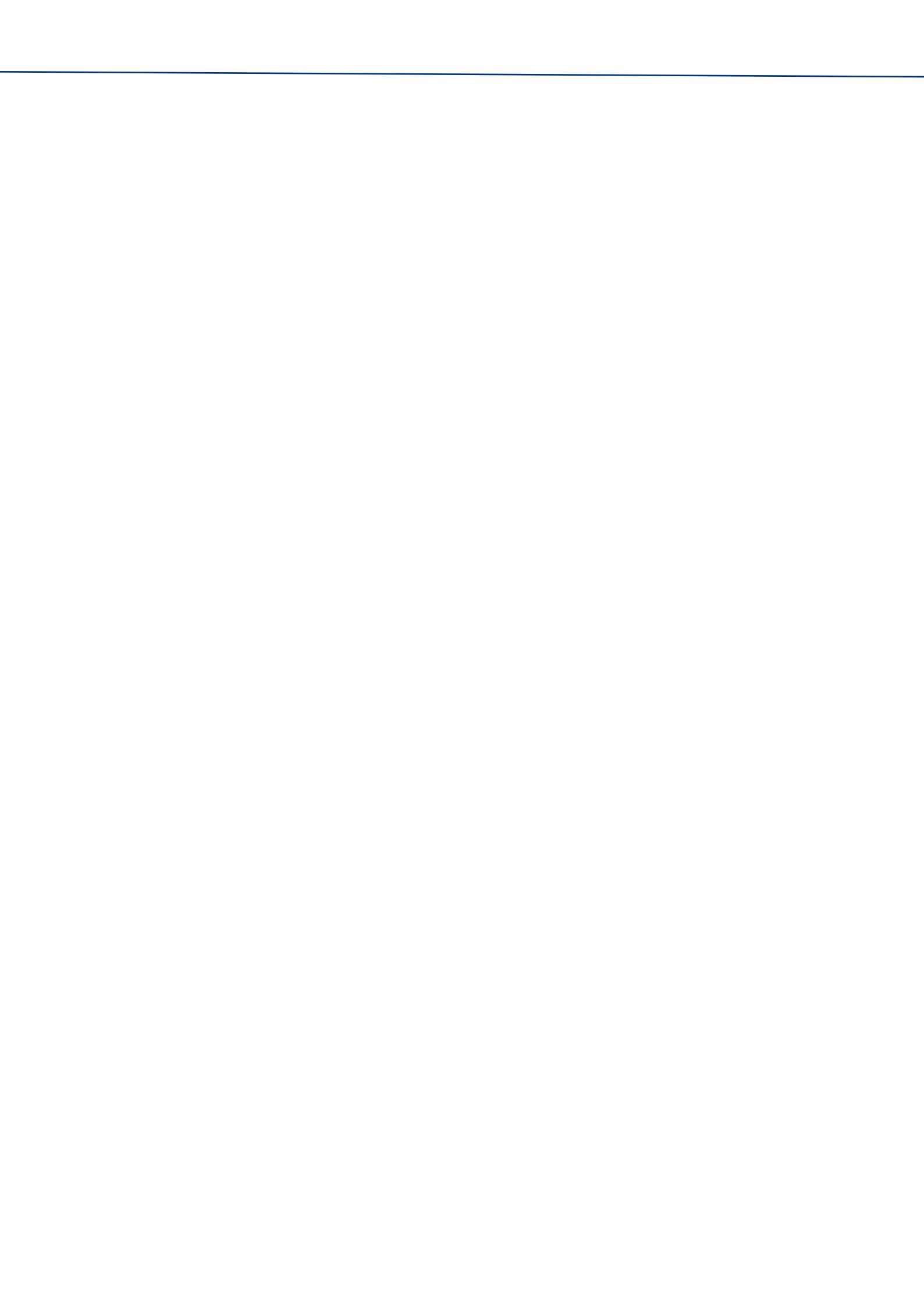
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**Long run income elasticities of
import demand**

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RESEARCH



Authors: Silvia Lui and Rebecca Riley with Dawn Holland, Ali Orazgani and Pawel Paluchowski

National Institute of Economic and Social Research

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¹ Correspondence: National Institute of Economic and Social Research, 2 Dean Trench Street, Smith Square, London SW1P 3HE; Tel.: +44-207-222-7665; fax: +44-207-654-1900
E-mail: s.lui@niesr.ac.uk; r.riley@niesr.ac.uk

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Contents

Contents.....	1
1. Background and overview.....	2
2. Data sources.....	4
3. Data construction.....	6
4. Data characteristics.....	15
5. Identifying the long run income elasticity of import demand.....	44
The long run income elasticity of import demand by product for country groups.....	45
The long run income elasticity of demand for UK imports by product for country groups.....	47
The sensitivity of import demand to the different components of aggregate demand.	48
6. Results.....	50
The long run income elasticity of import demand by product for country groups.....	50
The long run income elasticity of demand for UK imports by product for country groups.....	53
The sensitivity of import demand to the different components of aggregate demand.	54
Summary.....	54
References.....	69
A1. Product groups and SITC, Revision 2, 3-digit codes.....	71
A2. Diagnostic tests.....	84

1. Background and overview

The aim of this project, undertaken for the Department for Business, Innovation and Skills (BIS), is to contribute to the understanding of how demand for world and UK exports may change in response to rising incomes. In particular, to explore how the magnitude and product mix of imports varies with income and across economies at different stages of development. The background to this focus is one where new trends in global demand and supply bring new challenges and opportunities for UK exporters (BIS 2012b, 2012d) and a renewed awareness of the role of industrial strategy and sectoral policy in fostering UK competitiveness (BIS 2012c).

Specifically, this project has three objectives:

1. to identify the long run income elasticity of import demand by product for country groups;
2. to identify the long run income elasticity of demand for UK exports by product for country groups;
3. and to assess how changes in different components of aggregate demand may impact on import demand by product for country groups.

This report details a database, commissioned by BIS and developed for the analysis and modelling work, and presents estimates of the key parameters of interest.

Our approach to modelling trade elasticities builds on an established body of theoretical and empirical literature, which has shown that rising incomes are likely to have a strong influence on the magnitude of aggregate and sectoral trade flows.² However, the primary focus of this literature has been on the price sensitivity, rather than the income sensitivity, of trade. From the perspective of seeking to understand how rising incomes in overseas markets may impact on growth in demand for exports from the UK, therefore, it is important to understand more specifically how these influences are likely to impact on the composition of import demand growth across sectors and on the types of goods and services in which the UK has comparative advantage.

In order to explore these issues we construct a dataset on the volume and unit price of goods imports from the world and goods imports from the UK for 29

² See e.g. Mann & Plück (2005) and BIS (2012a) for reviews of the literature.

countries and 17 product groups covering the period 1980-2011³ using the UN COMTRADE database.⁴ We augment this with indicators of services trade using IMF statistics.

Adopting a widely used model of import demand⁵ we model country-group and product specific import volumes as a function of real incomes and the price of imported versus domestic goods. Countries are grouped according to their level of economic development and broad global region. When modelling demand for UK imports we also take into account price competition between UK exporters and exporters from elsewhere.⁶ The modelling strategy takes into account aggregate trends in trade flows, which may, for example, be affected by global demand changes, and permanent country and product specific differences in trade flows, which may reflect factors such as the distance between trading partners and permanent differences in consumer preferences. The estimation approach that we use is robust to a number of identification issues that are often ignored in analyses of detailed country and product specific import demand.⁷

This paper is organised as follows. Data sources and data construction are described in sections 2 and 3. Section 4 provides some descriptive statistics. The estimation approach is described in section 5 and estimated trade elasticities are presented in section 6.

³ The time period covered varies by country and product group.

⁴ COMTRADE data have been widely used to analyse trade volumes and prices. See e.g. Kee et al. (2008), Jones (2008), Senhadji & Montenegro (1998) and Chang & Winters (2002).

⁵ As outlined in Goldstein & Khan (1985).

⁶ For example as in the export models estimated in Pain *et al.* (2005).

⁷ A number of studies adopt dynamic panel methods to identify trade elasticities, but the level of disaggregation in these studies is typically far less than that adopted here (see e.g. Marquez, 2006; Mann & Plück, 2005; Senhadji & Montenegro, 1998). More disaggregate studies of trade flows tend to be relatively restrictive in the time dimension and tend to analyse static models (see e.g. Kee *et al.*, 2008; Green & Kohli, 1991; Jones, 2008).

2. Data sources

Data on bilateral trade in commodities volumes (weight) and values are available in the OECD's international trade by commodity statistics (<http://dx.doi.org/10.1787/itcs-data-en>) and in the UN Comtrade database (<http://comtrade.un.org/db/>). We have collected information on imports from the world and from the UK to our countries of interest. The data for Taiwan was collected from UNCTAD and National Statistics, Republic of China (Taiwan), (<http://eng.stat.gov.tw/ct.asp?xItem=25763&CtNode=5347&mp=5>).

Trade values (in \$) and weight (in kgs) are collected at the SITC Rev2 3-digit level; this splits goods into 237 product groups. Our initial intention was to collect these at the HS92 2-digit level in order to form the 15 product groups identified by BIS. But, the use of SITC Rev2 3-digit level statistics allows us to create longer time series for a wider set of countries. Using a look-up table between HS92 and SITC Rev2 we map the 237 product groups into 17 broader product groups as described in Table A1. The use of 17 product groups rather than the initial 15 groups reflects the disaggregation of "Machinery and Electrical products" and "Electrical and electric equipment" into 4 categories agreed with BIS⁸: Boilers, Engines and Turbines; Machinery, Equipment and Parts; ICT and Office Equipment; Electrical Machinery and Parts. Where a SITC Rev2 3-digit product spans more than one product group we allocate it to the group that accounts for the highest share of the total product import value.⁹ Unit values are derived by dividing trade values by trade weight.

We obtain data on bilateral services trade values from UNCTAD (http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sCS_referer=&sCS_ChosenLang=en). We also collect information on bilateral goods values and total trade values from this source. We construct goods and total trade volume indices using IMF World Economic Outlook statistics; combined with the value data from UNCTAD this allows us to construct goods and total trade volumes in 2005 prices. From this information we then derive series on services trade volumes and prices.¹⁰ We obtain information on bilateral services trade values for disaggregate services trade categories (transport; travel; other commercial

⁸ We explored the possibility of splitting these two groups into capital, intermediate and consumption goods (a distinction similar to that in e.g. Mann & Plück, 2005). We did not pursue this because most of the "Machinery and Electrical products" are classified as capital goods and because this kind of split would have required us to use SITC Rev2 5-digit information.

⁹ This mainly affects the coverage of the Chemicals, Pharmaceuticals, Precision Instruments, and Miscellaneous product groups. Using SITCRev2 3-digit product codes to construct BIS groups of interest, rather than HS92 2-digit codes, coverage of Chemicals and Precision Instruments groups is smaller and coverage of the Pharmaceuticals and Miscellaneous groups is larger.

¹⁰ $VOL_S^{2005 \text{ prices}} = VOL_{G+S}^{2005 \text{ prices}} - VOL_G^{2005 \text{ prices}}$; $P_S^{2005=1} = VAL_S / VOL_S^{2005 \text{ prices}}$.

services) from the World Trade Organization (<http://stat.wto.org/StatisticalProgram/WSDDBStatProgramSeries.aspx?Language=E>). We use the aggregate services import deflator to derive corresponding volume indices for each of these service import categories.

We include in our database a tariff adjusted import price. Tariff rates are obtained from the World Bank indicator database. These are available for primary and manufactured goods respectively (<http://data.worldbank.org/indicator>).¹¹ Total financial expenditure components are obtained from the National Accounts Main Aggregates Database (<http://unstats.un.org/unsd/snaama/Introduction.asp>).¹²

¹¹ We apply manufacturing tariff rates to the price of services imports in estimation.

¹² When modelling trade flows it is common to include indicator variables to purge the main parameters of interest from the effects of policy events. Policy events considered important when modelling import demand (see e.g. Barrell *et al.* (2007)) include:

- European Single Market (ESM): applicable only to the large European country group. This indicator has a value of one prior to 1988 and then gradually declines to zero by 1993, the formal completion of the Single Market Programme.
- Agreement on Textiles and Clothing: an indicator capturing the removal of quotas on non-OECD exports of clothes and textiles into OECD countries. It is gradually reduced from one in 1995 when the agreement came into effect, to zero by 2005, when all quotas and tariffs were formally abolished. This indicator may be particularly important for textile products, but may also influence other product categories.
- NAFTA: modelled as a gradual trend indicator from 1989-1997 affecting the United States and Canada only.
- EU membership: modelled as a dummy that increases gradually over the three years until a country becomes a full EU member.
- Liberalisation of China: Chinese trade reforms were introduced between 1978 and 1990, when mandatory export planning was abolished completely.
- 9/11: dummies for 2001 and 2002 to account for any volatility in import demand for mineral products and aerospace following 9/11.

In the disaggregate models considered in this paper the impacts of all of these policy innovations on import demand are accounted for by the inclusion of the level and change in cross sectional mean import demand.

3. Data construction

We aggregate import values and weight in kgs at the SITC Rev2 3-digit product level into the product groups (1-17) listed in Table 1 (mapping to SITC Rev2 3-digit shown in Table A1). This is done for each of the countries listed in Table 2 alongside their country group (as identified by BIS), with the exception of the United Arab Emirates and Vietnam, which are excluded from the database due to missing data issues. (For Vietnam we can obtain only eleven years of data, which is unsuitable for time-series estimation. UAE COMTRADE/OECD data has 5-6 year gaps for most import product values during the mid-1990s.)

Table 1. Product groups

1	Agriculture products (animal and vegetable)
2	Foodstuffs
3	Mineral products
4	Chemicals
5	Pharmaceuticals
6	Basic manufacturing
7	Textiles and footwear
8	Boilers, Engines and Turbines
9	Machinery, Equipment and Parts
10	ICT and Office Equipment
11	Electrical Machinery and Parts
12	Transport: Rail
13	Transport: Vehicles
14	Transport: Aerospace
15	Transport: Shipbuilding
16	Precision instruments
17	Miscellaneous manufacturing and other
18	Services
19	Services: Transport
20	Services: Travel
21	Services: Other commercial services

Table 1 also lists the services trade categories that we use. These data are very different to the data on trade in goods. In particular, prices are reflected by a price index rather than unit values (\$ per kg) and do not vary across different categories of services trade. Services trade volumes are measured in constant prices (rather than in kgs).

Table 2. Country groups

North America	Canada, USA
BRIC	Brazil, India, Russia, China
High-income Asia	South Korea, Japan, Singapore, Hong Kong, Taiwan
Middle-income Asia	Malaysia, Indonesia, Thailand, Vietnam
Middle East	Egypt, Qatar, UAE, Saudi Arabia
Large European	France, Germany, Spain, Italy, Netherlands, Belgium, Ireland
Central Europe	Slovak Republic, Slovenia, Poland, Hungary, Czech Republic

When constructing the data on goods trade we exclude 3-digit product codes where more than 5% of country-year observations are missing (both import values and weight). These product codes are: 12, 43, 212, 246, 261, 281, 286, 289, 333, 351, 675, 688, 941, 951, 961, 971 (see Table A1 for a description of these). We also exclude product code 667 (Pearl, precious and semi-precious stones, unworked or worked); this series proves difficult to impute.

In practice the aggregation of goods import values and weight, into the 29x17xYEAR categories resulting from the product and country groupings in Tables 1 and 2, requires us to deal with a number of data issues arising primarily due to missing data. The extent of missing (and therefore imputed) data that underlies the finished database is shown in Table 3. As is clear from comparing the last two columns, the data on trade values is far more comprehensive than the data on trade weights. Indeed, the information available on trade values is quite comprehensive, with the exception of the information available for Qatar (and perhaps India and Saudi Arabia). For Qatar around 17% of the import

values by 3-digit product code/year are missing (220 product codes¹³ x 31 years = 6820 observations; 17% of 6820 = 1176). For India and Saudi Arabia around 5% of the import values by product code/year are missing. For other countries the extent of missing value data is less than 1%.

Imputation is required to a much greater extent for the volume (weight) data. As shown in the last column of Table 3, around a third of import volumes by 3-digit product code/year are imputed for Canada, Hong Kong, India, Malaysia, and Singapore; around a quarter of these observations are imputed for China, Qatar, Thailand, and the United States. For other countries the extent of imputed observations is much less. The extent of imputed data on import weights is detailed by country and product group in Table 4.¹⁴ Below we describe briefly the imputation process we apply for the majority of missing import weight observations:

- Small gaps (1-3 years) in import values in the middle of the data are imputed by simple linear interpolation.
- Small gaps (1-3 years) in import weights in the middle of the data are filled using a simple linear interpolation in unit values.
- For Qatar and India missing import values are replaced with near-zero values (on inspection of the data this seems a reasonable assumption in most instances).
- Remaining missing import values are set equal to the mean value share of the 3-digit product in the country-product group multiplied by the country-product group import value. (We do not make this imputation in cases where the 3-digit product accounts for a significant share of country-

¹³ Recall that we have dropped 17 3-digit product codes.

¹⁴ Imputation is required where data is missing or, for very few observations (less than 200), where the import weight and value data imply a very substantial (1000 per cent or more) increase in the unit value sustained for just a year or two; or equivalent drop. These observations are (country, year, 3-digit product code): CAN, 2002, 848; CZE, 2011, 793; ESP, 2008 and 2009, 774; IRL, 2005, 784; SAU, 2008 and 2009, 514-515 and 524; BEL, 2008, 898; BRA, 1988, 541; CHN, 1992, 772; CHN, 1994, 784; CZE, 2004, 3-digit codes 541, 718, 751, 771, 762, 778, 898, 874; CZE, 2011, 792; DEU, 1999, 541; EGY, 2010, 3-digit codes 541, 711, 713, 723, 772; ESP, 2008, 3-digit codes 871-874, 885; HKG, 2000 and 2001, 653 and 848; HUN, 2011, 793; HUN, 1993, 885; IDN, 1989, 874; KOR, 1996, 541; MYS, 2006, 48 and 58; NLD, 2011, 3-digit codes 726, 728, 736, 741, 742, 716, 776; SAU, 2008 and 2009, 3-digit codes 831, 762, 884, 898; SGP, 1991, 57; SGP, 1990, 292 and 773; THA, 2002, 793; TWA, 1997-1999, 3-digit codes 41, 42, 44, 45, 61, 222, 271, 273, 274, 278, 287, 277, 247, 322, 323, 334, 335, 341, 282, 511, 512, 562, 592, 661, 671-674, 676-678, 691, 793.

product group import values - Russia group 14 and Saudi Arabia group 13.)

- Remaining missing import weights are derived using the predicted unit value from a regression of observed unit values on their lag, country mean unit value and its lag, product group mean unit value and its lag, country, year and 3-digit product fixed effects.
- Remaining missing import weights are derived using the predicted unit value from a regression of observed unit values on their forward lag, country mean unit value and its forward lag, product group mean unit value and its forward lag, country, year and 3-digit product fixed effects.
- Missing import weights where the entire time series is missing are derived using the predicted unit value from a regression of observed unit values on the country mean unit value, product group mean unit value, country, year and 3-digit product fixed effects.

An alternative to the imputation process used here is to use a price series from a separate source (and such a series will almost certainly be a more aggregate one) to infer import volumes. This option is not preferred because it does not make use of any of the information on weights that is available and thus it is not clear that such a price series will contain better information than the imputed price series developed here.

Table 3. Data coverage and imputation

Country	Goods data coverage	Services data coverage*	Missing groups	Values & Volumes % of goods data imputed	Volumes only % of goods data imputed
BEL	1993-2011	1980-2011	19-21	0.33	3.23
BRA	1983-2011	1980-2011		0.28	3.35
CAN	1978-2011	1980-2011		0.49	37.03
CHN	1987-2011	1982-2011		0.00	26.56
CZE	1993-2011	1995-2011		0.12	0.72
DEU	1978-2011	1990-2011		0.15	0.60
EGY	1981-2011		18-21	0.82	9.37
ESP	1978-2011	1980-2011		0.04	0.43
FRA	1978-2011	1980-2011		0.03	3.33
HKG	1978-2011	1980-2011		0.70	37.69
HUN	1991-2011	1995-2011		0.26	1.17
IDN	1979-2011		18-21	0.01	1.49
IND	1978-2011	1980-2011		5.56	29.08
IRL	1978-2010	1980-2011		0.15	1.10
ITA	1978-2011	1980-2011		0.00	1.10
JPN	1978-2011	1980-2011		0.07	6.38
KOR	1978-2011	1980-2011		0.07	2.02
MYS	1978-2011	1980-2011		0.24	37.81
NLD	1978-2011	1980-2011		0.31	5.71
POL	1992-2011	1989-2011		0.27	2.18
QAT	1981-2011		18-21	17.24	18.91
RUS	1996-2011	1994-2011	14	0.60	1.14
SAU	1978-2011	1980-2011	13, 20, 21	5.39	7.33
SGP	1979-2011	1980-2011		0.28	35.84
SVK	1994-2011	1993-2011		0.05	1.26
SVN	1992-2011	1992-2011		0.11	1.34
THA	1978-2011	1980-2011		0.19	22.61
TWA	1989-2011	1980-2011		0.06	4.58
USA	1978-2011	1980-2011		0.32	23.65

*For the disaggregated services categories the time period covered may be shorter. Note: Imputation concerns the goods data only

Table 4. Percentage of import goods volume observations imputed (observations refer to SITC Rev2 3-digit/year)

Country	Product Group																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
BEL	0.91	0.00	6.84	1.20	0.00	1.91	2.90	4.21	4.56	4.51	14.04	26.32	4.51	10.53	26.32	8.27	0.00
BRA	0.71	1.38	0.69	3.29	6.90	5.52	0.71	2.76	0.69	3.94	3.07	3.45	1.48	3.45	0.00	11.33	18.39
CAN	6.19	4.51	8.82	14.57	47.06	26.63	41.78	87.65	76.86	81.93	84.64	88.24	76.47	88.24	91.18	83.61	75.49
CHN	2.76	3.20	2.40	10.00	48.00	13.38	32.69	48.80	63.73	63.43	72.89	80.00	54.86	84.00	92.00	69.14	52.67
CZE	0.00	0.00	1.58	0.72	5.26	0.48	0.00	4.21	0.00	1.50	1.75	0.00	0.00	5.26	10.53	2.26	2.63
DEU	0.10	0.00	2.35	0.00	8.82	1.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EGY	3.34	2.80	1.61	2.79	35.48	4.34	10.79	23.23	16.99	25.81	29.39	25.81	5.99	22.58	41.94	27.19	19.89
ESP	0.10	0.39	0.29	0.13	0.00	0.32	0.00	0.00	0.39	0.00	0.33	2.94	0.00	0.00	0.00	2.94	4.90
FRA	0.51	0.00	1.47	0.94	0.00	2.30	5.07	4.12	4.51	7.56	11.11	14.71	5.88	14.71	14.71	6.30	6.37
HKG	3.96	5.10	10.88	22.86	94.12	27.22	43.81	76.47	73.14	81.51	84.64	91.18	71.43	85.29	94.12	81.09	79.41
HUN	0.33	0.00	0.48	0.43	19.05	0.52	2.13	1.90	0.00	0.00	4.23	0.00	0.00	0.00	9.52	8.84	0.79
IDN	0.00	0.00	0.00	2.89	0.00	2.37	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.52	10.61
IND	15.01	12.55	17.65	14.04	35.29	14.81	37.63	30.00	48.04	56.30	74.51	50.00	52.52	47.06	100.00	73.53	55.39
IRL	1.04	1.01	0.00	0.28	0.00	1.05	1.25	0.00	0.00	1.73	6.73	0.00	0.43	0.00	9.09	0.87	1.01
ITA	0.51	0.00	1.47	0.67	0.00	0.59	0.30	2.35	1.57	2.10	5.56	11.76	1.68	0.00	11.76	2.52	0.49
JPN	3.35	1.76	1.18	7.49	0.00	5.88	0.00	0.00	0.00	7.98	25.49	0.00	41.18	0.00	5.88	12.61	18.63
KOR	1.12	0.00	0.59	2.41	14.71	3.53	0.00	1.76	0.00	0.00	1.31	2.94	0.00	0.00	8.82	7.56	9.80
MYS	7.61	2.35	4.41	27.41	55.88	22.62	48.58	70.59	82.16	70.17	84.97	76.47	74.79	91.18	91.18	84.87	81.37
NLD	1.42	2.16	6.76	2.67	2.94	3.80	7.51	7.06	6.27	12.18	18.63	20.59	9.24	20.59	35.29	10.50	4.90
POL	0.86	1.67	0.50	1.59	15.00	1.73	2.76	3.00	1.00	5.00	4.44	0.00	0.71	0.00	5.00	7.14	5.83
QAT	14.13	13.12	27.74	20.09	16.13	21.58	20.24	25.81	13.33	13.36	13.62	77.42	12.90	12.90	12.90	23.04	24.19
RUS	0.00	0.00	5.00	1.14	0.00	2.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.25	3.57	4.17
SAU	4.56	4.12	7.94	8.96	5.88	9.14	7.51	4.71	4.12	2.94	4.90	8.82		2.94	2.94	15.13	15.69
SGP	3.13	0.00	5.45	23.55	69.70	24.74	48.17	78.79	73.33	70.13	75.76	78.79	69.26	75.76	78.79	77.92	77.27
SVK	0.96	1.11	1.11	1.52	5.56	1.11	0.57	1.11	1.48	0.00	1.23	0.00	0.00	0.00	11.11	3.97	4.63
SVN	0.34	1.33	0.50	1.82	0.00	2.27	0.17	0.00	0.00	0.00	0.56	0.00	0.00	5.00	0.00	5.71	6.67
THA	4.97	0.20	0.29	9.36	11.76	6.36	26.67	46.47	63.14	51.26	63.73	67.65	53.36	61.76	82.35	74.79	43.63
TWA	2.40	0.87	16.52	5.34	13.04	6.96	0.45	1.74	1.16	2.48	1.93	0.00	0.00	0.00	21.74	10.56	13.04
USA	2.43	1.76	5.29	10.70	8.82	17.54	11.56	58.82	57.65	66.39	63.07	70.59	43.28	76.47	76.47	63.87	57.35

Note: Each country-group contains annual import volume observations for SITC Rev2 3-digit products within the group. The numbers in this table indicate the percentage of these observations that are imputed.

The data on goods imports from the UK are derived in much the same way as the data on goods imports from the world, described above. Here missing trade values are far more prevalent (compare Tables 3 and 3a), probably reflecting in large part the fact that the UK is unlikely to have significant exports to all countries considered for all 3-digit product types. As in the construction of the world imports data we exclude 3-digit product codes: 12, 43, 212, 246, 261, 281, 286, 289, 333, 351, 675, 688, 941, 951, 961, 971 and 667. The extent of missing import value data for these products is significant.¹⁵ We also drop product-country pairs for which all import values and import weights are missing.¹⁶ In so far as these reflect genuine missing (zero) trade, this exclusion is warranted because these product groups will count as zero when aggregating into the 17 broader product groups described in Table 1.¹⁷ Belgium is excluded because of the short data series that is available. As before we also impute the weight data where the import weight and value data imply a very substantial (10 fold or more) increase or drop in the unit value sustained for just a year; approximately 0.75% of weight observations are imputed for this reason.

Rather than following steps 3 and 4 above, where after interpolating small gaps in the middle of the data we set remaining missing import values equal to the mean value share of the 3-digit product in the country-product group multiplied by the country-product group import value, we set remaining missing import values (and the corresponding weights) equal to zero. This seems more attractive given the number of missing values (5% of the data at this point) and the likelihood that many of these are genuinely zero values. (We do not make this imputation in cases where the 3-digit product accounts for more than a third of country-product group import values - China group 1, Egypt groups 12 and 14, Korea group 1, Qatar group 12, Russia group 14, Saudi Arabia groups 2 and 12, Slovakia group 15, and USA group 17.) Of course, it is a limitation of these data that we cannot distinguish accurately between genuine missing and unreported trade flows.

Table 3a shows the extent of imputation involved in constructing the data on goods imports from the UK. As with the goods imports from the world, imputation is required to a much greater extent for the volume (weight) data. The extent of

¹⁵ With the UK data we do not exclude all 3-digit product codes where more than 5% of country-year observations are missing (both import values and weight); this process would lead us to drop many more 3-digit product groups than listed here.

¹⁶ (Country; 3-digit SITC): BRA, QAT, SVN 41; BRA, 42; BRA, CZE, IDN, IND, MYS, THA 44; IDN 222; SVN 245; BRA, SVK 264; RUS 274; CZE, SVK 323; SVK 572; CZE, SVK, SVN 792.

¹⁷ In other words, what is 'missing' trade at a detailed product disaggregation becomes 'zero' trade at the broader product disaggregation that we adopt. Thus, we do not exclude genuine missing (zero) trade flows from our analysis (see Helpman et al. (2008) for a discussion of the biases that exclusions of zero trade flows might introduce).

imputed data on import volumes from the UK is detailed by country and product group in Table 4a.

Table 3a. Imports from the UK - data coverage and imputation

Country	Goods data coverage*	Missing groups	Values & Volumes % of goods data imputed	Volumes only % of goods data imputed
BRA	1983-2011		16.95	19.92
CAN	1979-2011		4.38	41.96
CHN	1987-2011	1	6.04	30.56
CZE	1993-2011		6.78	8.10
DEU	1979-2011		1.21	1.80
EGY	1981-2011	12, 14	16.98	21.17
ESP	1979-2011		1.56	2.83
FRA	1979-2011		0.92	2.93
HKG	1979-2011		7.50	40.05
HUN	1991-2011		9.26	10.54
IDN	1979-2011		13.42	15.46
IND	1979-2011		15.15	32.53
IRL	1979-2010		0.23	1.47
ITA	1979-2011		1.28	2.47
JPN	1979-2011		8.21	14.65
KOR	1979-2011	1	8.05	9.73
MYS	1979-2011		6.40	41.26
NLD	1979-2011		1.31	5.76
POL	1992-2011		11.61	13.71
QAT	1981-2011	12	25.66	26.97
RUS	1996-2011	14	8.19	9.24
SAU	1979-2011	2, 12	16.64	17.41
SGP	1979-2011		5.67	38.39
SVK	1994-2011	15	17.17	18.55
SVN	1992-2011		12.51	13.91
THA	1979-2011		10.82	29.92
TWA	1989-2011		9.85	10.86
USA	1979-2011	17	2.53	25.83

*For the disaggregated goods categories the time period covered may be shorter.

Table 4a. Percentage of import from the UK goods volume observations imputed (observations refer to SITC Rev2 3-digit/year)

Country	Product Group																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
BRA	50.49	28.51	34.14	4.43	3.45	14.94	24.51	11.72	0.69	3.94	7.28	14.29	31.03	3.45	6.90	2.87	11.03
CAN	22.78	6.87	29.70	18.18	69.70	34.53	42.11	85.45	75.56	81.82	81.82	84.85	72.29	78.79	93.94	72.22	78.18
CHN		13.60	28.00	10.10	32.00	17.96	36.69	40.80	53.33	51.43	59.11	52.00	53.14	56.00	84.00	49.33	36.80
CZE	24.50	6.67	28.95	1.00	5.26	5.46	7.62	15.79	0.00	0.00	0.00	0.00	0.00	5.26	10.53	0.88	1.05
DEU	1.46	1.01	13.33	0.14	3.03	2.74	1.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EGY	40.04	25.81	32.26	4.15	38.71	14.18	36.71	28.39	6.24	11.98	22.58		13.82		25.81	5.91	3.23
ESP	5.02	2.63	5.76	0.58	3.03	2.69	4.91	0.00	0.61	2.60	1.01	3.03	0.87	0.00	6.06	2.02	0.61
FRA	1.78	0.00	9.70	0.58	0.00	2.74	4.70	4.24	2.02	2.60	7.07	3.03	2.60	9.09	18.18	1.01	0.00
HKG	18.18	6.46	44.85	19.34	84.85	32.08	49.57	69.09	66.06	70.56	72.73	63.64	68.40	66.67	72.73	66.16	66.67
HUN	25.34	9.52	35.45	5.44	0.00	11.05	7.94	12.38	0.63	0.00	2.12	0.00	4.08	0.00	5.00	2.38	0.00
IDN	45.77	15.35	31.52	2.16	0.00	10.92	21.94	2.42	0.40	1.73	8.75	0.00	6.06	0.00	12.12	3.03	1.82
IND	51.95	32.12	28.28	10.97	33.33	13.26	39.39	20.00	39.19	43.72	65.66	24.24	54.11	24.24	93.94	57.58	35.15
IRL	0.75	2.50	3.75	0.30	0.00	1.36	1.72	0.00	0.00	2.68	4.51	0.00	0.45	0.00	9.38	0.52	3.13
ITA	5.22	1.21	4.24	0.29	3.03	2.92	1.67	0.61	0.61	3.90	3.03	3.03	0.00	0.00	9.09	2.02	3.03
JPN	32.68	9.09	33.94	7.65	0.00	13.89	4.44	5.45	0.00	4.76	22.90	0.00	43.29	0.00	0.00	2.02	25.45
KOR		23.03	36.06	1.73	3.03	11.15	10.87	4.85	0.00	0.00	2.02	3.03	11.26	0.00	21.21	0.00	2.42
MYS	28.14	8.89	15.76	23.95	54.55	26.19	55.84	68.48	76.36	63.64	82.49	60.61	70.13	84.85	90.91	72.73	72.12
NLD	1.04	0.81	17.58	2.74	3.03	6.17	7.94	5.45	3.84	9.96	13.80	0.00	7.36	3.03	27.27	2.02	6.06
POL	31.96	13.00	35.50	2.86	5.00	15.09	12.93	7.00	1.00	5.00	6.11	10.00	4.29	0.00	10.00	5.00	6.00
QAT	37.60	19.35	50.00	22.89	16.13	28.73	34.26	29.68	13.33	12.90	16.85		13.36	12.90	16.13	16.67	12.90
RUS	19.83	9.58	27.50	5.95	0.00	9.08	10.49	6.25	0.00	0.00	0.69	18.75	0.00		18.75	0.00	0.00
SAU	25.60		23.03	11.54	3.03	17.78	24.76	12.73	8.28	9.52	11.45		13.85	3.03	15.15	11.11	9.09
SGP	17.14	2.22	16.67	20.78	69.70	25.56	59.77	76.36	70.10	63.64	73.06	66.67	66.67	63.64	75.76	66.16	71.52
SVK	51.98	22.22	29.86	8.20	0.00	18.97	17.46	21.11	0.37	0.79	0.62	5.56	7.94	11.76		0.93	0.00
SVN	37.32	18.00	42.50	5.95	0.00	10.00	12.32	28.00	0.33	0.00	0.00	15.79	7.14	0.00	0.00	0.83	0.00
THA	37.72	15.35	33.94	6.49	9.09	11.32	33.75	44.85	57.78	46.32	59.26	54.55	51.52	54.55	81.82	63.13	33.33
TWA	37.52	12.46	22.71	0.41	0.00	9.02	8.54	0.00	0.29	0.00	0.00	0.00	19.25	0.00	8.70	0.72	1.74
USA	13.58	7.07	19.39	9.52	30.30	21.27	14.32	61.82	55.76	63.64	61.28	66.67	42.42	63.64	72.73	52.53	

Note: Each country-group contains annual import volume observations for SITC Rev2 3-digit products within the group. The numbers in this table indicate the percentage of these observations that are imputed.

4. Data characteristics

We present some tables and charts to illustrate very briefly some broad patterns in the resulting import volume and import price data. These data suggest that:

- The majority of imports from the world and from the UK go to North America and the Large European economies.
- The value of goods imports remains much higher than the value of services imports.
- Import volumes (from the world and from the UK) to the Large European countries and North America fell sharply following the financial crisis.
- Since 2009 total final expenditure volumes in the BRIC economies have exceeded that in the High-income Asia economies.
- More than half of UK exports go to Germany, France, Ireland and the USA.
- UK export market share is generally declining over time.
- UK export prices generally exceed average world export prices (by country and product group).

In interpreting these statistics it is important to bear in mind that market share figures may differ to those elsewhere because of differential country coverage and that export prices are measured as unit values and may reflect the quality as well as price of exports.

Table 5 reports the distribution of world import values across countries and product groups in 2005. In Table 6 countries are aggregated into the country groups listed in Table 2. The large European countries account for around 36% of all imports (from the world) in the database (the database does not cover all countries and hence this should not be interpreted as 36% of world imports). North America accounts for around 25%; High-income Asia for 19% and BRIC for 12%. The other country groups account for significantly smaller shares of imports. Services account for 20% of import values. Goods product groups that account for more than 5% of total import values are Mineral products, Chemicals, Basic manufacturing, Textiles, Machinery, ICT, Electrical machinery, and Vehicles. The data can be analysed to assess the distribution of imports across product groups within each country group (dividing through by the last column).

Services account for less than a fifth of total import values in all country groups but the Large European group (and the Middle East group, but this figure is affected by missing information on services imports for Egypt and Qatar and by missing information on Vehicle imports to Saudi Arabia). Of the 17 goods product groups Basic manufacturing accounts for the largest share of total import values in all but the Asian country groups. In these country groups imports of Electrical machinery and parts accounts for the largest share of total import values.

Figure 1 shows for each product group the import volume index. Each panel corresponds to a product group and each panel includes seven lines, one for each country group. The volume indices are, as expected, particularly erratic for groups 12, 14, and 15. These are the transport groups excluding Vehicles. In Figure 2 we plot import unit value indices for each product group. Again we compute this for each country group and standardise to unity in 2005. Again the variation within product groups is relatively large for the non-Vehicle transport groups. We also observe significantly larger fluctuations over time in North American import prices. This is in part likely to reflect movements in the dollar, but also note that unit prices are imputed for much of the Canadian and United States data.

In Figure 3 we illustrate goods import volumes in kgs by country group over time. Throughout the sample period large European countries are the biggest group (measured in terms of import kgs), followed by the High-income Asian countries; towards the end of the sample the latter is surpassed by the BRIC group. Import volumes to the Large European countries and North America fall sharply following the financial crisis. Corresponding unit values are shown in Figure 4. These are highest for North America. Note that unit values are determined by the composition of goods imports and may also reflect quality changes over time. In Figures 5a,b we plot goods import volumes in kgs by product group over time. Unit values are shown in Figures 6a,b. These are by far the highest for Aerospace products; followed by Precision instruments and Pharmaceuticals.

Figure 7 illustrates total final expenditure (the sum of final consumption, investment and export expenditure) in constant prices for the seven country groups that we consider. Total final expenditure is largest in North America throughout the sample, followed by the Large European (this group excludes the UK, as elsewhere in this report and database) and High-income Asia groups. By the end of the sample total final expenditure volumes in the BRIC group exceed that in the High-income Asia group.

Tables 7 and 8 and Figures 8-15 illustrate broad patterns in the data that has been constructed for imports from the UK (or UK exports). As shown in Table 7, in 2005, Basic manufacturing products (product group 6) accounted for 16% of UK goods exports values, a greater share of the total than any of the other

product groups shown. More than half of these exports were destined for Germany, France, Ireland and the USA. These same four countries also received more than half of all goods exports from the UK in 2005. The second and third largest product groups are Vehicle exports, accounting for 13% of UK export values in 2005, and Chemicals products, accounting for 11% of UK export values in 2005.

In Figure 8 we illustrate the development over time of UK goods export volumes (measured in kilograms) by country group. UK export volumes are generally rising over time to most country groups, but fell dramatically to the Large European countries following the financial crisis in 2008. The corresponding unit values in Figure 9 display relatively erratic patterns over time in comparison to the equivalent unit values for world exports shown in Figure 4. This is likely to reflect the greater level of disaggregation and imputation of the UK data. The cross country differences in unit values of UK imports shown in Figure 9 may in part reflect differences in importing country incomes and distance from the UK. For example, higher income countries may import higher quality goods, which will tend to result in higher unit values. Also, unit values of UK imports may be higher for countries that are further away from the UK because of a transfer of trade costs (which are likely to increase with distance) into prices and because of the substitution towards higher quality imports that may occur with higher trade costs (Alchian-Allen effects; fixed trade costs reduce the relative price of high-quality to low-quality goods).¹⁸

Figures 10a,b show UK goods export volumes by product group. The largest increases over time (in absolute terms) in UK goods export volumes occur for Basic manufacturing and Mineral products. In relative terms the rise over time in UK Vehicle export volumes is particularly large. Trends in corresponding export unit values by product group are illustrated in Figures 11a,b. These show a sharp rise in the unit value of UK Pharmaceutical exports over the last decade, which is broadly mirrored by the unit value of world Pharmaceutical exports (see Figure 6a). (Recall that trade unit values are affected by both the composition and quality of goods within broader product groups.)

Figure 12 shows the share of UK goods exports in total world goods export values to the country groups considered. UK export market share is generally declining over the period shown. (Note that market share is illustrated only for countries and product groups where the dataset covers both UK and world exports and may therefore differ to market share figures from other sources.) Figures 14a,b show UK goods exports market share by product group. The price

¹⁸ Thanks to Giordano Mion for these interpretations of cross-country differences in unit prices of UK imports.

of UK exports (unit values) relative to the price of world exports are shown in Figure 13 by country group and in Figures 15a,b by product group. These are indicators of UK export price competitiveness, although imperfect because price differences may simply reflect differences in the composition of goods exports (even within product groups). We include this indicator, measured by country and product, as a determinant of UK export volumes in the models shown in section 6.

Table 5. Distribution of import values in 2005

Country/product	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	All
BEL	0.17	0.13	0.35	0.41	0.43	0.63	0.18	0.05	0.19	0.16	0.15	0.00	0.41	0.00	0.02	0.06	0.09	0.61	4.04
BRA	0.03	0.01	0.08	0.12	0.03	0.12	0.02	0.03	0.09	0.07	0.08	0.00	0.05	0.01	0.00	0.03	0.01	0.29	1.08
CAN	0.11	0.11	0.15	0.20	0.09	0.65	0.15	0.15	0.31	0.29	0.24	0.01	0.65	0.06	0.01	0.10	0.13	0.78	4.20
CHN	0.22	0.04	0.35	0.54	0.03	1.38	0.35	0.08	0.67	0.87	1.69	0.01	0.15	0.08	0.01	0.54	0.04	1.00	8.02
CZE	0.03	0.02	0.03	0.04	0.02	0.23	0.05	0.02	0.08	0.09	0.09	0.00	0.08	0.01	0.00	0.02	0.03	0.12	0.95
DEU	0.42	0.27	0.58	0.53	0.36	1.56	0.55	0.27	0.53	0.89	0.73	0.02	0.81	0.23	0.04	0.21	0.27	2.52	10.81
EGY	0.04	0.01	0.03	0.01	0.00	0.05	0.01	0.00	0.02	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00		0.20
ESP	0.20	0.12	0.24	0.21	0.11	0.56	0.21	0.07	0.23	0.23	0.17	0.00	0.54	0.04	0.05	0.07	0.10	0.80	3.94
FRA	0.26	0.20	0.38	0.41	0.20	1.00	0.39	0.14	0.36	0.43	0.35	0.00	0.62	0.13	0.02	0.13	0.21	1.28	6.52
HKG	0.07	0.04	0.09	0.08	0.01	0.42	0.55	0.03	0.11	0.81	0.90	0.00	0.03	0.01	0.00	0.13	0.15	0.41	3.86
HUN	0.02	0.02	0.05	0.03	0.02	0.13	0.03	0.05	0.06	0.11	0.12	0.00	0.06	0.00	0.00	0.01	0.02	0.14	0.85
IDN	0.03	0.02	0.14	0.07	0.00	0.12	0.02	0.02	0.07	0.03	0.02	0.00	0.04	0.01	0.00	0.01	0.00		0.60
IND	0.05	0.01	0.16	0.13	0.01	0.20	0.04	0.01	0.10	0.11	0.06	0.00	0.01	0.02	0.02	0.03	0.01	0.56	1.55
IRL	0.03	0.04	0.05	0.06	0.03	0.10	0.04	0.01	0.04	0.17	0.07	0.00	0.06	0.03	0.00	0.02	0.04	0.85	1.63
ITA	0.28	0.13	0.14	0.29	0.16	0.85	0.37	0.06	0.26	0.28	0.22	0.00	0.52	0.03	0.02	0.10	0.09	1.07	4.88
JPN	0.43	0.23	0.76	0.30	0.10	0.71	0.44	0.07	0.22	0.57	0.54	0.00	0.17	0.06	0.00	0.21	0.17	1.48	6.45
KOR	0.10	0.05	0.35	0.23	0.02	0.53	0.11	0.03	0.22	0.19	0.50	0.00	0.05	0.02	0.01	0.13	0.03	0.71	3.28
MYS	0.04	0.03	0.07	0.07	0.01	0.20	0.02	0.02	0.09	0.18	0.44	0.00	0.04	0.01	0.01	0.04	0.01	0.26	1.54
NLD	0.21	0.13	0.27	0.23	0.13	0.46	0.14	0.03	0.14	0.57	0.28	0.01	0.20	0.01	0.00	0.11	0.10	1.01	4.03
POL	0.05	0.03	0.07	0.08	0.04	0.29	0.07	0.03	0.11	0.09	0.07	0.00	0.10	0.00	0.02	0.02	0.03	0.19	1.29
QAT	0.00	0.00	0.00	0.01	0.00	0.03	0.00	0.00	0.02	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.05	0.17
RUS	0.12	0.07	0.04	0.06	0.05	0.19	0.04	0.01	0.15	0.10	0.05	0.01	0.13		0.01	0.02	0.02	0.46	1.54
SAU	0.06	0.03	0.00	0.04	0.02	0.13	0.04	0.02	0.07	0.05	0.03	0.00		0.02	0.01	0.02	0.02	0.39	0.95
SGP	0.04	0.03	0.21	0.11	0.02	0.20	0.05	0.04	0.15	0.39	0.67	0.00	0.05	0.04	0.01	0.08	0.02	0.66	2.77
SVK	0.01	0.01	0.03	0.02	0.01	0.08	0.02	0.01	0.03	0.03	0.03	0.00	0.05	0.00	0.00	0.02	0.01	0.05	0.43
SVN	0.01	0.01	0.02	0.01	0.01	0.06	0.02	0.00	0.02	0.01	0.01	0.00	0.03	0.00	0.00	0.00	0.01	0.03	0.26
THA	0.04	0.02	0.05	0.10	0.01	0.29	0.04	0.02	0.12	0.12	0.22	0.00	0.05	0.01	0.01	0.03	0.01	0.32	1.47
TWA	0.05	0.03	0.13	0.21	0.02	0.36	0.05	0.01	0.21	0.13	0.48	0.01	0.05	0.02	0.00	0.11	0.02	0.39	2.29
USA	0.46	0.39	1.25	0.88	0.47	2.58	1.48	0.40	1.04	2.27	1.49	0.01	2.38	0.20	0.02	0.51	0.95	3.63	20.42
All countries	3.57	2.24	6.09	5.49	2.42	14.12	5.51	1.71	5.69	9.28	9.70	0.11	7.33	1.07	0.30	2.73	2.57	20.07	100.00

Table 6. Distribution of import values in 2005 (country groups)

Country group	Product groups																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	All products
North America	0.57	0.49	1.41	1.08	0.56	3.22	1.64	0.55	1.35	2.56	1.74	0.03	3.02	0.26	0.03	0.60	1.09	4.42	24.62
BRIC	0.42	0.13	0.63	0.85	0.12	1.89	0.45	0.14	1.00	1.15	1.88	0.02	0.34	0.11	0.04	0.62	0.07	2.32	12.19
High-income Asia	0.68	0.38	1.55	0.93	0.17	2.23	1.20	0.19	0.91	2.09	3.08	0.02	0.34	0.15	0.03	0.66	0.39	3.64	18.64
Middle-income Asia	0.11	0.07	0.26	0.24	0.02	0.62	0.09	0.06	0.28	0.33	0.68	0.00	0.12	0.03	0.02	0.07	0.02	0.58	3.61
Middle East	0.11	0.04	0.03	0.06	0.03	0.21	0.05	0.03	0.11	0.07	0.04	0.00	0.03	0.02	0.01	0.02	0.02	0.44	1.32
Large European	1.57	1.03	2.01	2.15	1.43	5.15	1.89	0.64	1.75	2.74	1.95	0.04	3.16	0.48	0.15	0.69	0.89	8.14	35.85
Central Europe	0.11	0.10	0.21	0.19	0.10	0.79	0.20	0.11	0.29	0.34	0.32	0.01	0.31	0.01	0.02	0.06	0.09	0.53	3.78
All countries	3.57	2.24	6.09	5.49	2.42	14.12	5.51	1.71	5.69	9.28	9.70	0.11	7.33	1.07	0.30	2.73	2.57	20.07	100.00

Figure 1 Product import volume index (2005=1), by country group

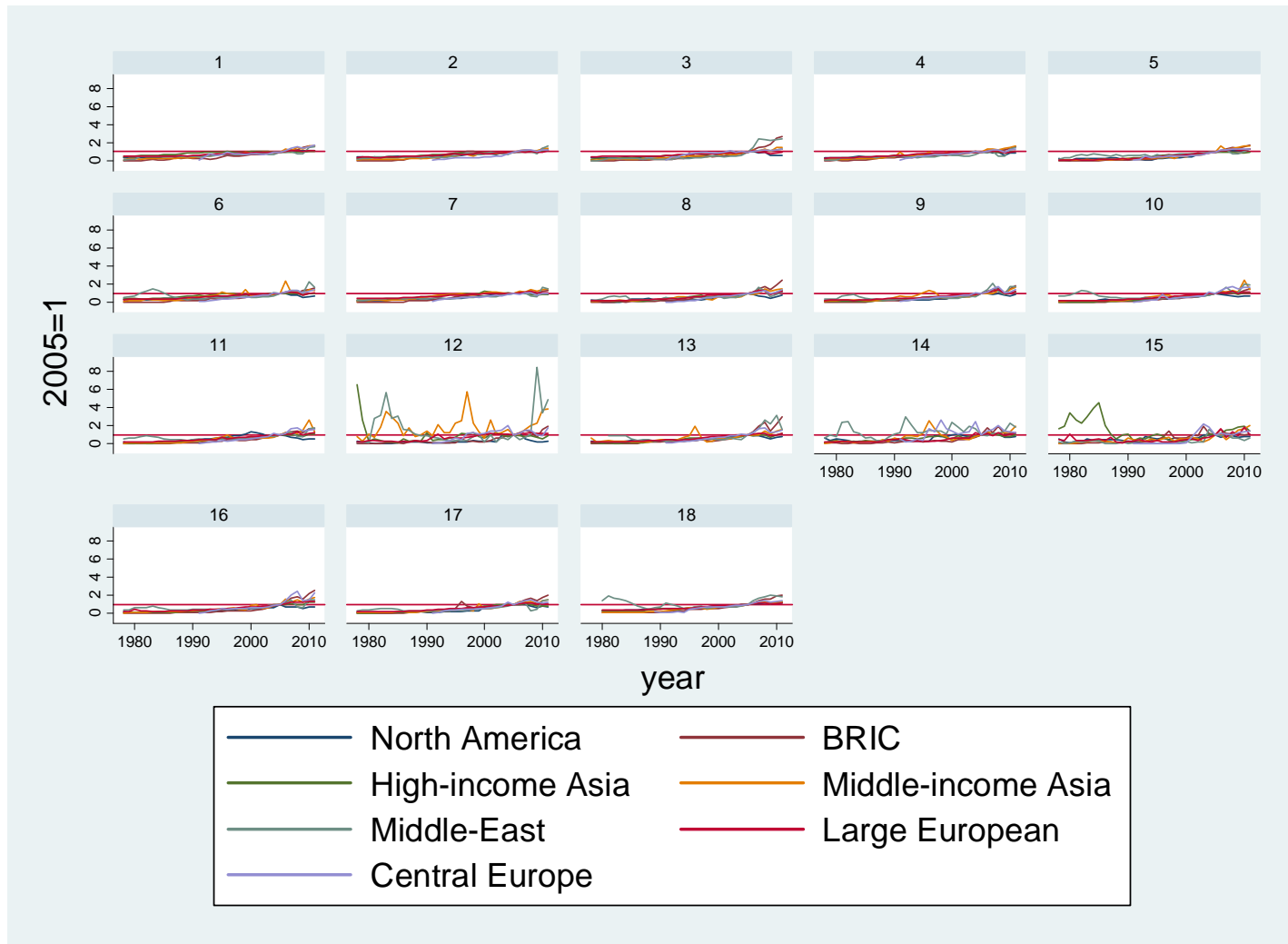


Figure 2. Product import unit value index (2005=1), by country group

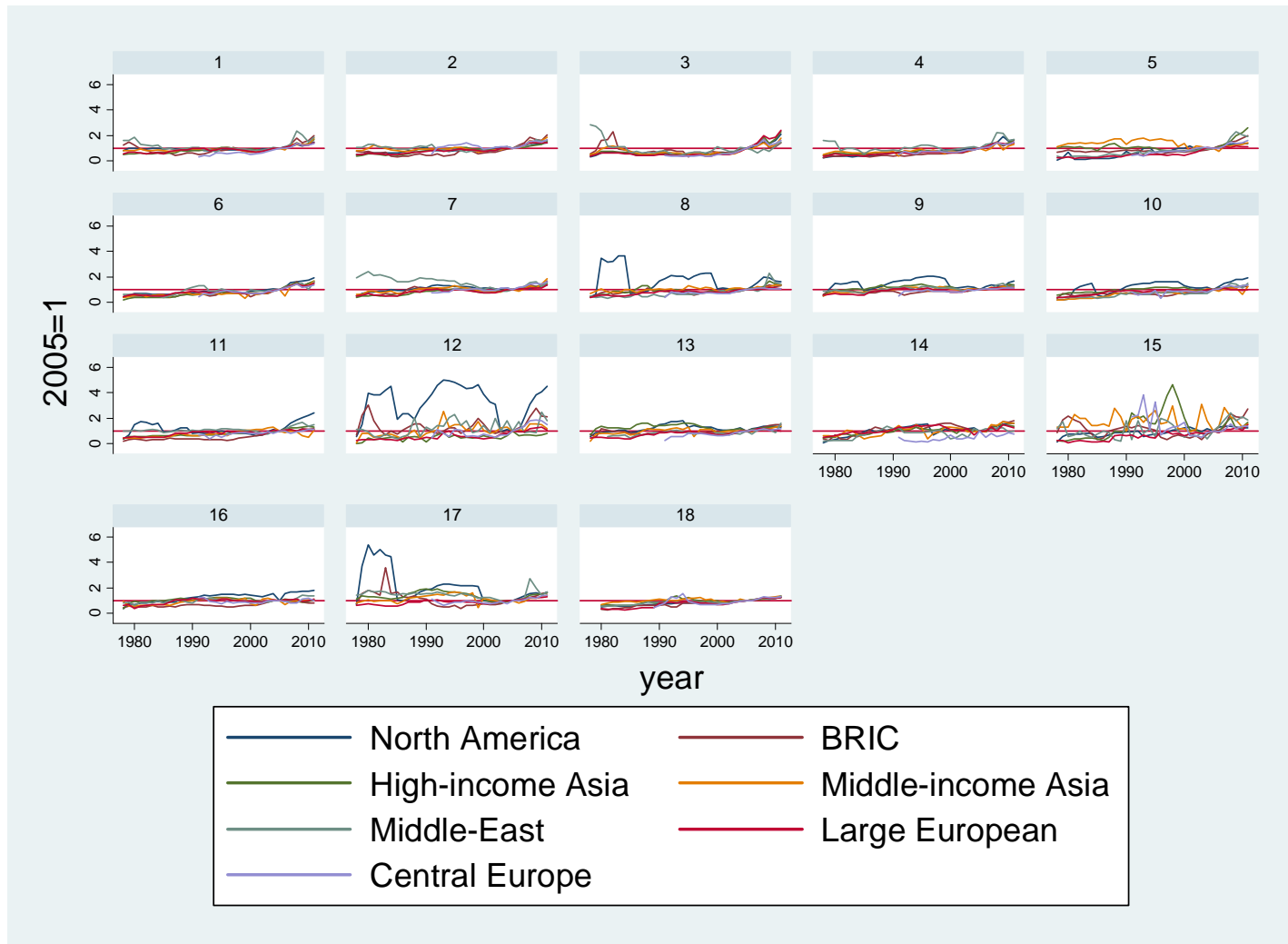


Figure 3. Import volumes (kg, billions), by country group

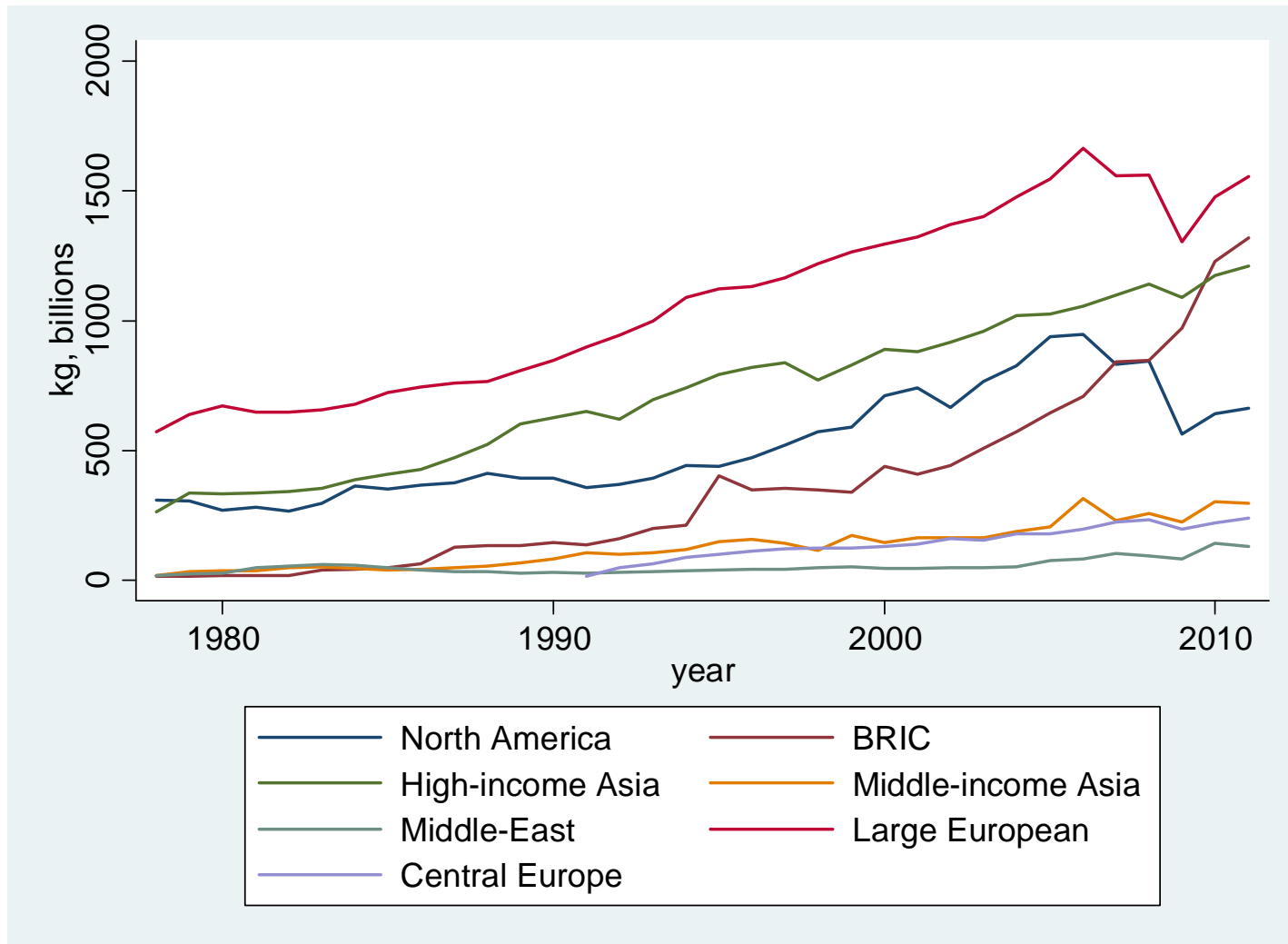


Figure 4. Import unit values (\$ per kg), by country group

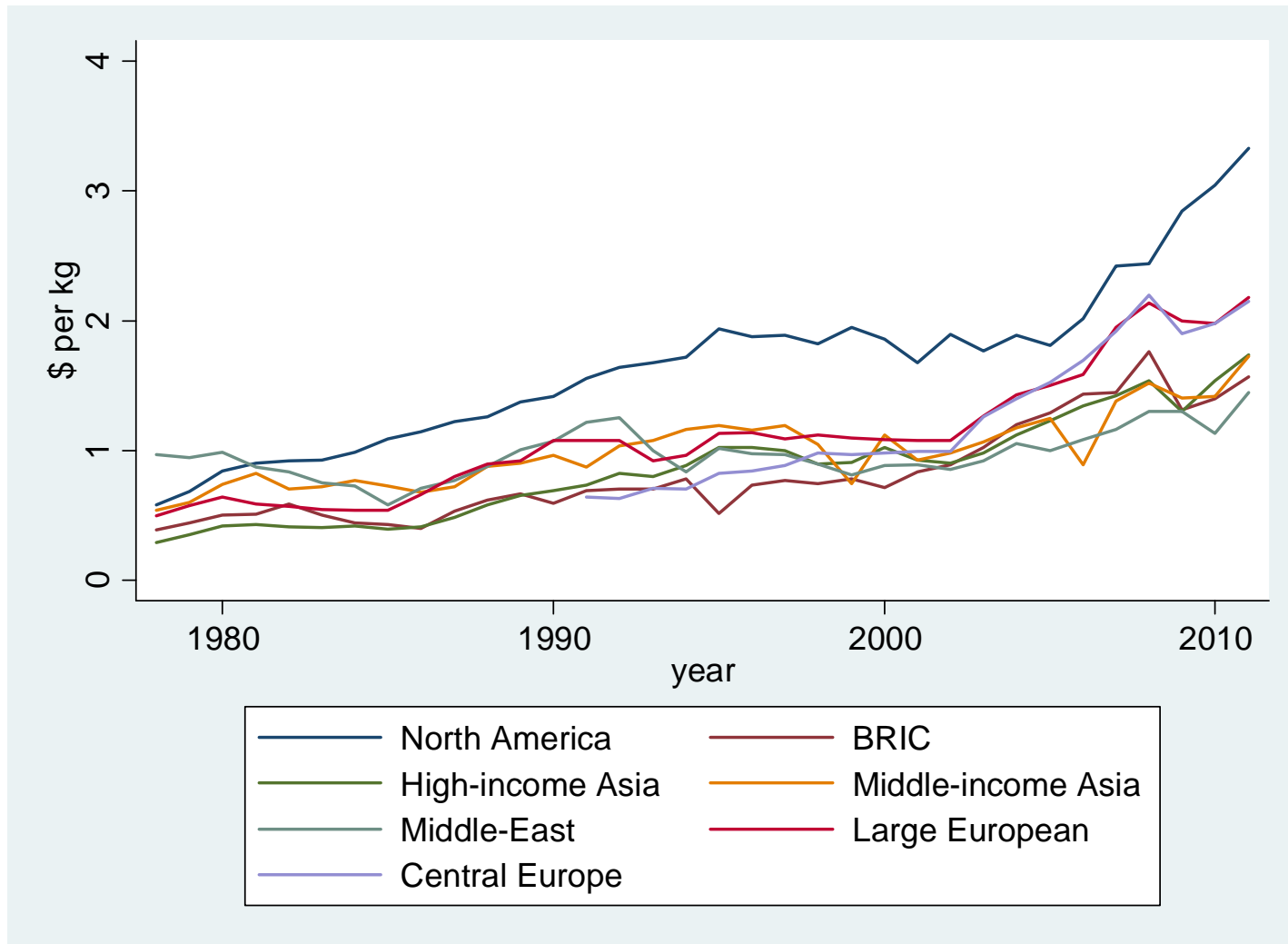


Figure 5a. Import volumes (kg, billions), by product group

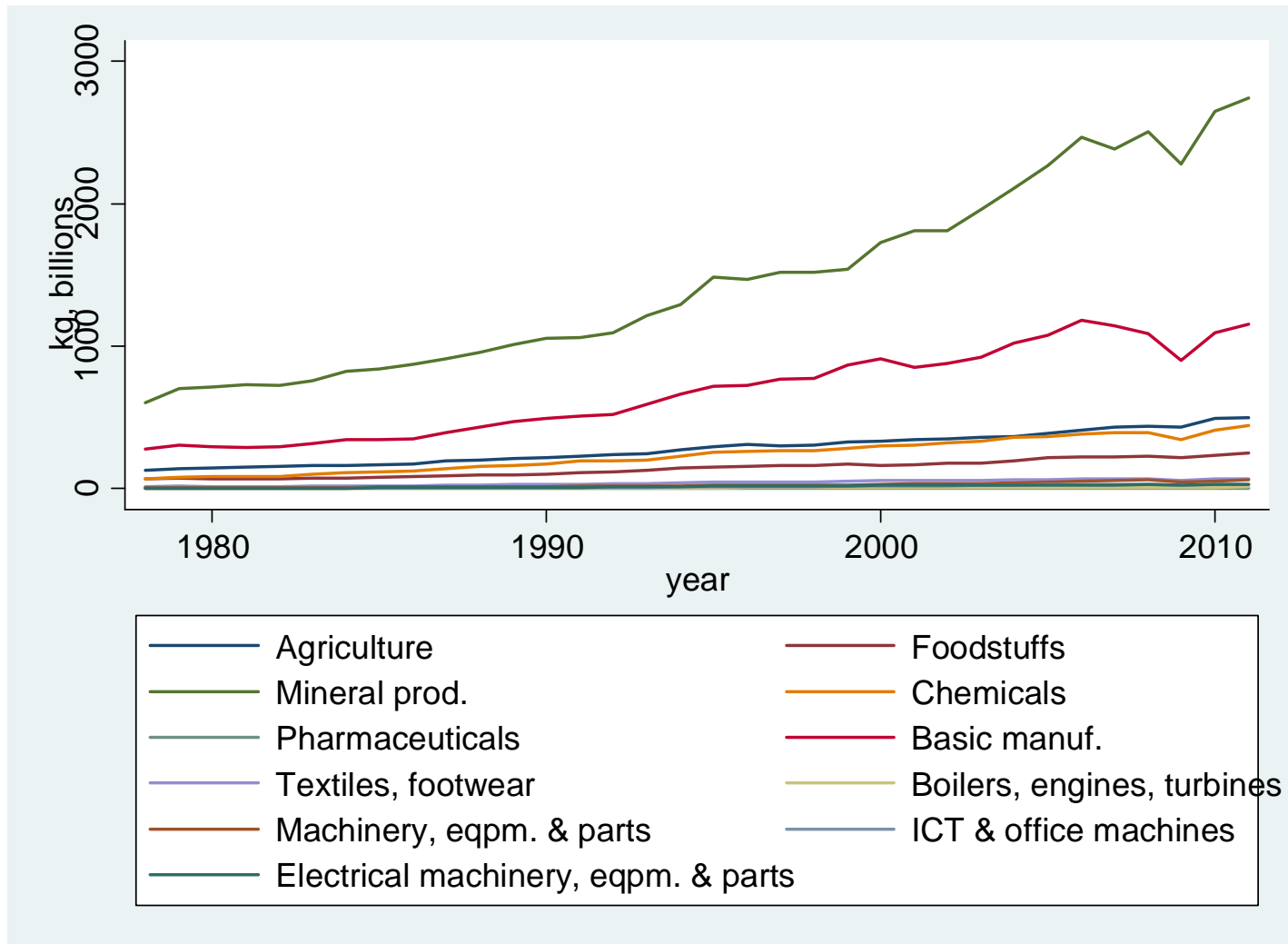


Figure 5b. Import volumes (kg, billions), by product group

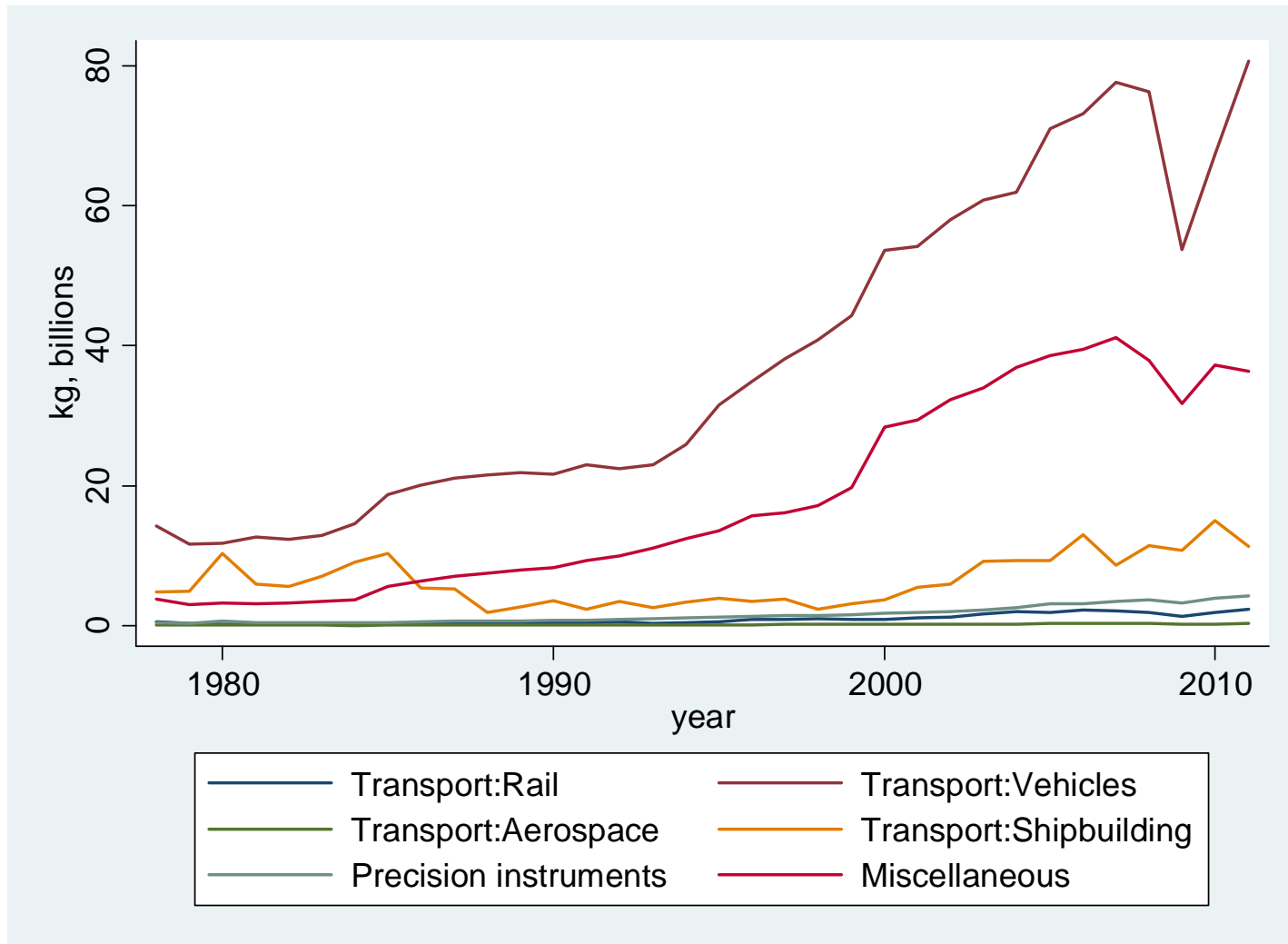


Figure 6a. Import unit values (\$ per kg), by product group

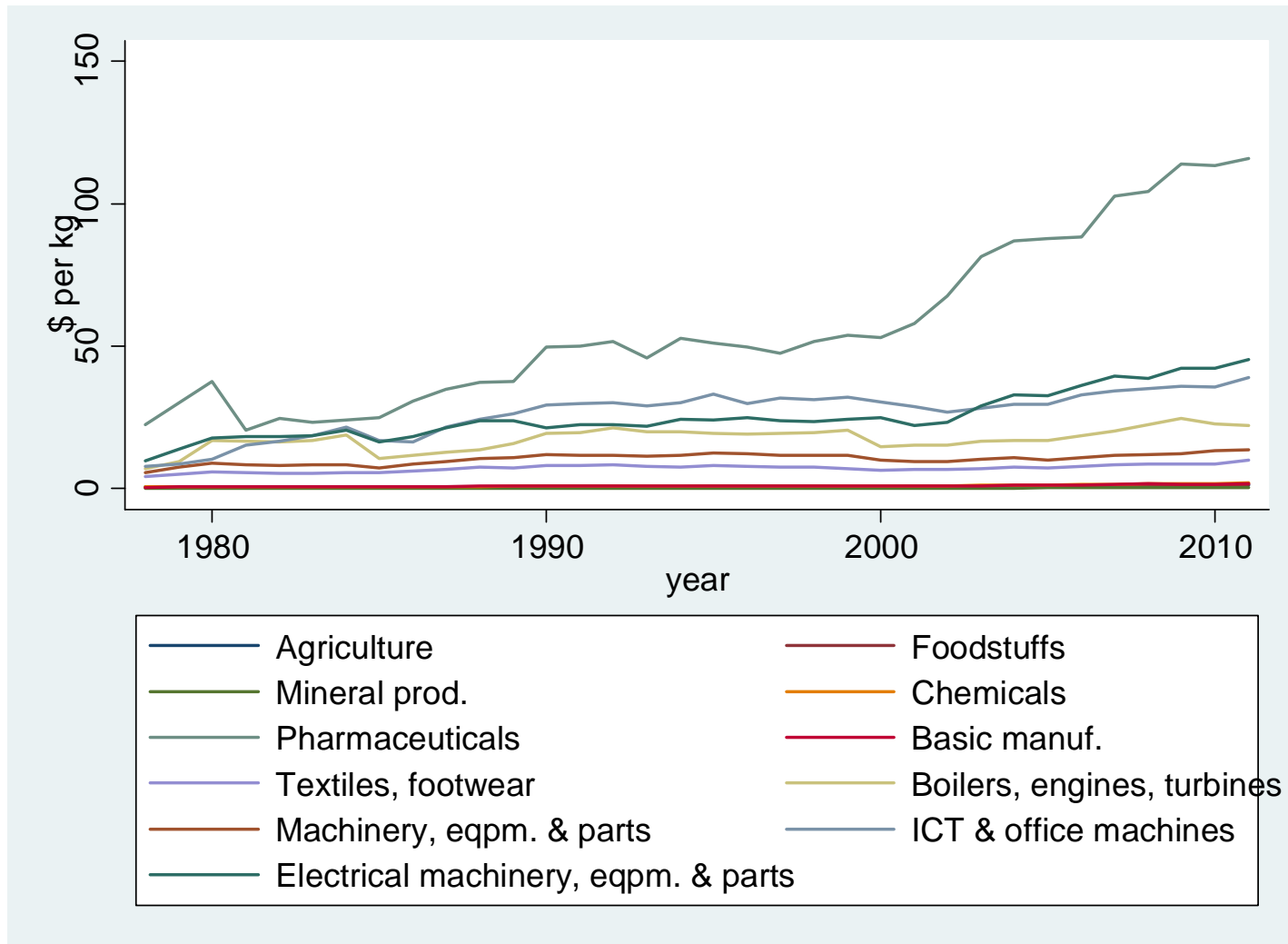


Figure 6b. Import unit values (\$ per kg), by product group

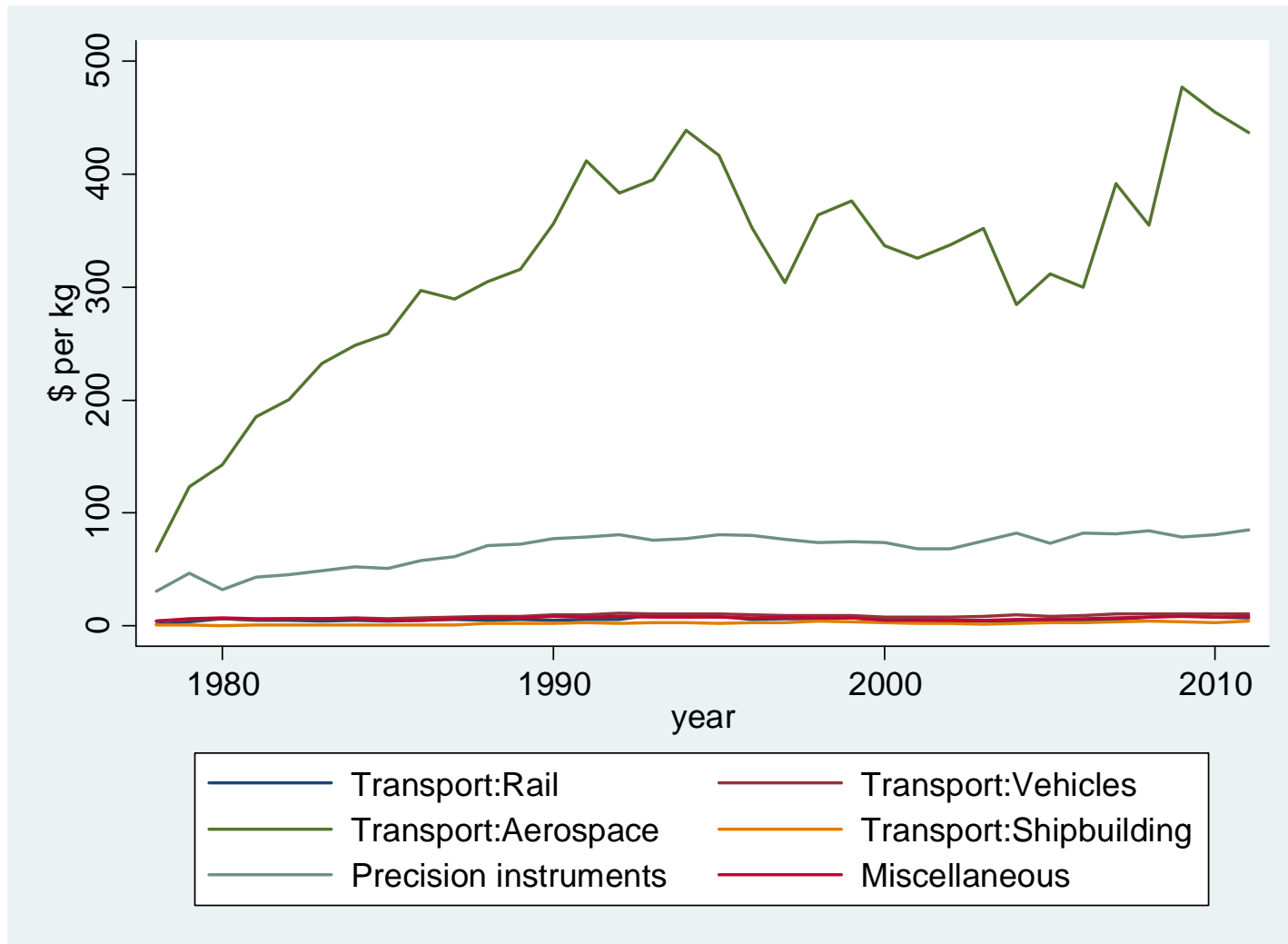


Figure 7. Total final expenditure (\$billions 2005 prices), by country group

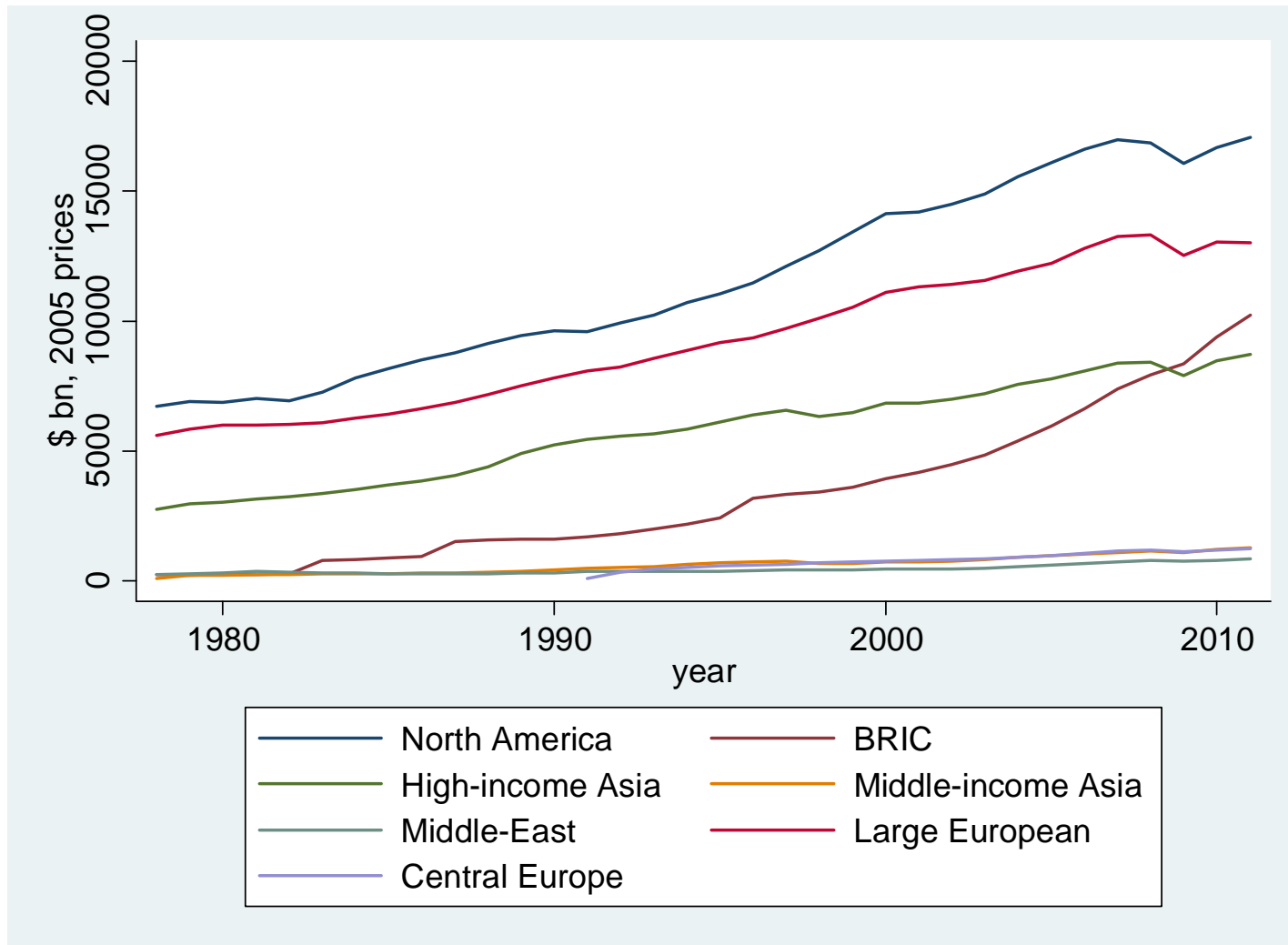


Table 7. Distribution of goods imports from the UK values in 2005

Country/Product	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	All
BRA	0.00	0.03	0.01	0.17	0.05	0.11	0.01	0.03	0.07	0.02	0.03	0.00	0.03	0.01	0.00	0.03	0.00	0.62
CAN	0.04	0.10	0.10	0.21	0.32	0.31	0.03	0.27	0.23	0.11	0.12	0.00	0.19	0.31	0.04	0.10	0.03	2.52
CHN		0.07	0.01	0.20	0.07	0.58	0.08	0.17	0.46	0.16	0.32	0.00	0.10	0.02	0.00	0.24	0.02	2.51
CZE	0.01	0.02	0.00	0.08	0.05	0.20	0.05	0.01	0.10	0.11	0.11	0.00	0.08	0.00	0.00	0.02	0.02	0.87
DEU	0.22	0.30	0.53	2.59	1.00	2.82	0.41	1.00	0.92	1.38	1.18	0.01	2.26	1.09	0.04	0.43	0.16	16.33
EGY	0.03	0.00	0.00	0.03	0.01	0.04	0.00	0.00	0.02	0.01	0.01		0.00		0.00	0.01	0.00	0.17
ESP	0.32	0.55	0.18	0.50	0.64	1.07	0.17	0.36	0.42	0.57	0.47	0.00	1.53	0.11	0.04	0.11	0.21	7.26
FRA	0.52	0.52	0.63	1.29	1.19	1.89	0.32	0.41	0.88	0.96	0.58	0.00	1.64	0.51	0.05	0.25	0.22	11.87
HKG	0.02	0.06	0.00	0.07	0.02	0.16	0.15	0.29	0.06	0.49	0.22	0.00	0.06	0.00	0.01	0.07	0.02	1.72
HUN	0.01	0.01	0.00	0.06	0.03	0.10	0.04	0.02	0.05	0.09	0.19	0.00	0.07	0.00	0.00	0.03	0.02	0.70
IDN	0.00	0.02	0.00	0.07	0.01	0.10	0.01	0.01	0.04	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.30
IND	0.00	0.02	0.01	0.10	0.01	0.38	0.03	0.04	0.17	0.06	0.07	0.00	0.01	0.04	0.01	0.06	0.01	1.00
IRL	0.55	0.79	1.34	0.72	0.25	1.88	0.59	0.03	0.48	1.14	0.79	0.01	0.49	0.02	0.00	0.16	0.36	9.60
ITA	0.16	0.19	0.16	0.59	0.58	1.16	0.34	0.13	0.50	0.57	0.52	0.00	1.07	0.10	0.07	0.16	0.20	6.52
JPN	0.04	0.13	0.01	0.31	0.55	0.36	0.10	0.11	0.21	0.13	0.21	0.00	0.49	0.04	0.00	0.20	0.07	2.96
KOR		0.12	0.03	0.10	0.08	0.31	0.05	0.03	0.18	0.08	0.16	0.00	0.05	0.02	0.00	0.13	0.02	1.36
MYS	0.00	0.03	0.00	0.05	0.03	0.15	0.01	0.03	0.07	0.05	0.22	0.00	0.02	0.03	0.00	0.05	0.01	0.74
NLD	0.26	0.19	1.38	0.82	0.64	0.84	0.11	0.04	0.37	1.14	0.44	0.01	0.30	0.02	0.01	0.11	0.12	6.82
POL	0.03	0.03	0.04	0.17	0.12	0.33	0.11	0.03	0.15	0.07	0.08	0.00	0.19	0.00	0.01	0.03	0.03	1.41
QAT	0.00	0.01	0.00	0.01	0.01	0.05	0.01	0.01	0.06	0.02	0.03		0.03	0.00	0.00	0.02	0.01	0.27
RUS	0.04	0.06	0.01	0.16	0.07	0.17	0.03	0.02	0.13	0.11	0.05	0.00	0.40		0.01	0.03	0.01	1.27
SAU	0.01		0.01	0.11	0.08	0.16	0.03	0.02	0.12	0.05	0.08		0.06	0.34	0.08	0.03	0.02	1.19
SGP	0.00	0.09	0.05	0.16	0.04	0.18	0.02	0.22	0.16	0.31	0.24	0.00	0.03	0.09	0.00	0.15	0.03	1.78
SVK	0.00	0.00	0.00	0.03	0.03	0.06	0.01	0.00	0.02	0.03	0.07	0.00	0.03	0.00		0.01	0.01	0.28
SVN	0.00	0.00	0.00	0.02	0.02	0.04	0.01	0.00	0.01	0.01	0.01	0.00	0.03	0.00	0.00	0.01	0.00	0.16
THA	0.01	0.07	0.01	0.06	0.02	0.10	0.03	0.01	0.07	0.01	0.09	0.00	0.03	0.02	0.00	0.02	0.00	0.55
TWA	0.00	0.11	0.00	0.07	0.07	0.18	0.02	0.00	0.10	0.04	0.09	0.00	0.03	0.00	0.00	0.04	0.00	0.78
USA	0.08	0.67	1.75	1.97	2.02	1.85	0.30	1.38	1.69	0.89	0.89	0.01	3.36	0.46	0.07	1.05		18.43
All	2.37	4.18	6.25	10.72	8.01	15.56	3.06	4.66	7.76	8.62	7.26	0.06	12.59	3.26	0.45	3.58	1.60	100.00

Table 8. Distribution of goods imports from the UK values in 2005 (country groups)

Country group	Product Groups																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	All products
North America	0.12	0.77	1.85	2.18	2.34	2.16	0.33	1.64	1.92	1.00	1.01	0.01	3.55	0.77	0.11	1.16	0.03	20.95
BRIC	0.04	0.17	0.04	0.63	0.20	1.24	0.14	0.26	0.83	0.35	0.46	0.01	0.54	0.07	0.03	0.37	0.04	5.41
High-income Asia	0.07	0.51	0.08	0.73	0.76	1.19	0.35	0.66	0.71	1.05	0.91	0.01	0.66	0.15	0.02	0.60	0.14	8.60
Middle-income Asia	0.02	0.11	0.01	0.18	0.06	0.35	0.05	0.04	0.18	0.07	0.32	0.00	0.06	0.05	0.00	0.08	0.01	1.59
Middle East	0.04	0.02	0.01	0.15	0.10	0.25	0.04	0.03	0.20	0.08	0.12		0.09	0.34	0.08	0.06	0.03	1.63
Large European	2.02	2.54	4.21	6.52	4.30	9.65	1.94	1.98	3.57	5.77	3.98	0.04	7.29	1.86	0.21	1.23	1.28	58.40
Central Europe	0.06	0.06	0.05	0.35	0.25	0.72	0.21	0.06	0.34	0.31	0.45	0.00	0.40	0.00	0.01	0.09	0.08	3.42
All countries	2.37	4.18	6.25	10.72	8.01	15.56	3.06	4.66	7.76	8.62	7.26	0.06	12.59	3.26	0.45	3.58	1.60	100.00

Figure 8. Imports from the UK volumes (kg, billions), by country group

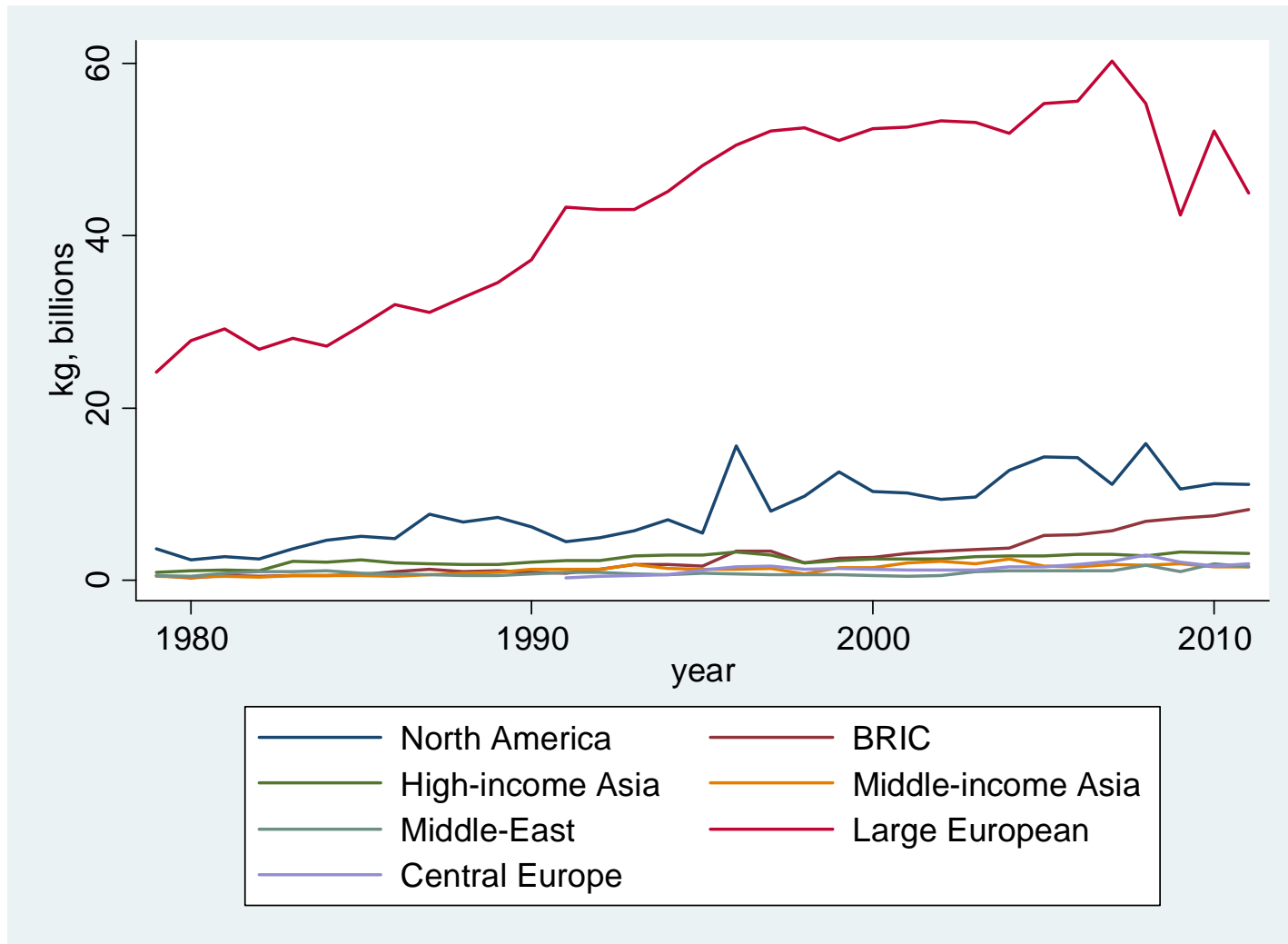


Figure 9. Imports from the UK unit values (\$ per kg), by country group

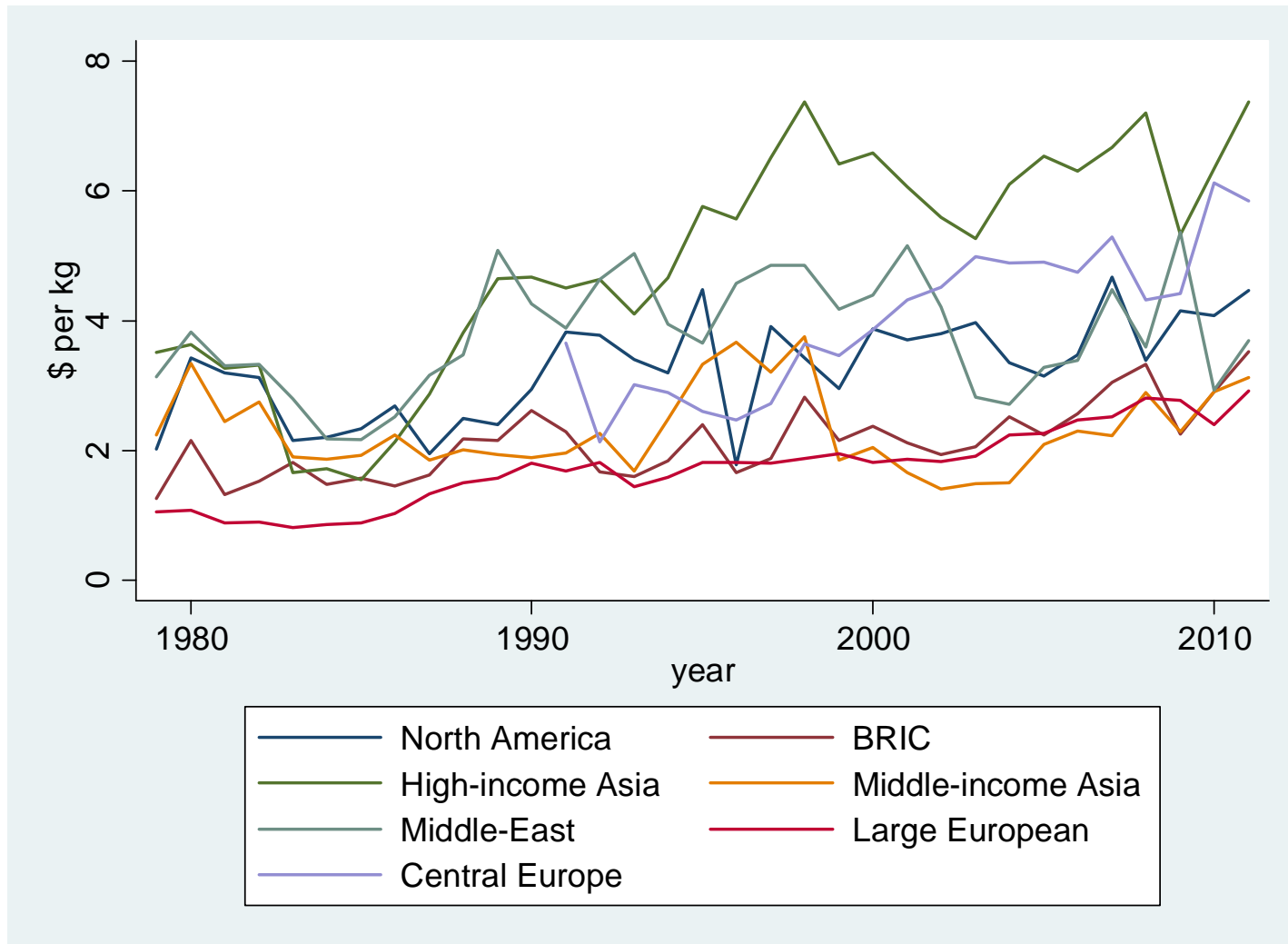


Figure 10a. Imports from the UK volumes (kg, billions), by product group

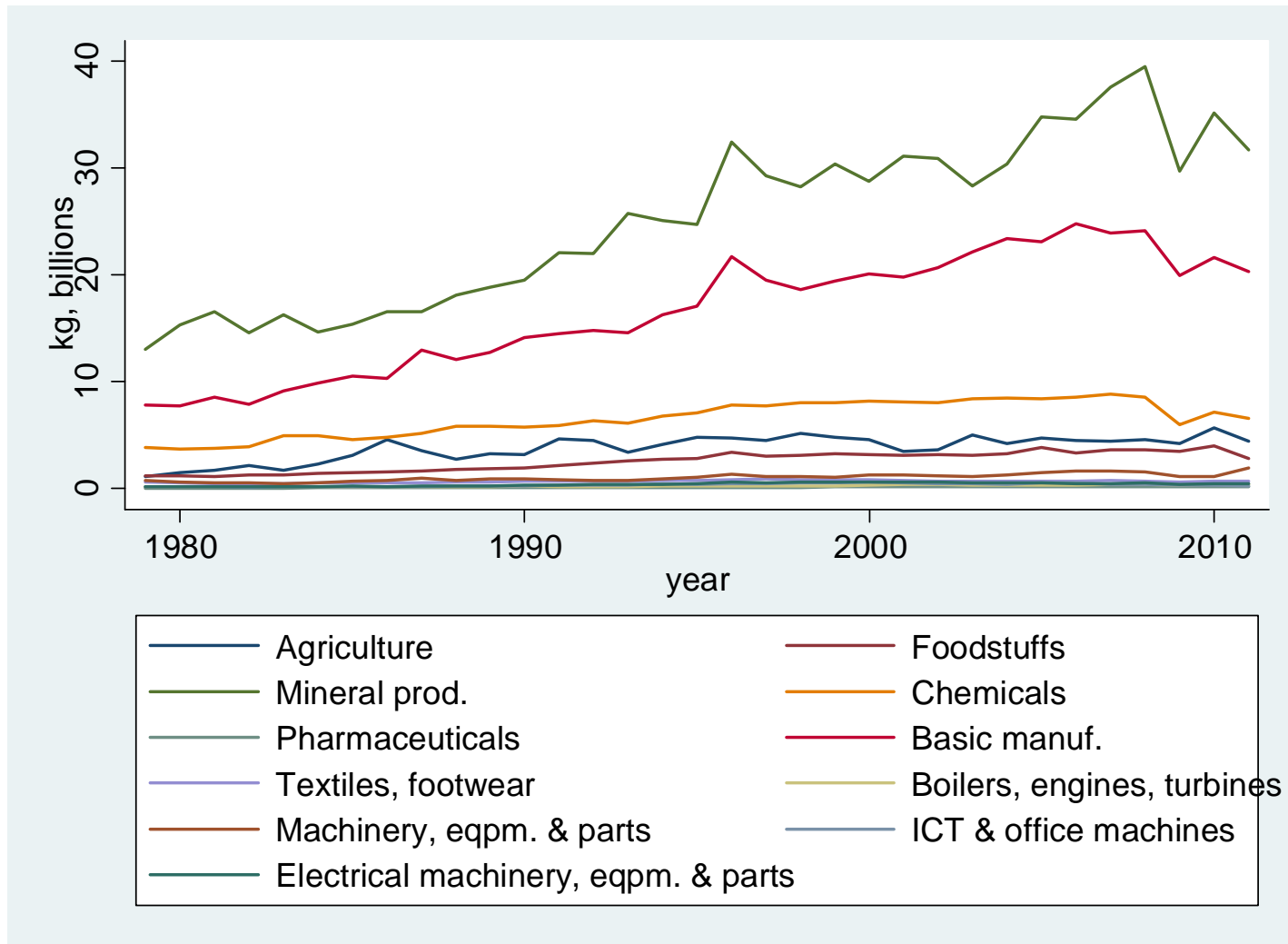


Figure 10b. Imports from the UK volumes (kg, billions), by product group

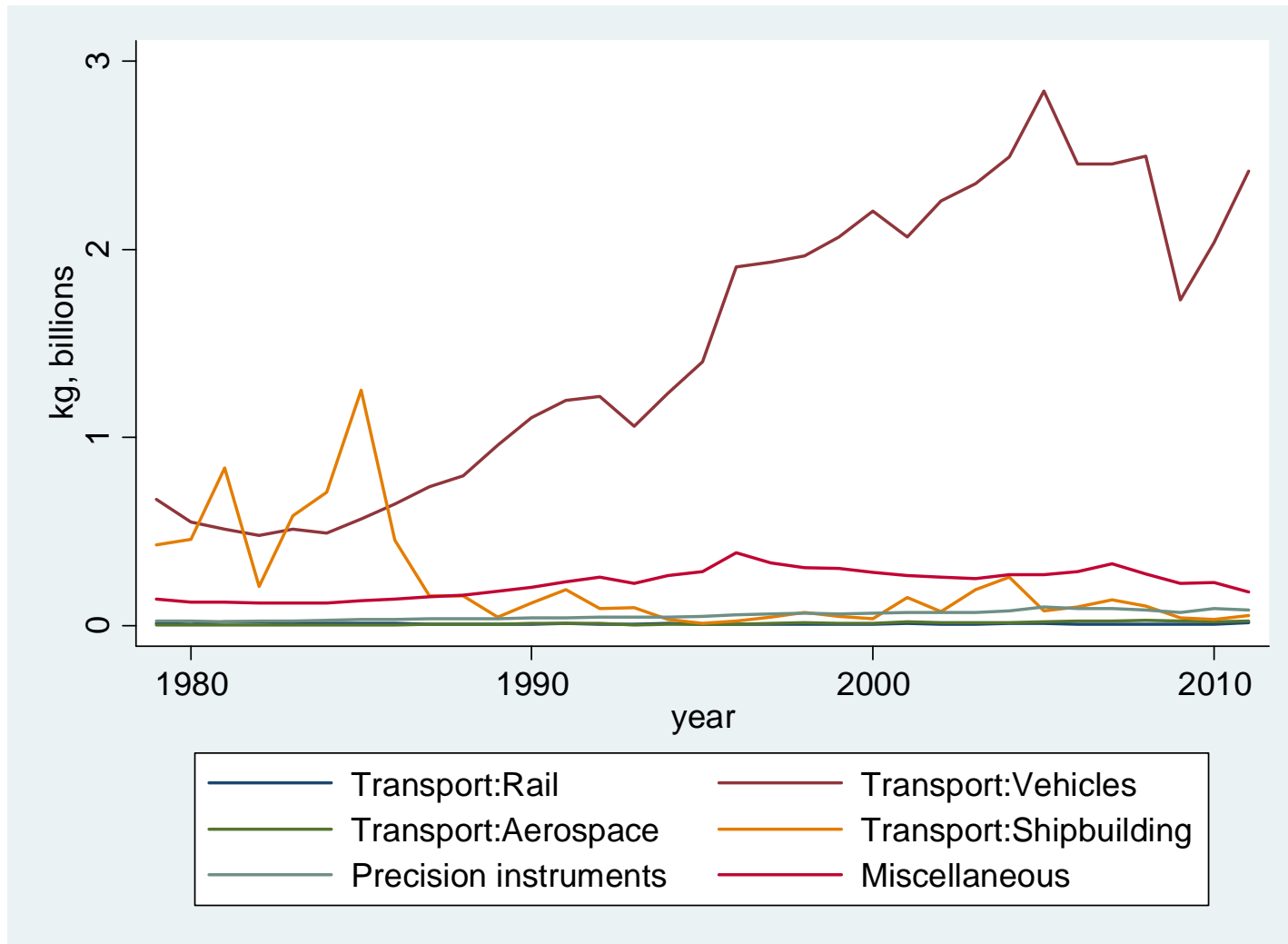


Figure 11a. Imports from the UK unit values (\$ per kg), by product group

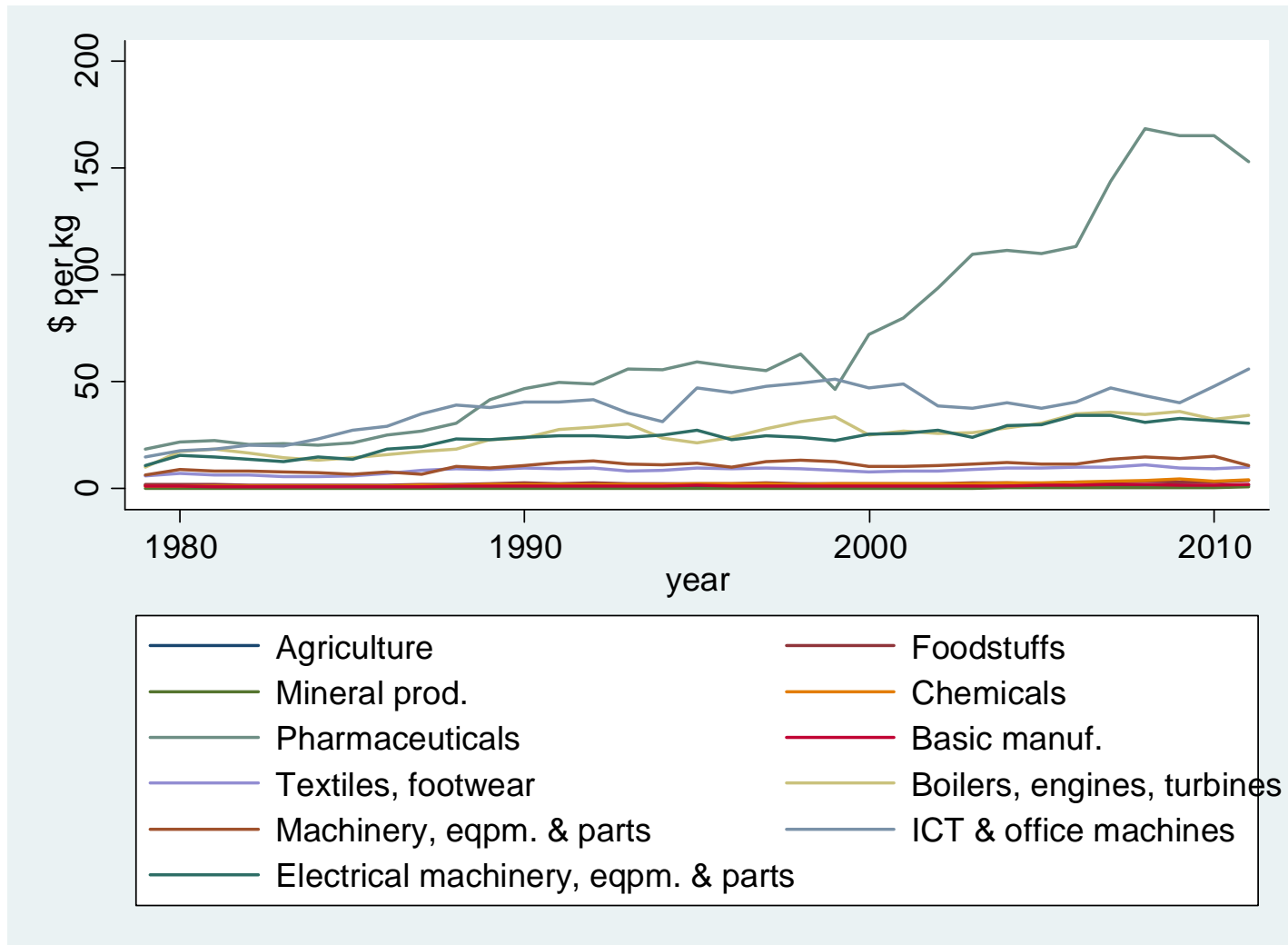


Figure 11b. Imports from the UK unit values (\$ per kg), by product group

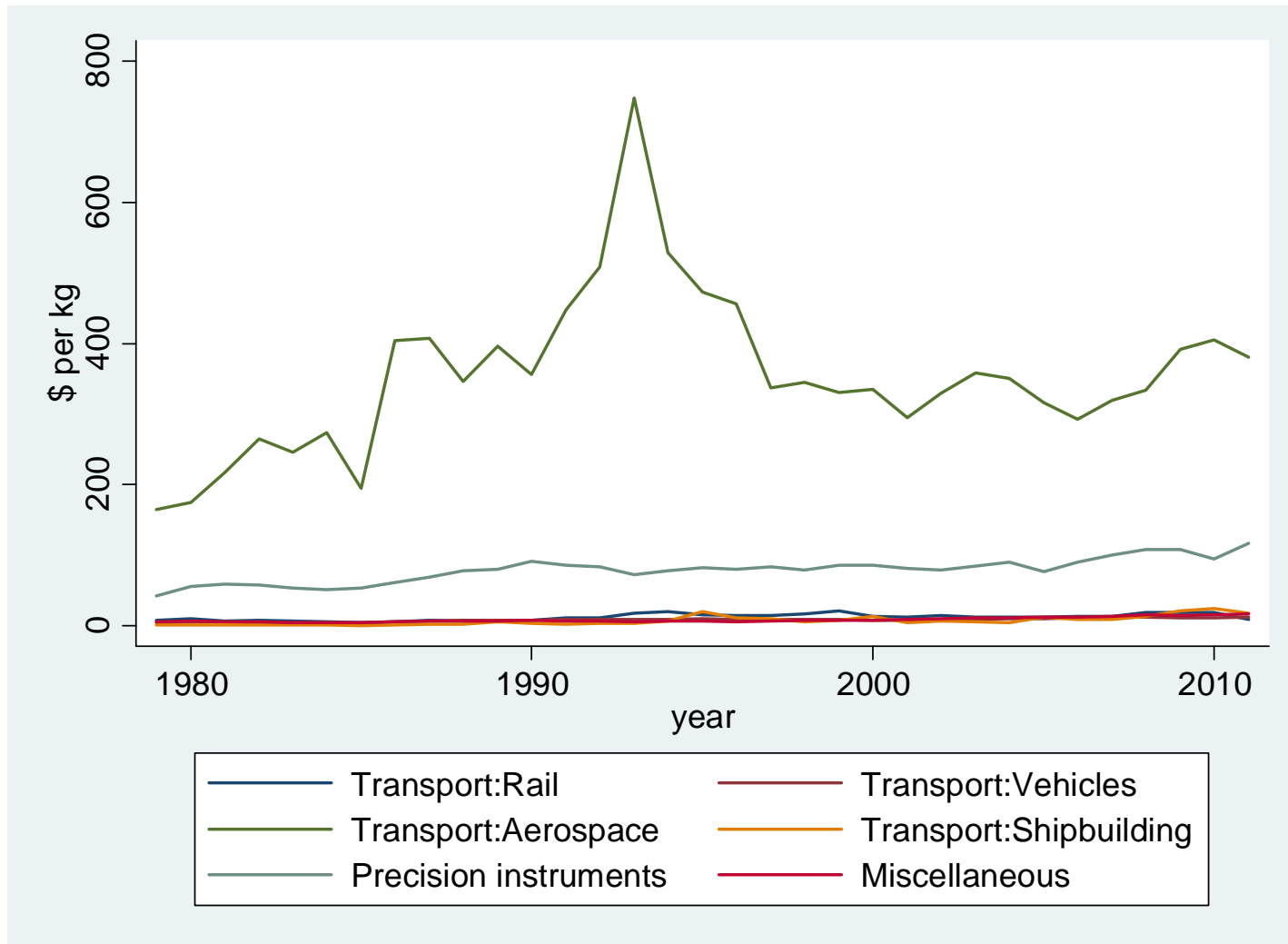


Figure 12. UK exports goods market share, by country group

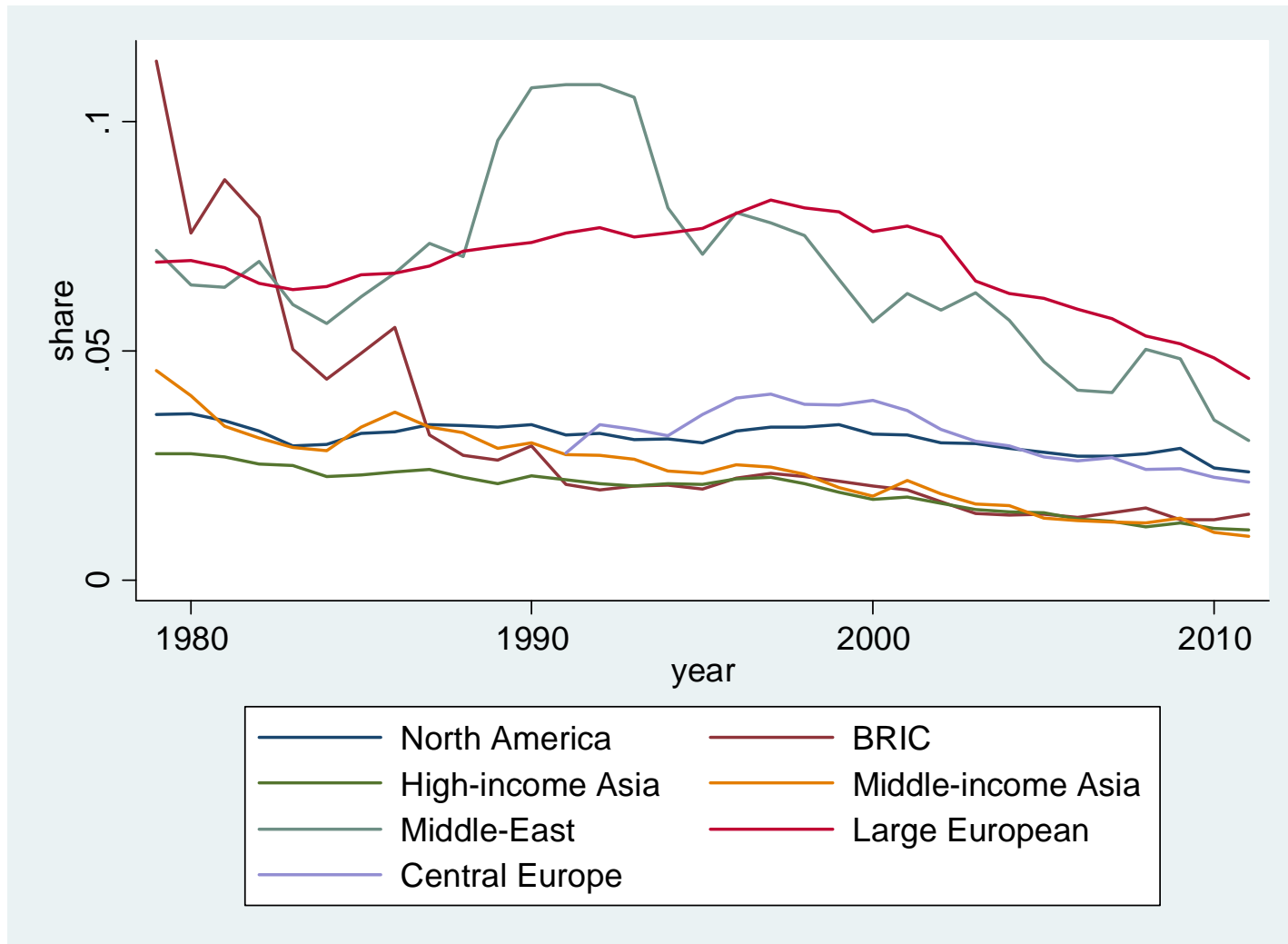


Figure 13. Imports from the UK unit values relative to world import unit values, by country group

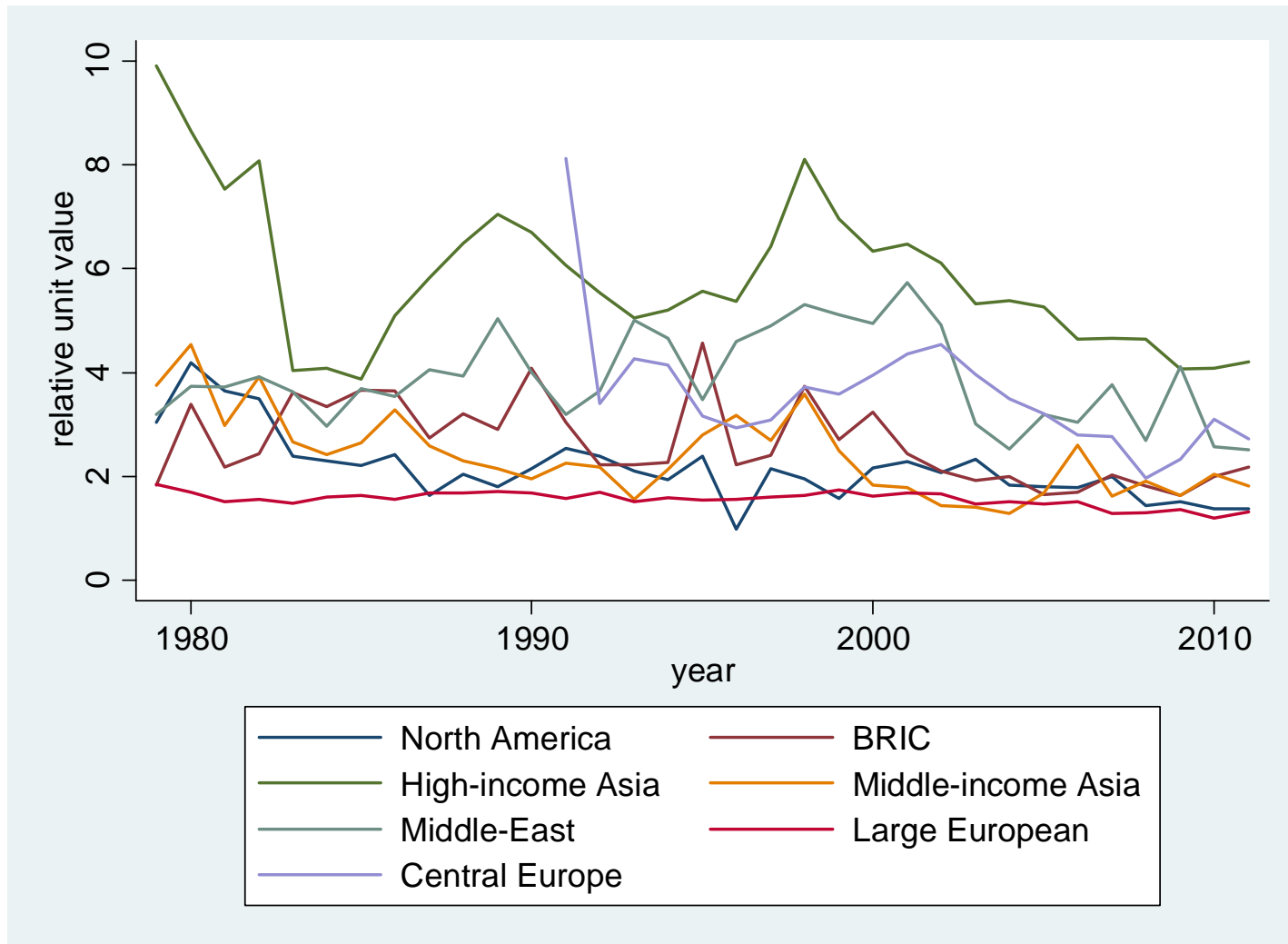


Figure 14a. UK exports goods market share, by product group

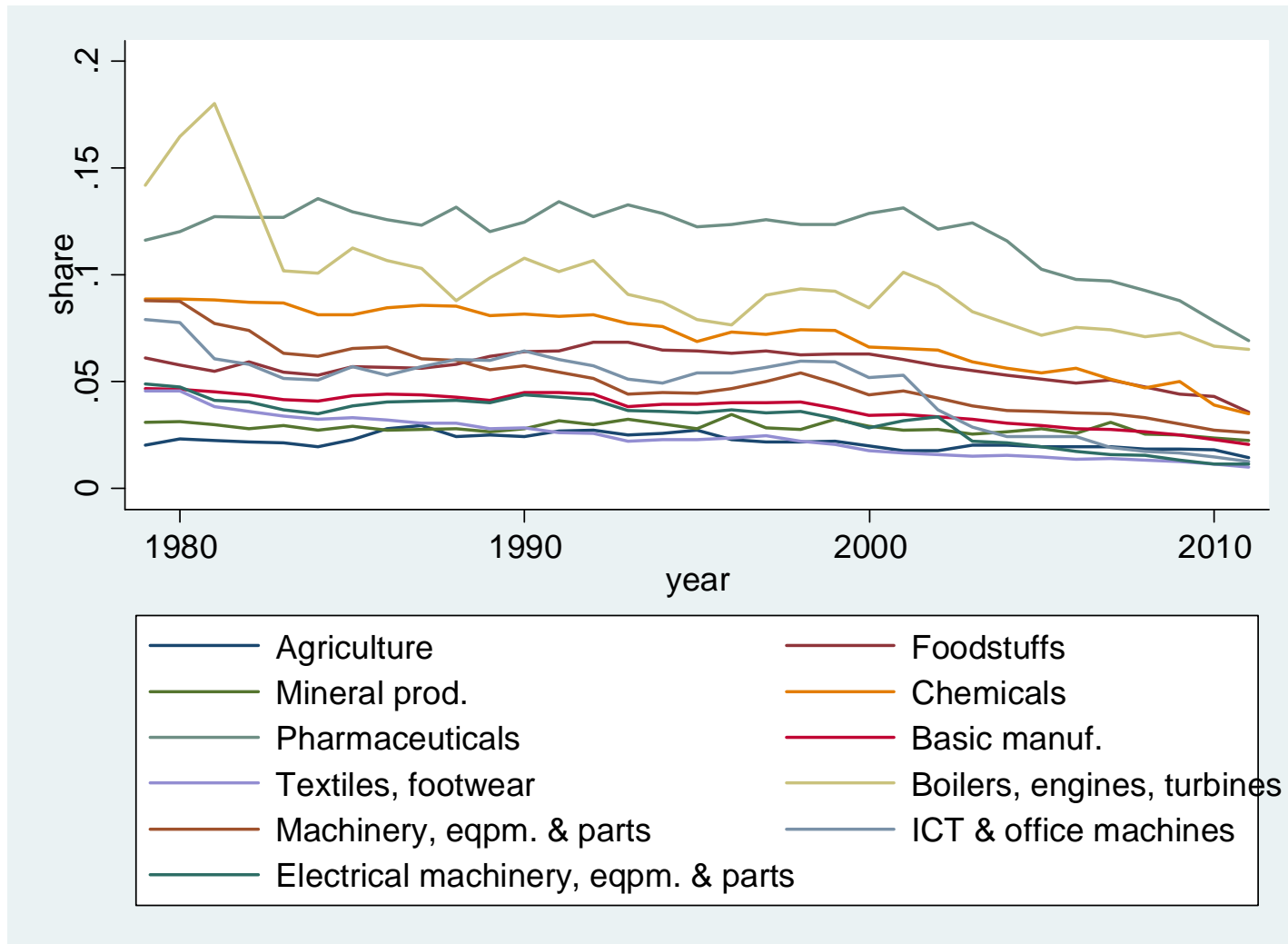


Figure 14b. UK exports goods market share, by product group

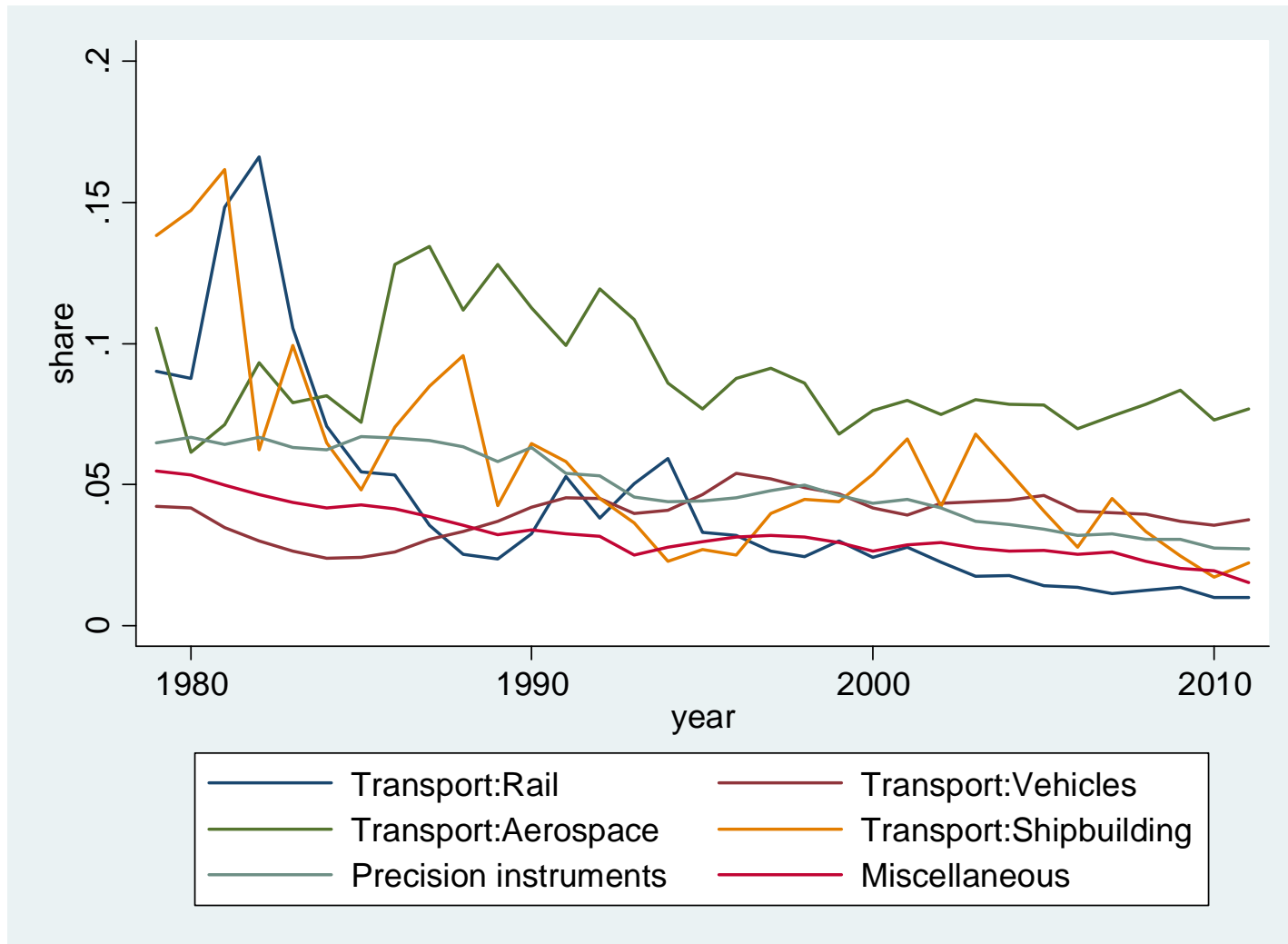


Figure 15a. Imports from the UK unit values relative to world import unit values, by product group

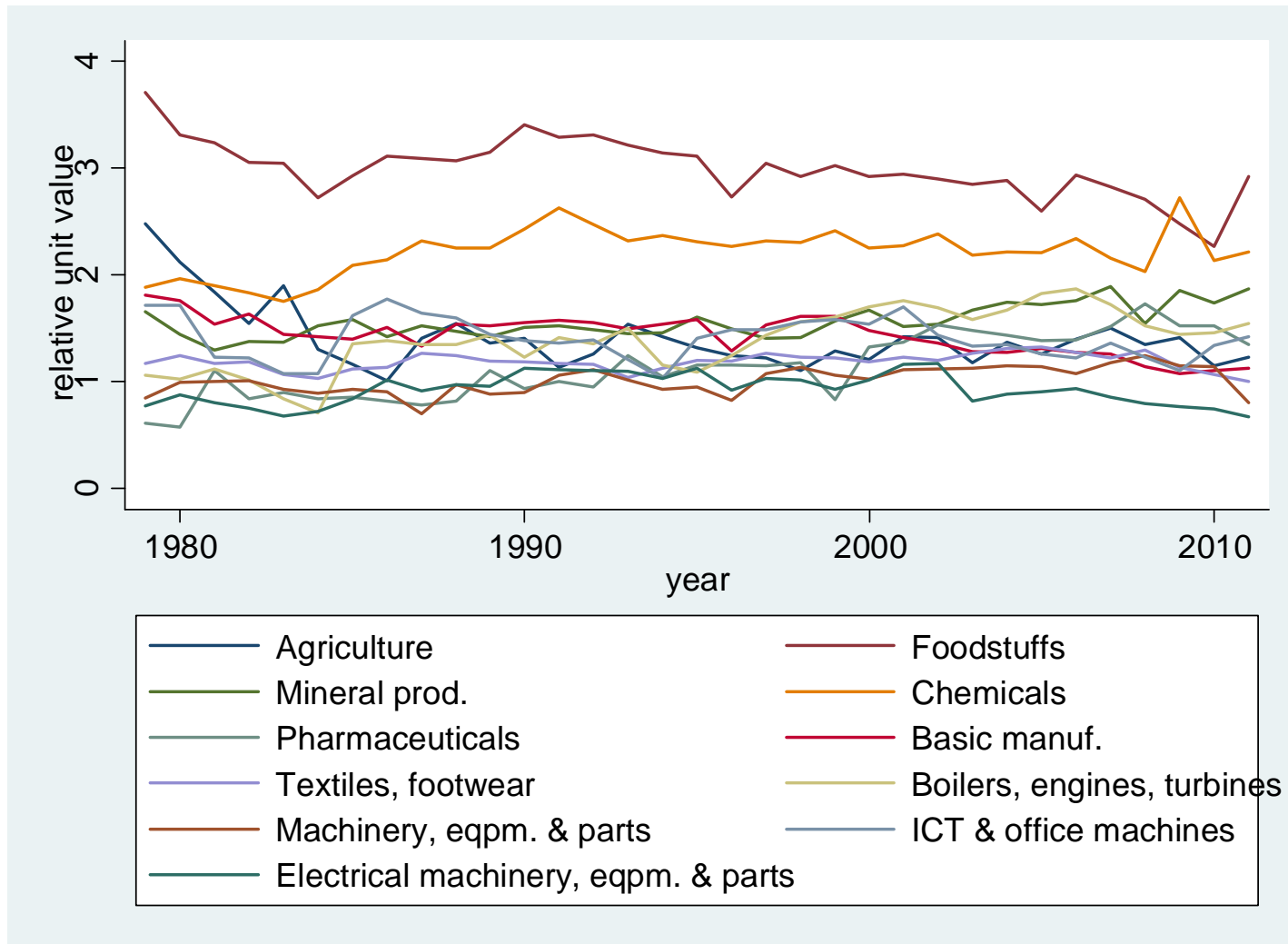
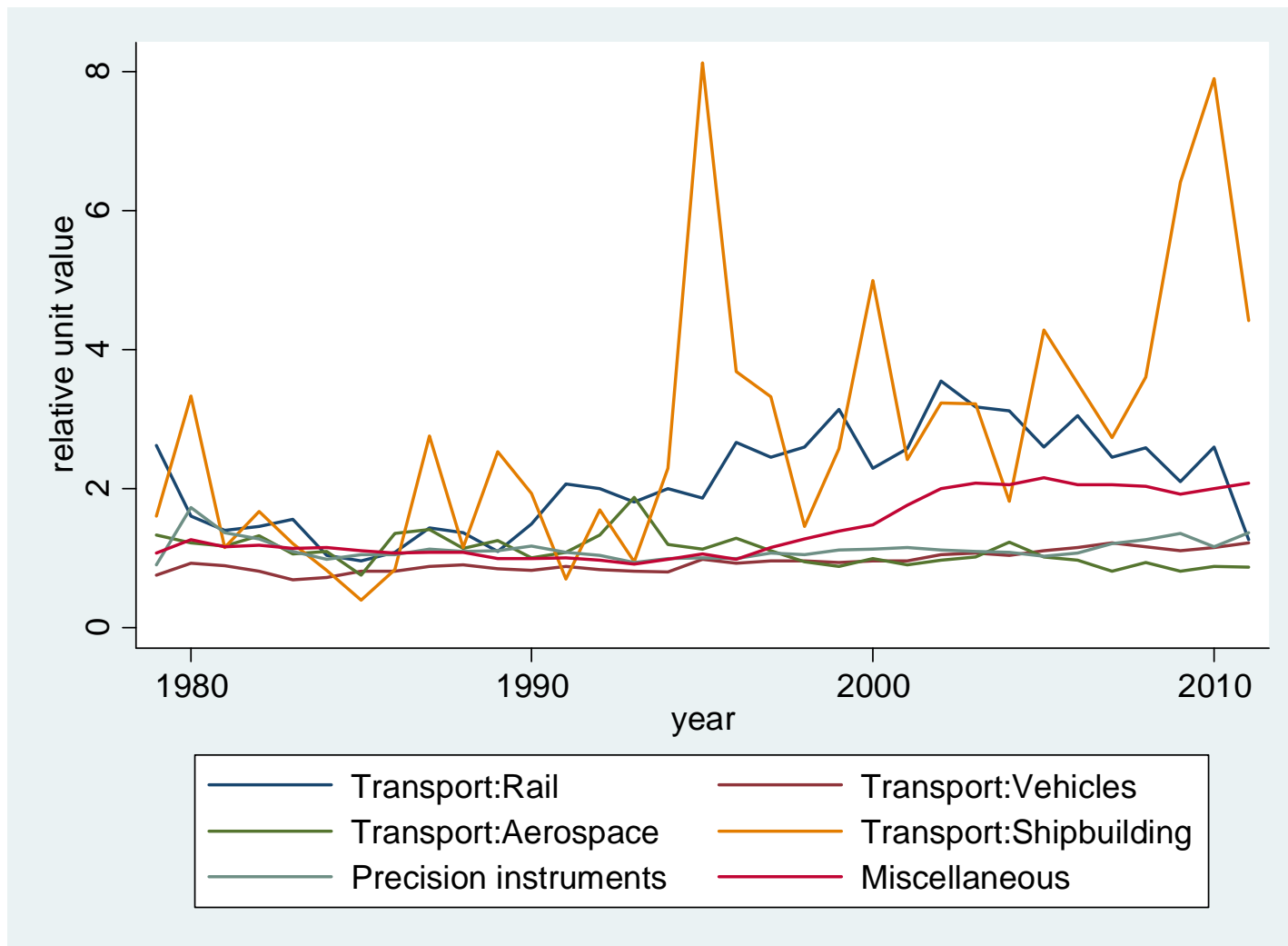


Figure 15b. Imports from the UK unit values relative to world import unit values, by product group



5. Identifying the long run income elasticity of import demand

This section describes the approach we have taken to modelling the three relationships that we seek to understand:

1. the long run income elasticity of import demand by product for country groups;
2. the long run income elasticity of demand for UK exports by product for country groups;
3. how changes in different components of aggregate demand may impact on import demand by product for country groups.

In order to identify these relationships we also need to try to take into account other factors that may impact on the patterns of growth in import demand over time. We estimate income elasticities of import demand within a widely used model, where foreign and domestic goods are viewed as imperfect substitutes.¹⁹ In this model imports depend not only incomes, but also on the price of domestic versus imported goods, which may change due to exchange rate movements²⁰ or other factors that impact upon relative costs, such as differential rates of productivity growth or the costs of inputs to the production process. Product specific import demand not only depends on the price of foreign versus domestic versions of that product, but also on the relative price of other substitutable products. In the model of UK exports (or imports from the UK) we also need to take into account the extent to which imports from the UK compete with imports from other supplier countries. Following standard practice we use relatively aggregated price indices to summarise these movements in relative prices.

Non-price influences on trends in import demand, such as radical innovations or cultural shifts and the general tendency over time towards increased

¹⁹ Goldstein & Khan (1985); see also the literature reviews in Mann & Plück (2005) and BIS (2012a).

²⁰ Exchange rate movements may not always be reflected in the relative price of foreign and domestic products, e.g. if exporters wish to maintain a particular product price in the currency of the export market.

globalisation, are captured by the inclusion of cross-country average import demand in the model. Because of the disaggregate modelling approach that we adopt the inclusion of these cross-sectional averages also accounts for a series of policy innovations that affect the trend in product or area specific import demand (see footnote 12 above). Our modelling approach also takes into account permanent differences in product specific import demand across countries, such as distance between trading partners and permanent differences in tastes.²¹

Our objective is to better understand the long run determinants of import demand. In order to distinguish these separately from the determinants of short-run fluctuations in trade flows we estimate this model in an error-correction framework, which yields estimates of both short-run and long-run trade elasticities.²² We report long-run elasticities only. This dynamic framework is also helpful in so far as it reduces the risk of producing elasticity estimates that reflect spurious correlations over time between trade flows and their potential determinants.

The long run income elasticity of import demand by product for country groups

We identify the long run income elasticity of import demand (imports from the world) within a relatively standard imperfect substitutions model of imports, in which the volume of imports to country i is related to the relative price of imported versus domestic goods and to a measure of income in country i . Because we estimate product-specific import demand we would ideally like to relate the volume of imports to country i of product x to the relative price of the imported product versus the domestically produced product and all potential substitutes for product x (imported or domestically produced). In practice this is not possible and we follow the majority of studies in this area, accounting for relative prices by including in the model the price of the imported product x versus a composite price index.²³

This long run (or equilibrium) relationship between import demand and its key determinants is illustrated in the following equation:

²¹ This is done by the inclusion of product-country specific fixed effects.

²² This type of framework is more commonly adopted in less disaggregated analyses of import demand.

²³ Similar studies typically use the TFE or GDP deflator. We use the TFE deflator. We do not make an adjustment for the particular product price as in Kee *et al.* (2008).

$$\ln(IMPVOL_{it}) = \beta_p \ln\left(\frac{IMPPRICE_{it}}{TFE_{P_{it}}}\right) + \beta_y \ln(TFE_{CONS_{it}}) + \delta_i + \varepsilon_{it} \quad (1)$$

where $IMPVOL_{it}$ denotes import volumes into country i (weight in kilograms for goods trade and a constant price series for services imports), $IMPPRICE_{it}$ denotes the price of imports into country i (unit values for goods and a price index for services), and domestic prices are measured by the deflator for total final expenditure in country i , $TFE_{P_{it}}$. Incomes in the importing country are measured by country i real total final expenditure, $TFE_{CONS_{it}}$. All variables in the model are included in logs. The δ_i refers to country fixed effects which account for permanent differences in import demand across countries; the ε_{it} is a random error term with country specific variance. In this model the coefficient β_y measures the income elasticity of import demand, i.e. the % change in import demand that arises with a 1% rise in income. The coefficient β_p measures the price elasticity of import demand, i.e. the % change in import demand that arises with a 1% rise in import prices relative to the price of domestic goods. We estimate these long term trade elasticities for each country group for each of the 17 goods product groups, for aggregate services imports, and for 3 service sector sub-categories.

We specify this model in dynamic form as an autoregressive distributed lag model in order to avoid interpreting spurious correlations over time between the variables of interest as import demand elasticities. The ARDL approach proposed by Pesaran (1997) can be used to examine long-run relationships regardless of the time series properties of the individual regressors and we avoid having to establish the order of integration of the regressors. Also, with a sufficient number of lags of the regressors included in the ARDL model, coefficient estimates remain consistent in the presence of endogeneity. We specify the ARDL model in error correction form and obtain direct estimates of the long-run parameters of interest.

To maximise the efficiency of our estimates we pool the parameters across countries within country group-product pairs using the pooled mean group estimator proposed by Pesaran, Shin and Smith (1999). In this model we pool the long-run elasticities of import demand across countries within a country group (for a specific product), but allow the short-run elasticities of demand to vary across countries. (Note that a pooled dynamic fixed effects model, where both the short and long run elasticities of import demand are constrained to be identical across countries, is rejected for most product-country groups. Therefore we do not use

the pooled dynamic fixed effects model, which may lead to biased estimated of the key trade parameters that we are interested in.)

We include cross-sectional means of the dependent variable in the short and long run to capture common trends in the data and to ensure non-spherical disturbances. This requires us to balance the data across countries within each product-country group panel. (This means we drop Russia from the BRIC model and Belgium from the Large European model because of the shorter time series that is available for these countries. Taiwan is dropped from the High-income Asia model as we do not have information on tariff-adjusted prices for this country. In the models of services imports Indonesia is excluded from Middle-income Asia due to missing data. We do not estimate models for services imports to the Middle East due to missing data problems.)

We use a generic ARDL(2,2,2) specification for all models, i.e. we include in the model the contemporaneous, first and second year lagged values of the regressors, except in the cases where we encounter convergence problems (and parameter estimates cannot be computed) or where the parameter estimates run counter to economic theory and are sensitive to the lag structure. In these cases we seek alternative ARDL specifications, usually by reducing the number of lags.²⁴

The long run income elasticity of demand for UK imports by product for country groups

To estimate the long run income elasticity of demand for imports from the UK (UK exports) we take a similar modelling approach to that in modelling imports from the world (in equation 1), but allowing for differences in the determinants of world exports to the determinants of UK exports. We use the same income variable. (As we are interested in the sensitivity of UK export volumes to incomes we do not follow the literature that uses world exports as a measure of market size, which essentially models export market share rather than export volumes; see e.g. Pain *et al.* (2005).) The main differences between the determinants of UK export volumes, $IMPVOL^{UK}$, and the determinants of world exports above are the price variables. The relative price of imported versus domestic goods is now

²⁴ A reduced lag specification is used for goods imports from the world: BRIC Textiles & footwear, ICT and office machines, Electrical machinery, equipment & parts; High-income Asia Textiles & footwear, Boilers, engines and turbines and Miscellaneous; Large European Agriculture products and Boilers, engines and turbines; Central European Chemical/related industries. A reduced lag specification is also used for services imports from the world: North America All and Other commercial activities; BRIC Transport; Middle-income Asia Travel and Other commercial activities; Central European All, Transport, and Other commercial activities.

captured by the ratio of the price of UK exports, $IMPPRICE^{UK}$, to the total final expenditure deflator, rather than by the ratio of the price of world exports to the total final expenditure deflator. We also include an additional price term to account for competition between UK exporters and other exporters; the ratio of the unit value of UK exports to the unit value of world exports. The long run model is specified in equation (2):

$$\ln(IMPVOL_{it}^{UK}) = \beta_p \ln\left(\frac{IMPPRICE_{it}^{UK}}{TFE_{P_{it}}}\right) + \beta_R \ln\left(\frac{IMPPRICE_{it}^{UK}}{IMPPRICE_{it}}\right) + \beta_y \ln(TFE_{CONS_{it}}) + \delta_i + \varepsilon_{it} \quad (2)$$

In estimating (2) we follow the procedure described above for estimating (1). However, due to the increase in the number of variables (the additional price term increases the number of parameters to be estimated in an ARDL(2,2,2,2) by three per country and product) and the limited time series that are available we start with an ARDL(1,1,1,1) specification. Where we do not achieve convergence or where the parameters deviate from economic theory and can be improved upon with alternative lag structures we increase the number of lags.²⁵

The sensitivity of import demand to the different components of aggregate demand

To assess how changes in the different components of aggregate demand may impact on import demand (from the world) we adapt equation (1) to include the individual components of real total final expenditure (consumption, C_{CONS} , investment, I_{CONS} , and exports, X_{CONS}) as in equation (3):²⁶

$$\ln(IMPVOL_{it}) = \beta_p \ln\left(\frac{IMPPRICE_{it}}{TFE_{P_{it}}}\right) + \beta_C \ln(C_{CONS_{it}}) + \beta_I \ln(I_{CONS_{it}}) + \beta_X \ln(X_{CONS_{it}}) + \delta_i + \varepsilon_{it} \quad (3)$$

However, we find that this model does not perform very well at the level of disaggregation used in estimating equations (1) and (2), i.e. for product-country group pairs, and we do not report these estimates. Instead we estimate this

²⁵ An increased lag specification is used for goods imports from the UK: North America Mineral products, Chemical/related industries, and Basic manufacturing; BRIC Machinery, equipment & parts and Miscellaneous; High-income Asia Foodstuffs and Chemical/related industries; Middle East Boilers, engines and turbines; Large European Agriculture products and Basic manufacturing; Central European Boilers, engines and turbines and Precision instruments.

²⁶ Similar models are estimated by Abbott & Seddighi (1996) and Funke & Nickel (2006). Bussiere *et al.* (2011) include a composite income index where the components of demand are weighted by their import intensity.

model for specific products, but pooled across *all* countries (rather than across countries within country groups as we do in estimating (1) and (2)).

6. Results

The resulting long-run price (β_p) and income (β_y) elasticities of import demand are reported in Tables 9-22. Standard diagnostics (serial correlation tests and a goodness-of-fit measure) of the main models are reported in Annex Tables A2.1-A2.6.

The long run income elasticity of import demand by product for country groups

Long run price and income elasticities for goods imports (from the world) are reported in Tables 9 and 10 respectively.²⁷ In the majority of cases the estimated price and income elasticities of import demand are statistically significant and have the expected sign. For example, in Table 9, the majority of the long-run price elasticities are negative and statistically significant at the 1% level. Unexpected values (i.e. positive and statistically significant price elasticities) are confined to Aerospace products. In Table 10 the majority of long-run income elasticities are positive and statistically significant at the 1% or 5% levels. As in many other studies, these lie distributed around unity. To provide an example of how we can interpret these figures, the estimated long-run income elasticity of machinery, equipment & parts imports to North America of 2.352 implies that a 1% increase in total final expenditure in North America is associated with a 2.35% increase in the volume of machinery, equipment & parts imports to this region. Unexpected values (i.e. negative and statistically significant income elasticities) are confined to mineral products and the non-vehicle transport products, demand for which can be very erratic (and therefore it may be difficult to obtain good estimates of the underlying elasticities).

Looking at the long-run income elasticities in Table 10, and comparing these estimates to the mean estimate across country or product groups, it is difficult to point to a clear pattern in the magnitude of these across country groups or between different types of product (for example, higher and lower tech products).²⁸ This difficulty is, as anticipated, exacerbated by the level of product/country disaggregation; it is possible that clearer patterns may emerge with more succinct groupings of the data. In Table 11 we report the error

²⁷ Note that measurement error in import volumes and its determinants will, to the extent that it is random, lead to a downward bias in the magnitude of these estimates.

²⁸ This echoes the findings discussed in BIS (2012a).

correction terms. This generally lies between -1 and 0 as it should.²⁹ However, for some product-country group pairs these are not precisely determined. Again, this may reflect both the level of disaggregation that we adopt and the limited length of the time series that are available, leading to some inefficiency in the estimates of key parameters.

For these reasons we report in Table 12 this same model, but where we pool the long run parameters of the import demand model across *all* countries (rather than just across countries within country groups). Note that this model still allows for country-specific short-run parameters of import demand and fixed effects. A Hausman test suggests that pooling across countries is acceptable (with the exceptions of the models for Precision instruments and Miscellaneous products). This is consistent with our interpretation that differences in the parameters across country groups do not exhibit any clear pattern. In contrast, when we pool the long run parameters of the model across product groups within countries the Hausman test rejects the homogeneity assumption in almost half of the country models; these models are not shown. These findings suggest that differences in the parameters of the import demand relationship are more significant across product groups than across countries. In other words, in estimating price and income elasticities of import demand within the standard model it is important to take into account differences in demand for different products, but less important to take into account differences across countries.³⁰

The trade elasticities in the pooled model in Table 12 are more precisely determined than those in the more disaggregate model in Tables 9-11. Virtually all the long-run parameters are significant at the 1% level and all have the expected sign. Imports of mineral products, pharmaceuticals and shipbuilding are relatively sensitive to income; estimated income elasticities are greatest for these products.³¹

Given the focus of this study we would like to further explore the extent to which the long-run income elasticity of the demand for imports varies by stage of

²⁹ An error correction term of -1 implies that imports adjust instantaneously to the long-run equilibrium shown in equation (1). An error correction term of 0 implies that imports do not adjust to the long-run equilibrium (i.e. the concept of long-run equilibrium is not well-defined).

³⁰ Marquez (2005) suggests product disaggregation is important in modelling US services imports.

³¹ Note that most of the estimated income elasticities here are less than unity. This is different from many studies of aggregate import demand, where income elasticities of import demand are often greater than one. One of the reasons for the lower income elasticities in this paper is likely to be the inclusion of cross-sectional means of import demand, which means that we do not associate general trends in import demand, that may be influenced by a range of factors, with changes in income.

development. Of course, the Hausman test in Table 12 suggests that we can identify a common long-run model across countries for demand of world imports. This implies that import demand elasticities do not differ systematically between different countries (which may be at different stages of development). Nonetheless this does not provide a very strong test of whether or not income elasticities of import demand differ between more and less economically advanced economies. Therefore we report in Table 13 an augmented version of the pooled model in Table 12, including an interaction term between income and an indicator of whether or not an economy is economically advanced.³² This interaction term measures the *difference* in the income elasticity of import demand between advanced and less advanced economies; the income elasticity for the advanced countries is obtained by adding together the coefficients on income and the interaction term. The statistical significance of the interaction term for several product-specific models in Table 13 suggests that these differences are, on average, non-negligible. But, the sign of this difference varies across product types. For example, the income elasticity of imports of agriculture products is half a percentage point less in advanced compared to less advanced economies (the coefficient estimate on the interaction term is -0.498). In contrast, the income elasticity of imports of boilers, engines and turbines, of machinery and ICT, and in particular of pharmaceuticals products is greater in advanced compared to less advanced economies. These findings are in line with those of an earlier study by Green & Kohli (1991), who find, in a slightly different set-up, that the level of socio-economic development predicts imports of sophisticated industrial products. But, this pattern does not always hold. For example, the estimated income elasticity of imports of precision instruments is smaller for the advanced economies than for the less advanced economies.

Elasticities of demand for service imports are reported in Table 14. For the aggregate services category, central estimates of the long-run elasticity of imports with respect to incomes is higher for the economically more developed country groups (North America and Large European) than for other country groups. In Table 15 we report models where we have pooled the long-run parameters of demand for services imports across all countries included in the sample (similar to the pooled models for goods imports in Tables 12 and 13). A Hausman test accepts the pooling assumption in all but the model for transport services; and in the transport services model the income elasticity is not significantly different from zero. The interaction term between income and stage of development is positive and statistically significant in all but the transport services model, suggesting that the income elasticity of services imports is

³² We classify all Large European, North American and High-income Asian countries as advanced.

greater in advanced economies than in less advanced economies, as we might expect.

The long run income elasticity of demand for UK imports by product for country groups

Coefficients from the model for UK exports (imports from the UK) by product and country group are reported in Tables 16-19. In many cases the estimated price and income elasticities of demand for imports from the UK are statistically significant and have the expected sign. However, in comparison to the imports from the world models, we have more product-country group pairs where the models are not well-determined. This may in part result from the lower quality of the UK exports data, much of which requires imputation. Further, the price terms are sensitive to the lag specification, in part because of the collinearity between the two price terms. The error correction term generally lies between -1 and 0 as it should.

In Table 20 we report the model of UK exports pooled across all countries. Most of the parameters are precisely determined and have the expected sign. As measured here, the price of UK exports relative to domestic goods appears to be a better predictor of UK exports than the price of UK exports relative to the price of exports from other supplier countries. For the majority of products the income elasticity of imports from the UK is positive and statistically significant. But, it is negative and statistically significant for textiles and footwear products and ICT products. However, the Hausman test rejects the latter of these models, which is therefore likely to be biased. The income elasticity of imports from the UK reported in Table 20 is generally smaller than the income elasticity of imports from the world in Table 12. This may reflect the fact that UK market share has been declining over time, and echoes the findings reported in BIS (2012a). Note however that the UK export models are estimated on a smaller group of countries and are therefore not directly comparable to the world export models.

In Table 21 we include in the cross-country pooled model of UK exports and interaction term between income and stage of development. This interaction term is often statically significant suggesting differences in the income elasticity of demand for UK exports between advanced and less advanced export markets. However, these results are difficult to interpret and often of opposite sign to the equivalent parameters in the model of world exports in Table 13. This may partly reflect differences in country coverage and data problems.

The sensitivity of import demand to the different components of aggregate demand

In Table 22 we report the results of estimating equation (3) (pooled across countries). We find significant differences in the elasticity of imports with respect to the individual components of demand. Increases in export expenditures appear to be associated with increases in imports of most product groups, consistent with the importance of globally integrated supply chains. Consumption expenditure tends to have a bigger impact on imports of Agricultural and Mineral products than on imports of other products. Increases in investment expenditure are associated with particularly strong increases in imports of Transport products (Rail and Shipbuilding), but also with increases in imports of Boilers, engines and turbines products, Machinery, equipment and parts products, and with Precision instrument products. However, the estimated of elasticities of import demand with respect to consumption and investment expenditure are negative and statistically significant in several cases. It is likely that these estimates are affected by multicollinearity of the expenditure series, making it difficult to distinguish these elasticities separately.

Summary

The models of world imports presented in this paper suggest that both income and the relative price of foreign versus domestic goods influence import demand; much as previous studies suggest. Our modelling work suggests that income and prices may influence the demand for one product differently from the demand for another product. In contrast, the long run determinants of product specific imports appear similar across different countries. Further exploration reveals that demand for imported services and high tech goods is more sensitive to income in the more economically advanced countries.

Models of UK exports are less well determined and this may in part be the result of data problems. Consistent with falling UK export market share we find that UK exports are less sensitive than world exports to changes in income.

Looking at the relationship between import demand and the components of expenditure (consumption, investment, and export expenditure) we find that export expenditure is associated with increased demand for imports of most product groups. Difficulties in identifying import demand elasticities with respect to the components of expenditure are likely to be exacerbated by the high correlation between these components.

Table 9. Long-run price elasticities of import demand for goods

	North America		BRIC		Middle-income Asia		High-Income Asia		Middle East		Large European		Central European		Mean
Agriculture products	-0.29	*	0.49		0.46		-1.04	***	-0.28	*	-0.20		-0.75	***	-0.23
Foodstuffs	-0.45	*	-0.59		-0.23	***	-0.75	***	-0.91	***	-0.76	***	-0.74	***	-0.63
Mineral products	4.28		0.04		-0.10	***	-0.28	***	-1.09	***	-0.03		1.52		0.62
Chemical/related industries	-0.66	***	-0.96	***	-1.42	***	-0.47	***	-0.26	**	-0.69	***	-0.26		-0.67
Pharmaceuticals	-0.57	***	-0.80	***	-0.45	*	-0.67	***	-0.51	***	-1.17	***	-0.68	***	-0.69
Basic manufacturing	0.01		-1.50	***	-0.33	***	-0.64	***	-1.10	***	-0.05		-0.83	***	-0.63
Textiles and footwear	-0.28		-1.67	***	0.14		-0.09		0.18		-1.27	***	-0.35	***	-0.48
Boilers, engines and turbines	-4.05		-0.88	***	-0.59	***	-0.35	***	-0.29		-0.77	***	0.00		-0.99
Machinery, equipm. & parts	-1.16	***	-1.39	***	-1.30	***	-0.49	***	-1.14	***	-0.64	***	-0.87	***	-1.00
ICT and office machines	-0.33		-1.46	***	-0.72	***	0.41		-1.06	***	-0.38	***	-0.03		-0.51
Electrical machinery, equipm. & parts	-1.01	***	-0.03		-0.80	***	-0.03		0.07		-0.71	***	-1.01	***	-0.50
Transport: Rail	-0.75	***	-1.01	***	-1.18	***	-0.28	**	0.38		-0.64	***	0.26	**	-0.46
Transport: Vehicles	-0.25	***	-0.04		-0.96	***	-0.56	***	-0.44	***	-0.39	***	-0.92	***	-0.51
Transport: Aerospace	-0.41	***	-0.19		-0.97	***	2.20	***	0.97	***	-0.45	***	-0.82	***	0.05
Transport: Shipbuilding	-1.67	***	-0.60	***	-0.74	***	-1.12	***	-0.96	***	-0.87	***	0.12		-0.83
Precision instruments	-0.02		-1.60	***	0.73		-0.67	***	-1.42	***	-0.93	***	-0.62	***	-0.65
Miscellaneous	-0.84	***	-1.34	***	-0.51	***	-0.70	***	-1.03	***	-0.72	***	-0.09		-0.75
MEAN	-0.50		-0.80		-0.53		-0.33		-0.52		-0.63		-0.36		-0.52

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(2,2,2) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the world), log import price and log income; import price equals import product unit value relative to total final expenditure deflator; income equals real total final expenditure; country groups include the countries specified in the text, except United Arab Emirates, Vietnam, Taiwan, Russia and Belgium.

Table 10. Long-run income elasticities of import demand for goods

	North America		BRIC		Middle-income Asia		High-income Asia		Middle East		Large European		Central European		Mean
Agriculture products	0.46		2.07	***	2.27		1.03	**	0.45	***	0.12		0.28	***	0.95
Foodstuffs	0.78	***	0.45	***	0.86	***	0.86	***	0.42	***	0.26	***	0.48		0.59
Mineral products	-1.20		-2.71	*	1.20	***	-0.28	*	1.42	***	0.64	***	7.67		0.96
Chemical/related industries	0.49	*	0.81	***	1.10	**	0.77	***	-0.16		0.78	***	0.95	***	0.68
Pharmaceuticals	2.56	***	1.28	***	0.10		0.40	***	0.26		0.28		1.46	***	0.90
Basic manufacturing	-0.07		1.33	***	0.96	***	1.25	***	0.13		0.32		0.73	***	0.66
Textiles and footwear	-0.07		0.77	**	0.50	***	-0.03		1.26	**	2.06	***	0.91	**	0.77
Boilers, engines and turbines	-0.52		1.11	***	0.17		0.58	***	-0.21		3.28	**	0.82	***	0.75
Machinery, equipm. & parts	2.35	**	0.68	***	-0.18		0.44	**	0.31		0.67	***	0.83	***	0.73
ICT and office machines	2.52		0.73	***	0.45	***	-0.84		0.26		-0.12		4.99	***	1.14
Electrical machinery, equipm. & parts	1.39	***	1.64	**	0.11		-0.68		0.93	***	1.01	***	1.22	*	0.80
Transport: Rail	1.22	*	-0.64	*	1.18	***	-0.04		0.09		0.85	**	-1.06	***	0.23
Transport: Vehicles	0.54	***	0.98		0.37		0.19	**	0.78	***	0.39	**	0.65	***	0.56
Transport: Aerospace	0.08		0.87	***	-0.07		-0.47	*	-1.55	**	-1.65	***	-1.05	***	-0.55
Transport: Shipbuilding	0.71	**	-0.98	**	0.32	***	0.33		0.41		2.25	***	1.96	***	0.71
Precision instruments	4.35	*	2.29	***	-0.10		1.17	***	0.56	**	0.31	*	0.97		1.37
Miscellaneous	0.58	***	1.93	***	1.00	***	0.92	***	0.83	***	1.31	***	-0.46		0.87
MEAN	0.95		0.74		0.60		0.33		0.36		0.75		1.26		0.71

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(2,2,2) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the world), log import price and log income; import price equals import product unit value relative to total final expenditure deflator; income equals real total final expenditure; country groups include the countries specified in the text, except United Arab Emirates, Vietnam, Taiwan, Russia and Belgium.

Table 11. Error-correction adjustment (goods)

	North America		BRIC		Middle-income Asia		High-income Asia		Middle East		Large European		Central European		Mean
Agriculture products	-0.19	*	-0.20	**	-0.02		-0.15		-0.53	***	-0.28	***	-0.74	***	-0.30
Foodstuffs	-0.30		-0.37	*	-0.37		-0.34	*	-0.45	***	-0.19	***	-0.16	**	-0.31
Mineral products	-0.01		-0.28		-0.40	**	-0.70	***	-0.44	**	-0.28	**	-0.02		-0.30
Chemical/related industries	-0.40	***	-0.49	***	-0.02		-0.57	*	-0.67	*	-0.27	**	-0.29		-0.39
Pharmaceuticals	-0.19	**	-0.43		-0.16		-0.26		-0.54	**	-0.14	***	-0.50		-0.32
Basic manufacturing	-0.23		-0.28		-0.26	*	-0.43	***	-0.45	**	-0.22	**	-0.56	***	-0.35
Textiles and footwear	-0.27		-0.30	*	-0.21	**	-0.37	***	-0.31		-0.07		-0.23		-0.25
Boilers, engines and turbines	0.03		-0.42		-0.24	*	-0.62	***	-0.30		-0.06		-0.61		-0.32
Machinery, equipm. & parts	-0.16	***	-0.58	**	-0.25	***	-0.32	***	-0.65	***	-0.25	**	-0.67	***	-0.41
ICT and office machines	-0.08	***	-0.16		-0.21	*	-0.20	***	-0.71	***	-0.23	**	-0.17		-0.25
Electrical machinery, equipm. & parts	-0.20		-0.18		-0.29	**	-0.25		-0.37	***	-0.24	**	-0.27	***	-0.26
Transport: Rail	-0.25	**	-0.59		-0.44	***	-1.09	***	-0.37		-0.42	***	-0.46	**	-0.52
Transport: Vehicles	-0.63		-0.18	***	-0.19	**	-0.67	***	-0.60		-0.22		-0.57	***	-0.44
Transport: Aerospace	-0.67	***	-0.61	***	-0.61	**	-0.40		-0.30		-0.28	**	-0.56	***	-0.49
Transport: Shipbuilding	-0.44	**	-0.39	**	-0.43	***	-0.63	***	-0.42	***	-0.35	*	-0.24	***	-0.42
Precision instruments	-0.14	*	-0.36		-0.08		-0.29	**	-0.48	***	-0.16	***	-0.34		-0.26
Miscellaneous	-0.54		-0.29		-0.09		-0.32		-0.48	*	-0.24		-0.14		-0.30
MEAN	-0.28		-0.36		-0.25		-0.45		-0.48		-0.23		-0.38		-0.35

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(2,2,2) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the world), log import price and log income; import price equals import product unit value relative to total final expenditure deflator; income equals real total final expenditure; country groups include the countries specified in the text, except United Arab Emirates, Vietnam, Taiwan, Russia and Belgium.

Table 12. Import demand for goods (pooled across countries)

	Relative price (imports vs domestic)		Income		Error-correction adjustment		Hausman test for pooling (p-value)
Agriculture products	-0.261	**	0.784	***	-0.237	***	0.761
Foodstuffs	-0.641	***	0.614	***	-0.339	***	0.337
Mineral products	-0.276	***	1.387	***	-0.254	***	0.315
Chemical/related industries	-0.542	***	0.921	***	-0.261	***	0.387
Pharmaceuticals	-0.753	***	1.230	***	-0.246	***	0.333
Basic manufacturing	-0.440	***	0.854	***	-0.322	***	0.530
Textiles and footwear	-0.258	***	0.720	***	-0.237	***	0.404
Boilers, engines and turbines	-0.752	***	0.635	***	-0.264	***	0.656
Machinery, equipm. & parts	-1.044	***	0.446	***	-0.416	***	0.462
ICT and office machines	-0.805	***	0.335	**	-0.245	***	0.899
Electrical machinery, equipm. & parts	0.064		0.889	***	-0.296	***	0.310
Transport: Rail	-0.651	***	0.452	**	-0.509	***	0.459
Transport: Vehicles	-0.322	***	0.885	***	-0.310	***	0.989
Transport: Aerospace	-0.378	***	0.686	***	-0.451	***	0.545
Transport: Shipbuilding	-1.025	***	1.479	***	-0.470	***	0.475
Precision instruments	-0.804	***	0.446	***	-0.285	***	0.005
Miscellaneous	-0.805	***	0.394	***	-0.274	***	0.048

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(2,2,2) models; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the world), log import price, and log income; import price equals import product unit value relative to total final expenditure deflator; income equals real total final expenditure; countries include the countries specified in Table 2 except United Arab Emirates, Vietnam, Taiwan, Russia, Belgium and the Central European countries.

Table 13. Import demand for goods with interaction between income and development (pooled across countries)

	Relative price (imports vs domestic)		Income		Income x Advanced		Error-correction adjustment	
Agriculture products	-0.526	***	0.644	***	-0.498	***	-0.293	***
Foodstuffs	-1.083	***	0.441	***	0.411	***	-0.345	***
Mineral products	-0.160	***	1.399	***	-0.366	***	-0.285	***
Chemical/related industries	-0.079	**	0.559	***	-0.049		-0.285	***
Pharmaceuticals	-0.741	***	1.125	***	3.132	***	-0.254	***
Basic manufacturing	-0.446	***	0.855	***	0.088		-0.326	***
Textiles and footwear	-0.596	***	-0.272	***	-0.112		-0.238	***
Boilers, engines and turbines	-0.834	***	0.635	***	0.280	**	-0.266	***
Machinery, equipm. & parts	-1.034	***	0.353	***	0.151	***	-0.420	***
ICT and office machines	-0.698	***	0.606	***	0.518	***	-0.259	***
Electrical machinery, equipm. & parts	0.079	*	0.893	***	0.092		-0.291	***
Transport: Rail	-0.674	***	0.862	***	-0.811	***	-0.475	***
Transport: Vehicles	-0.310	***	0.860	***	-0.111		-0.310	***
Transport: Aerospace	-0.388	***	0.685	***	0.019		-0.451	***
Transport: Shipbuilding	-1.108	***	1.041	***	0.674	**	-0.474	***
Precision instruments	-0.821	***	0.777	***	-0.192	***	-0.334	***
Miscellaneous	-0.763	***	0.332	***	-0.166	*	-0.263	***

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(2,2,2) models; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the world), log import price, and log income; import price equals import product unit value relative to total final expenditure deflator; income equals real total final expenditure; countries include the countries specified in Table 2 except United Arab Emirates, Vietnam, Taiwan, Russia, Belgium and the Central European countries; Countries classified as advanced economies include the North American, Large European, and High-income Asian countries.

Table 14. Elasticities of demand for services imports

	North America		BRIC		Middle-income Asia		High-Income Asia		Middle East		Large European	
Long-run price elasticity												
Services	-0.167		-0.348	*	-0.763	***	-2.846		-1.276	***	0.171	
Services: Transport	-1.555	***	-0.950	***	-0.496	***	-0.180		-0.307		-6.061	
Services: Travel	-1.684	***	-0.786	***	-2.117	***	-29.805		-2.046	***	-1.867	***
Services: Other commercial activities	0.111		-0.044		-0.572	*	-0.883	***	-0.188		-2.435	***
Long-run income elasticity												
Services	1.111	***	0.850	***	0.832	***	-4.176		1.860	***	0.588	**
Services: Transport	0.108		1.105	***	-0.030		-2.323		3.868	***	1.336	
Services: Travel	0.055		0.454		0.861	***	0.835		0.403	*	0.843	***
Services: Other commercial activities	1.620	***	0.527	**	1.221	***	1.262	***	1.197	***	-0.147	
Error-correction adjustment												
Services	-0.292		-0.268	***	-0.143	***	-0.012		-0.225	**	-0.415	***
Services: Transport	-0.307		-0.404		-0.250	*	0.010		-0.072		-0.055	
Services: Travel	-0.379	*	-0.376	*	-0.190		-0.016		-0.182		-0.477	**
Services: Other commercial activities	-0.129		-0.370	**	-0.144	***	-0.150	**	-0.312	**	-0.165	

Notes: Statistical significance indicated as *** p<0.01, ** p<0.05, * p<0.1; ARDL(2,2,2) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the world), log import price and log income; import price equals import price index relative to total final expenditure deflator; income equals real total final expenditure.

Table 15. Elasticities of demand for services imports (pooled across countries)

	Relative price (imports vs domestic)		Income		Income x Advanced		Error-correction adjustment	
Services	-1.179	***	0.812	***			-0.263	***
Services: Transport	-0.797	***	0.192				-0.163	***
Services: Travel	-1.849	***	1.170	***			-0.292	***
Services: Other commercial activities	-0.943	***	1.099	***			-0.283	***
Services	-1.097	***	0.923	***	0.206	***	-0.320	***
Services: Transport	-1.424	***	0.511	***	-0.231	**	-0.212	***
Services: Travel	-1.633	***	0.553	***	1.819	***	-0.213	***
Services: Other commercial activities	-1.176	***	0.918	***	0.605	***	-0.310	***

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(2,2,2) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the world), log import price and log income; import price equals import price index relative to total final expenditure deflator; income equals real total final expenditure; countries include the countries specified in Table 2 except Vietnam, Taiwan, Russia, Belgium, Indonesia and Middle Eastern countries; pooled models further exclude the Central European countries; Hausman test for pooling (p-value) in the model without the interaction between income and stage of development: Services 0.727, Transport 0.015, Travel 0.804, Other commercial activities 0.923; Countries classified as advanced economies include the North American, Large European, and High-income Asian countries.

Table 16. Long-run price elasticities of import demand for goods from the UK

	North America		BRIC		Middle-income Asia		High-income Asia		Middle East		Large European		Central European		Mean
Agriculture products	-0.73	**	0.11		3.01		-1.72	***	-0.12		0.64	**	0.37		0.22
Foodstuffs	-0.67	***	-0.83	***	-0.34				-0.40		-0.49	***	1.29	***	-0.24
Mineral products	-0.44		-0.73		0.50	**	-0.12		-0.15	***	-1.79	***	-1.25	***	-0.57
Chemical/related industries	1.78		-0.66	***	0.38		-0.20		-0.29	**	-1.28	***	-0.22		-0.07
Pharmaceuticals	-0.85	***	-1.56	***	-0.37	***	-0.93	***	-0.56	***	-1.34	***	-1.67	***	-1.04
Basic manufacturing	-0.32		-0.04		-0.06		-0.16		-0.33		-0.47	***	0.04		-0.19
Textiles and footwear	0.66		2.68		-1.52	***	-0.42	**	0.06		-0.53	**	-0.40		0.08
Boilers, engines and turbines	1.06	**	-0.58		-1.46	**	-0.23		-0.80	***	-0.98	***	-1.73	***	-0.67
Machinery, equipm. & parts	-0.55	***	-1.75	***	-2.03	***	-0.04		-0.59	***	-0.88	***	-0.87	***	-0.96
ICT and office machines	0.07		-0.11		-0.98	***	-0.46	*	-0.98	***	0.13		0.09		-0.32
Electrical machinery, equipm. & parts	-1.24	**	-0.83	***	-1.30	***	-0.04		-0.35		-0.05		-0.65	***	-0.64
Transport: Rail	0.31	*	-0.34		-1.79	**	-0.34				-0.48		-0.38		-0.50
Transport: Vehicles	-1.58	***	-1.14	***	0.13		-0.83	***	-0.28		-0.55		-1.56	***	-0.83
Transport: Aerospace	-0.86	*	-0.75	***	0.62	***	0.18		-0.23		-0.08		-0.07		-0.17
Transport: Shipbuilding	0.80		-0.43		-0.71	***	-0.79	**	-0.20		-0.69	***	-1.02	**	-0.44
Precision instruments	-0.30		-0.81	***	-0.59	***	-0.38		-1.04	***	-0.36	***	-0.17		-0.52
Miscellaneous			0.26		-0.12		0.22		-0.03		-0.91	***	-1.49	***	-0.34
MEAN	-0.18		-0.44		-0.39		-0.39		-0.39		-0.59		-0.57		-0.42

Notes: Statistical significance indicated as *** p<0.01, ** p<0.05, * p<0.1; ARDL(1,1,1,1) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the UK), log import price, log relative import price and log income; import price equals import from the UK product unit value relative to total final expenditure deflator; relative import price equals import from the UK product unit value relative to import from the world product unit value; income equals real total final expenditure; country groups include the countries specified in the text, except United Arab Emirates, Vietnam, Taiwan, Belgium and Russia.

Table 17. Long-run relative import price elasticities of import demand for goods from the UK

	North America		BRIC		Middle-income Asia		High-income Asia		Middle East		Large European		Central European		Mean
Agriculture products	-0.39		-1.37	***	-2.74	*	0.18		0.38		-2.37	***	-1.29		-1.08
Foodstuffs	-0.25	*	0.17		1.02	***			-0.21		0.30	**	-1.63	***	-0.10
Mineral products	2.53	**	0.74	***	0.54	***	-0.45	***	-0.04		-0.94	***	-0.45		0.28
Chemical/related industries	-2.78	**	-0.36	*	-0.76	***	-0.50	**	-0.02		0.48	***	-0.22		-0.59
Pharmaceuticals	0.00		-0.16		-0.29	*	-0.01		-0.75	***	0.66	***	1.11	***	0.08
Basic manufacturing	-0.75		0.47	***	-0.03		0.02		-0.06		-0.76	***	0.03		-0.16
Textiles and footwear	-1.21	***	-4.98	**	1.11	***	-0.36		-0.45	**	-0.61	*	-0.31		-0.97
Boilers, engines and turbines	-1.32	***	0.03		-0.04		0.18		0.53	***	-0.66	***	1.23	***	-0.01
Machinery, equipm. & parts	-0.03		-0.21		0.59	***	-0.45	***	-0.07		0.05		-0.05		-0.02
ICT and office machines	-0.09		0.39		0.76	***	-0.24		0.16		-0.49	***	-0.67	***	-0.03
Electrical machinery, equipm. & parts	0.72	**	-0.49	*	0.48	***	-0.12		-1.05	***	-0.44	***	-0.21		-0.16
Transport: Rail	-0.55	**	-0.57		0.88		0.17				-0.18		0.24		0.00
Transport: Vehicles	0.25		0.91	**	-1.03	***	0.33		-0.24		-0.41		-0.14		-0.05
Transport: Aerospace	1.30		0.12		-0.28		-0.39		-0.47		0.03		0.01		0.05
Transport: Shipbuilding	0.99		-0.89	**	-0.22		0.14		-0.66	***	-0.07		0.37		-0.05
Precision instruments	-0.21		-0.56	***	-0.24	**	-0.47	*	0.60	***	-0.29	***	-1.08	***	-0.32
Miscellaneous			0.34		0.33	***	0.02		0.01		-0.17		1.03	***	0.26
MEAN	-0.11		-0.38		0.01		-0.12		-0.15		-0.35		-0.12		-0.17

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(1,1,1,1) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the UK), log import price, log relative import price and log income; import price equals import from the UK product unit value relative to total final expenditure deflator; relative import price equals import from the UK product unit value relative to import from the world product unit value; income equals real total final expenditure; country groups include the countries specified in the text, except United Arab Emirates, Vietnam, Taiwan, Belgium and Russia.

Table 18. Long-run income elasticities of import demand for goods from the UK

	North America		BRIC		Middle-income Asia		High-Income Asia		Middle East		Large European		Central European		Mean
Agriculture products	0.54	*	0.22		1.18	***	0.10		0.08		0.59	***	2.13	***	0.69
Foodstuffs	0.25	***	0.19		0.63	***			-0.40		-0.06		1.04	***	0.28
Mineral products	1.12	**	0.43	***	-0.19		0.82	***	1.05	***	1.43	***	0.38	***	0.72
Chemical/related industries	1.45	***	0.18		0.01		0.14		0.03		0.32	***	0.14		0.32
Pharmaceuticals	1.97	***	1.18	***	0.00		0.50	***	-0.24		0.50	*	2.77	***	0.96
Basic manufacturing	0.48	***	0.18		0.67	***	0.66	***	0.82	**	0.76	***	0.68	***	0.61
Textiles and footwear	0.63	***	1.98	**	0.37	***	-0.10		-0.34		-0.72	***	0.72	*	0.36
Boilers, engines and turbines	0.79		0.61	**	0.47	**	-0.19		0.19	**	0.25		0.36		0.35
Machinery, equipm. & parts	0.60	***	-1.60	***	0.54	***	0.03		0.14		-0.13		0.24		-0.03
ICT and office machines	-0.10		-0.13		-0.03		0.18		0.12		-0.01		0.65	***	0.10
Electrical machinery, equipm. & parts	0.89	***	0.15		0.39	***	-0.20		0.28	*	-0.07		-1.03	***	0.06
Transport: Rail	-0.27		-0.26		0.83	**	0.15				0.66		1.03	**	0.36
Transport: Vehicles	0.22		-1.65	***	0.22		0.08		-0.43		0.26		0.19		-0.16
Transport: Aerospace	0.73		-0.06		-0.91	***	-0.13		-2.03		0.21		1.88	***	-0.04
Transport: Shipbuilding	-0.10		-1.54	***	0.72	**	0.22		0.15		1.03	***	3.37	***	0.55
Precision instruments	0.63	*	0.71	***	0.47	***	0.73	***	0.35	**	0.49	***	0.00		0.48
Miscellaneous			0.95	***	0.38	***	0.83	***	1.00	***	0.67	***	0.74	***	0.76
MEAN	0.61		0.09		0.34		0.24		0.05		0.36		0.90		0.37

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(1,1,1,1) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the UK), log import price, log relative import price and log income; import price equals import from the UK product unit value relative to total final expenditure deflator; relative import price equals import from the UK product unit value relative to import from the world product unit value; income equals real total final expenditure; country groups include the countries specified in the text, except United Arab Emirates, Vietnam, Taiwan, Belgium and Russia.

Table 19. Error-correction adjustment (goods from the UK)

	North America		BRIC		Middle-income Asia		High-Income Asia		Middle East		Large European		Central European		Mean
Agriculture products	-0.45	***	-0.47	***	-0.08		-0.49	***	-0.47	***	-0.38	**	-0.36	**	-0.38
Foodstuffs	-0.48		-0.36	*	-0.20	**			-0.31		-0.31	***	-0.32	**	-0.33
Mineral products	-0.24		-0.57	***	-0.31	*	-0.38		-0.74	*	-0.27		-0.34	*	-0.41
Chemical/related industries	-0.22		-0.22		-0.22	***	-0.31	***	-0.55	**	-0.24	***	-0.32	**	-0.30
Pharmaceuticals	-0.37	***	-0.27		-0.36	**	-0.54	***	-0.41	*	-0.29	*	-0.26	**	-0.36
Basic manufacturing	-0.25	***	-0.38	***	-0.28	***	-0.46	***	-0.22		-0.33	**	-0.49	**	-0.34
Textiles and footwear	-0.21		-0.19		-0.23	**	-0.42	**	-0.29	**	-0.28	**	-0.36	**	-0.28
Boilers, engines and turbines	-0.16		-0.46	**	-0.21		-0.44	***	-0.79	*	-0.12	**	-0.61	**	-0.40
Machinery, equipm. & parts	-0.42		-0.35		-0.27	**	-0.76	***	-0.45	***	-0.32	***	-0.45	***	-0.43
ICT and office machines	-0.62	***	-0.40	***	-0.33	***	-0.36	***	-0.37	***	-0.23	**	-0.61	*	-0.42
Electrical machinery, equipm. & parts	-0.18	*	-0.43	***	-0.56	***	-0.35	***	-0.48	***	-0.43	***	-0.28		-0.39
Transport: Rail	-0.59		-0.53	***	-0.38	***	-0.88	***			-0.37	***	-0.60	***	-0.56
Transport: Vehicles	-0.55	***	-0.43		-0.28	**	-0.49	***	-0.35		-0.28	***	-0.45	***	-0.40
Transport: Aerospace	-0.18		-0.90	***	-0.67	***	-0.29		-0.14		-0.36	***	-0.51	***	-0.43
Transport: Shipbuilding	-0.29		-0.58	***	-0.48	***	-0.92	***	-0.63	***	-0.58	***	-0.61	***	-0.58
Precision instruments	-0.36	**	-0.40	**	-0.40	***	-0.49	***	-0.52	**	-0.42	***	-0.31		-0.41
Miscellaneous			-0.38	**	-0.17		-0.72	***	-0.34	**	-0.25	*	-0.37	**	-0.37
MEAN	-0.35		-0.43		-0.32		-0.52		-0.44		-0.32		-0.43		-0.40

Notes: Statistical significance indicated as *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; ARDL(1,1,1,1) models unless specified otherwise in the text; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the UK), log import price, log relative import price and log income; import price equals import from the UK product unit value relative to total final expenditure deflator; relative import price equals import from the UK product unit value relative to import from the world product unit value; income equals real total final expenditure; country groups include the countries specified in the text, except United Arab Emirates, Vietnam, Taiwan, Belgium and Russia.

Table 20. Import demand for goods from the UK (pooled across countries)

	Relative price (uk imports vs domestic)		Relative import price (uk vs world)		Income		Error-correction adjustment		Hausman test for pooling (p-value)
Agriculture products	-0.461	***	-0.952	***	0.020		-0.307	***	0.109
Foodstuffs	-0.081		-0.211		0.437	***	-0.216	***	0.140
Mineral products	-1.407	***	-1.577	***	1.087	***	-0.148	**	0.287
Chemical/related industries	-0.462	***	-0.872	***	0.927	***	-0.098	**	0.001
Pharmaceuticals	-0.987	***	0.140		0.401	***	-0.261	***	0.797
Basic manufacturing	-0.821	***	-0.097		0.082		-0.307	***	0.743
Textiles and footwear	-0.824	***	-0.157		-0.963	***	-0.243	***	0.163
Boilers, engines and turbines	-0.241	***	-0.321	**	0.394	***	-0.299	***	0.220
Machinery, equipm. & part	-1.169	***	-0.022		-0.104		-0.315	***	0.478
ICT and office machines	-0.125		0.147		-1.217	***	-0.180	***	0.014
Electrical machinery, equipm. & parts	-1.272	***	0.170	*	-0.120		-0.362	***	0.478
Transport: Rail	-0.709	***	-0.127		0.871	***	-0.570	***	0.401
Transport: Vehicles	-1.279	***	0.526	***	0.275	*	-0.341	***	0.878
Transport: Aerospace	-0.729	***	0.077		0.031		-0.471	***	0.615
Transport: Shipbuilding	-0.828	***	-0.146	*	0.146		-0.644	***	0.931
Precision instruments	-0.270	**	-0.286	***	0.358	***	-0.381	***	0.755
Miscellaneous	-1.109	***	0.028		0.891	***	-0.315	***	0.763

Notes: Statistical significance indicated as *** p<0.01, ** p<0.05, * p<0.1; ARDL(1,1,1,1) models (except Mineral products, Electrical machinery, and Precision instruments, which are ARDL(2,2,2,2)); pooled mean group estimates including cross-sectional means; long run relationship between log imports, log import price, log relative import prices and log income; relative price equals uk export product unit value relative to total final expenditure deflator; relative import price equals uk export product unit value relative to world export product unit value; income equals real total final expenditure; countries include the countries specified in Table 2 except United Arab Emirates, Vietnam, Taiwan, Russia, Belgium and the Central European countries.

Table 21. Import demand for goods from the UK with interaction between income and development (pooled across countries)

	Relative price (uk imports vs domestic)		Relative import price (uk vs world)		Income		Income x Advanced		Error-correction adjustment	
Agriculture products	-0.46	**	-0.79	***	0.06		0.46	***	-0.33	***
Foodstuffs	0.02		-0.31	**	0.46	***	-0.60	***	-0.18	***
Mineral products	-1.50	***	-1.30	***	2.53	***	-3.45	***	-0.11	
Chemical/related industries	-0.87	***	0.18	***	-0.13	***	-0.28	***	-0.19	***
Pharmaceuticals	-0.96	***	0.12	*	0.49	***	1.67	***	-0.31	***
Basic manufacturing	-0.80	***	-0.09		0.18	*	-0.15		-0.31	***
Textiles and footwear	-0.52	***	-0.66	***	0.18		-1.46	***	-0.33	***
Boilers, engines and turbines	-0.27	***	-0.33	***	0.40	***	0.15		-0.30	***
Machinery, equipm. & parts	-1.18	***	-0.01		-0.07		-0.06		-0.32	***
ICT and office machines	-0.92	***	0.68	***	0.32	**	-1.41	***	-0.27	***
Electrical machinery, equipm. & parts	-1.04	***	-0.20	**	0.42	***	-1.89	***	-0.36	***
Transport: Rail	-0.80	***	-0.08		0.16		0.93	***	-0.59	***
Transport: Vehicles	-1.20	***	0.54	***	0.38	***	-0.23		-0.34	***
Transport: Aerospace	-0.69	***	0.01		0.02		-0.34		-0.46	***
Transport: Shipbuilding	-0.82	***	-0.15	*	0.30		-0.25		-0.65	***
Precision instruments	-1.32	***	0.58	***	-0.04		-0.73	***	-0.35	***
Miscellaneous	-1.19	***	0.17	**	0.93	***	-0.46	***	-0.33	***

Notes: Statistical significance indicated as *** p<0.01, ** p<0.05, * p<0.1; ARDL(1,1,1,1) models (except Mineral products, Electrical machinery, and Precision instruments, which are ARDL(2,2,2,2)); pooled mean group estimates including cross-sectional means; long run relationship between log imports, log import price, log relative import prices and log income; relative price equals uk export product unit value relative to total final expenditure deflator; relative import price equals uk export product unit value relative to world export product unit value; income equals real total final expenditure; countries include the countries specified in Table 2 except United Arab Emirates, Vietnam, Taiwan, Russia, Belgium and the Central European countries; Countries classified as advanced economies include the North American, Large European, and High-income Asian countries.

Table 22. Import demand for goods with disaggregate expenditure components (pooled across countries)

	Relative price (imports vs domestic)		Consumption		Investment		Exports		Error-correction adjustment		Hausman test for pooling (p-value)
Agriculture products	-0.27	***	1.10	***	0.02		-0.32	***	-0.31	***	0.24
Foodstuffs	-0.69	***	0.35	***	0.09		0.30	***	-0.26	***	0.44
Mineral products	-0.05	*	1.47	***	-0.09	*	-0.02		-0.36	***	0.93
Chemical/related industries	-0.56	***	0.40	***	-0.25	***	0.68	***	-0.33	***	0.66
Pharmaceuticals	-0.42	***	0.33	**	-0.30	***	0.82	***	-0.21	***	0.14
Basic manufacturing	-0.91	***	0.49	***	-0.17	**	0.38	***	-0.24	***	0.38
Textiles and footwear	-0.55	***	-0.11		-0.04		0.14	**	-0.25	***	0.96
Boilers, engines and turbines	-0.74	***	-0.80	***	0.41	***	0.59	***	-0.29	***	0.86
Machinery, equipm. & parts	-0.94	***	0.30	**	0.29	***	0.04		-0.33	***	0.49
ICT and office machines	-0.22	***	0.45	***	-0.24	***	0.93	***	-0.18	***	0.53
Electrical machinery, equipm. & parts	-0.40	***	0.11		-0.11		0.93	***	-0.31	***	0.71
Transport: Rail	-0.55	***	-1.08	**	1.67	***	-0.37	*	-0.51	***	0.56
Transport: Vehicles	-0.81	***	0.27	*	-0.01		0.85	***	-0.35	***	0.64
Transport: Aerospace	-0.77	***	0.82	***	-0.40	**	0.44	***	-0.48	***	0.10
Transport: Shipbuilding	-1.07	***	-1.87	***	1.12	***	0.79	***	-0.57	***	0.90
Precision instruments	-0.81	***	0.15		0.31	***	0.13	*	-0.34	***	0.52
Miscellaneous	-0.76	***	0.65	***	0.07	**	0.08		-0.30	***	0.68

Notes: Statistical significance indicated as *** p<0.01, ** p<0.05, * p<0.1; ARDL(1,1,1,1) models; pooled mean group estimates including cross-sectional means; long run relationship between log imports (from the world), log import price, log consumption expenditure, log gross fixed capital formation, and log exports; import price equals import product unit value relative to total final expenditure deflator; countries include the countries specified in Table 2 except United Arab Emirates, Vietnam, Taiwan, Russia, Belgium and the Central European countries.

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A1. Product groups and SITC, Revision 2, 3-digit codes

1 Agriculture products (animal and vegetable)

- 1 Live animals chiefly for food
- 941 Animals, live, nes, (including zoo animals, pets, insects, etc)
- 11 Meat and edible meat offal, fresh, chilled or frozen
- 411 Animal oils and fats
- 12 Meat and edible meat offal, in brine, dried, salted or smoked
- 34 Fish, fresh, chilled or frozen
- 35 Fish, dried, salted or in brine; smoked fish
- 36 Crustaceans and molluscs, fresh, chilled, frozen, salted, etc
- 22 Milk and cream
- 23 Butter
- 24 Cheese and curd
- 25 Eggs, birds', and egg yolks, fresh, dried or preserved
- 291 Crude animal materials, nes
- 292 Crude vegetable materials, nes
- 54 Vegetables, fresh or simply preserved; roots and tubers, nes
- 57 Fruit and nuts, fresh, dried
- 71 Coffee and coffee substitutes
- 74 Tea and mate

- 75 Spices
- 41 Wheat and meslin, unmilled
- 45 Cereals, unmilled
- 43 Barley, unmilled
- 44 Maize, unmilled
- 42 Rice
- 46 Meal and flour of wheat and flour of meslin
- 47 Other cereal meals and flour
- 222 Seeds and oleaginous fruit, whole or broken, for 'soft' fixed oil
- 223 Seeds and oleaginous fruit, whole or broken, for other fixed oils
- 91 Margarine and shortening
- 423 Fixed vegetable oils, soft, crude refined or purified
- 424 Other fixed vegetable oils, fluid or solid, crude, refined
- 431 Animal and vegetable oils and fats, processed, and waxes

2 Foodstuffs

- 14 Meat and edible meat offal, prepared, preserved, nes; fish extracts
- 37 Fish, crustaceans and molluscs, prepared or preserved, nes
- 61 Sugar and honey
- 62 Sugar confectionery and preparations, non-chocolate
- 72 Cocoa
- 81 Feeding stuff for animals (not including unmilled cereals)

- 73 Chocolate and other preparations containing cocoa, nes
- 48 Cereal, flour or starch preparations of fruits or vegetables
- 98 Edible products and preparations, nes
- 56 Vegetables, roots and tubers, prepared or preserved, nes
- 58 Fruit, preserved, and fruits preparations
- 111 Non-alcoholic beverages, nes
- 112 Alcoholic beverages
- 121 Tobacco unmanufactured; tobacco refuse
- 122 Tobacco, manufactured

3 Mineral products

- 278 Other crude minerals
- 274 Sulphur and unroasted iron pyrites
- 273 Stone, sand and gravel
- 271 Fertilizers, crude
- 281 Iron ore and concentrates
- 287 Ores and concentrates of base metals, nes
- 286 Ores and concentrates of uranium and thorium
- 322 Coal, lignite and peat
- 323 Briquettes; coke and semi-coke; lignite or peat; retort carbon
- 341 Gas, natural and manufactured
- 335 Residual petroleum products, nes and related materials

- 333 Crude petroleum and oils obtained from bituminous minerals
- 334 Petroleum products, refined
- 351 Electric current

4 Chemicals

- 522 Inorganic chemical elements, oxides and halogen salts
- 523 Other inorganic chemicals; compounds of precious metals
- 524 Radioactive and associated material
- 688 Uranium depleted in U235, thorium, and alloys, nes; waste and scrap
- 511 Hydrocarbons, nes, and derivatives
- 512 Alcohols, phenols etc, and their derivatives
- 516 Other organic chemicals
- 513 Carboxylic acids, and their derivatives
- 514 Nitrogen-function compounds
- 515 Organo-inorganic and heterocyclic compounds
- 562 Fertilizers, manufactured
- 532 Dyeing and tanning extracts, and synthetic tanning materials
- 531 Synthetic dye, natural indigo, lakes
- 533 Pigments, paints, varnishes and related materials
- 551 Essential oils, perfume and flavour materials
- 553 Perfumery, cosmetics, toilet preparations, etc
- 554 Soap, cleansing and polishing preparations

- 598 Miscellaneous chemical products, nes
- 592 Starches, insulin and wheat gluten; albuminoidal substances; glues
- 572 Explosives and pyrotechnic products
- 882 Photographic and cinematographic supplies
- 883 Cinematograph film, exposed and developed
- 591 Pesticides, disinfectants

5 Pharmaceuticals

- 541 Medicinal and pharmaceutical products

6 Basic manufacturing

- 583 Polymerization and copolymerization products
- 582 Condensation, polycondensation and polyaddition products
- 584 Regenerated cellulose; derivatives of cellulose; vulcanized fibre
- 585 Other artificial resins and plastic materials
- 893 Articles, nes of plastic materials
- 892 Printed matter
- 232 Natural rubber latex; rubber and gums
- 233 Synthetic rubber, latex, etc; waste, scrap of unhardened rubber
- 621 Materials of rubber
- 628 Articles of rubber, nes
- 625 Rubber tires, tire cases, inner and flaps, for wheels of all kinds

- 245 Fuel wood and wood charcoal
- 246 Pulpwood (including chips and wood waste)
- 247 Other wood in the rough or roughly squared
- 634 Veneers, plywood, "improved" wood and other wood, worked, nes
- 248 Wood, simply worked, and railway sleepers of wood
- 641 Paper and paperboard
- 635 Wood manufactures, nes
- 244 Cork, natural, raw and waste
- 633 Cork manufactures
- 251 Pulp and waste paper
- 642 Paper and paperboard, precut, and articles of paper or paperboard
- 661 Lime, cement, and fabricated construction materials
- 663 Mineral manufactures, nes
- 662 Clay and refractory construction materials
- 666 Pottery
- 664 Glass
- 665 Glassware
- 667 Pearl, precious and semi-precious stones, unworked or worked
- 277 Natural abrasives, nes
- 681 Silver, platinum and other metals of the platinum group
- 971 Gold, non-monetary (excluding gold ores and concentrates)
- 289 Ores and concentrates of precious metals, waste, scrap

- 897 Gold, silver ware, jewelry and articles of precious materials, nes
- 961 Coin (other than gold coin), not being legal tender
- 671 Pig and sponge iron, spiegeleisen, etc, and ferro-alloys
- 282 Waste and scrap metal of iron or steel
- 672 Ingots and other primary forms, of iron or steel
- 674 Universals, plates, and sheets, of iron or steel
- 673 Iron and steel bars, rods, shapes and sections
- 677 Iron or steel wire (excluding wire rod), not insulated
- 691 Structures and parts, nes, of iron, steel or aluminium
- 676 Rails and railway track construction materials, of iron or steel
- 678 Tube, pipes and fittings, of iron or steel
- 692 Metal containers for storage and transport
- 693 Wire products (excluding insulated electrical wire); fencing grills
- 699 Manufactures of base metal, nes
- 694 Nails, screws, nuts, bolts, rivets, etc, of iron, steel or copper
- 697 Household equipment of base metal, nes
- 679 Iron, steel casting, forging and stamping, in the rough state, nes
- 675 Hoop and strip of iron or steel, hot-rolled or cold-rolled
- 682 Copper
- 288 Non-ferrous base metal waste and scrap, nes
- 683 Nickel
- 684 Aluminium

- 685 Lead
- 686 Zinc
- 687 Tin
- 689 Miscellaneous non-ferrous base metals, employed in metallurgy
- 695 Tools for use in the hand or in machines
- 696 Cutlery

7 Textiles and footwear

- 211 Hides and skins, excluding furs, raw
- 611 Leather
- 612 Manufactures of leather or of composition leather, nes; etc
- 831 Travel goods, handbags etc, of leather, plastics, textile, others
- 848 Articles of apparel, clothing accessories, non-textile, headgear
- 212 Furskins, raw
- 613 Furskins, tanned or dressed; pieces of furskin, tanned or dressed
- 261 Silk
- 651 Textile yarn
- 654 Textile fabrics, woven, other than cotton or man-made fibres
- 268 Wool and other animal hair (excluding tops)
- 263 Cotton
- 652 Cotton fabrics, woven (not including narrow or special fabrics)
- 265 Vegetable textile fibres, excluding cotton, jute, and waste

- 264 Jute, other textile bast fibres, nes, raw, processed but not spun
- 653 Fabrics, woven, of man-made fibres (not narrow or special fabrics)
- 266 Synthetic fibres suitable for spinning
- 267 Other man-made fibres suitable for spinning, and waste
- 657 Special textile fabrics and related products
- 656 Tulle, lace, embroidery, ribbons, trimmings and other small wares
- 659 Floor coverings, etc
- 658 Made-up articles, wholly or chiefly of textile materials, nes
- 655 Knitted or crocheted fabrics (including tubular, etc, fabrics)
- 845 Outerwear knitted or crocheted, not elastic nor rubberized
- 846 Under-garments, knitted or crocheted
- 847 Clothing accessories, of textile fabrics, nes
- 842 Men's and boys' outerwear, textile fabrics not knitted or crocheted
- 843 Womens, girls, infants outerwear, textile, not knitted or crocheted
- 844 Under garments of textile fabrics, not knitted or crocheted
- 269 Old clothing and other old textile articles; rags
- 851 Footwear

8 Boilers, Engines and Turbines

- 711 Steam boilers and auxiliary plant; and parts thereof, nes
- 712 Steam engines, turbines
- 713 Internal combustion piston engines, and parts thereof, nes

- 714 Engines and motors, non-electric; parts, nes
- 718 Other power generating machinery and parts thereof, nes

9 Machinery, Equipment and Parts

- 721 Agricultural machinery (excluding tractors) and parts thereof, nes
- 723 Civil engineering, contractors' plant and equipment and parts, nes
- 724 Textile and leather machinery, and parts thereof, nes
- 725 Paper and paper manufacture machinery, and parts thereof, nes
- 726 Printing, bookbinding machinery, and parts thereof, nes
- 727 Food-processing machines (non-domestic) and parts thereof, nes
- 728 Other machinery, equipment, for specialized industries; parts nes
- 736 Metalworking machine-tools, parts and accessories thereof, nes
- 737 Metalworking machinery (other than machine-tools), and parts, nes
- 741 Heating and cooling equipment and parts thereof, nes
- 742 Pumps for liquids; liquid elevators; and parts thereof, nes
- 743 Pumps, compressors; centrifuges; filtering apparatus; etc, parts
- 744 Mechanical handling equipment, and parts thereof, nes
- 745 Other non-electric machinery, tools and mechanical apparatus, nes
- 749 Non-electric parts and accessories of machinery, nes

10 ICT and Office Equipment

- 751 Office machines

- 752 Automatic data processing machines and units thereof
- 759 Parts, nes of and accessories for machines of headings 751 or 752
- 764 Telecommunication equipment, nes; parts and accessories, nes
- 771 Gramophones, dictating machines and other sound recorders
- 773 Radio-broadcast receivers
- 775 Television receivers

11 Electrical Machinery and Parts

- 716 Rotating electric plant and parts thereof, nes
- 761 Electric power machinery, and parts thereof, nes
- 762 Electrical machinery and apparatus, nes
- 763 Household type equipment, nes
- 772 Musical instruments, parts and accessories thereof
- 776 Electrical apparatus for making and breaking electrical circuits
- 778 Thermionic, microcircuits, transistors, valves, etc
- 884 Equipment for distribution of electricity
- 898 Optical goods nes

12 Transport: Rail

- 791 Railway vehicles and associated equipment

13 Transport: Vehicles

- 722 Tractors (other than those falling in heading 74411 and 7832)
- 783 Road motor vehicles, nes
- 781 Passenger motor vehicles (excluding buses)
- 782 Lorries and special purposes motor vehicles
- 784 Motor vehicle parts and accessories, nes
- 785 Cycles, scooters, motorized or not; invalid carriages
- 786 Trailers, and other vehicles, not motorized, nes

14 Transport: Aerospace

- 792 Aircraft and associated equipment, and parts thereof, nes

15 Transport: Shipbuilding

- 793 Ships, boats and floating structures

16 Precision instruments

- 871 Optical instruments and apparatus
- 881 Photographic apparatus and equipment, nes
- 874 Measuring, checking, analysis, controlling instruments, nes, parts
- 774 Electro-medical and radiological equipment
- 872 Medical instruments and appliances, nes
- 873 Meters and counters, nes
- 885 Watches and clocks

17 Miscellaneous manufacturing and other

951 Armoured fighting vehicles, war firearms, ammunition, parts, nes

894 Baby carriages, toys, games and sporting goods

821 Furniture and parts thereof

812 Sanitary, plumbing, heating, lighting fixtures and fittings, nes

899 Other miscellaneous manufactured articles, nes

895 Office and stationary supplies, nes

896 Works of art, collectors' pieces and antiques

A2. Diagnostic tests

A2.1. Serial correlation tests for goods imports from the world models

	North America	BRIC	High-income Asia	Middle-income Asia	Middle East	Large European	Central European
Agriculture products	0.36	0.49	0.07	0.37	0.03	0.81	0.09
Foodstuffs	0.19	0.54	0.69	0.94	0.54	0.53	0.05
Mineral products	0.53	0.36	0.43	0.59	0.70	0.26	0.17
Chemical/related industries	0.66	0.10	0.02	0.17	0.89	0.96	0.02
Pharmaceuticals	0.27	0.82	0.82	0.19	0.31	0.29	0.41
Basic manufacturing	0.58	0.54	0.60	0.97	0.98	0.10	1.00
Textiles and footwear	0.05	0.25	0.81	0.75	0.60	0.18	0.00
Boilers, engines and turbines	0.93	0.65	0.62	0.71	0.78	0.49	0.00
Machinery, equipm. & parts	0.67	0.02	0.95	0.65	0.48	0.58	0.66
ICT and office machines	0.95	0.58	0.15	0.97	0.38	0.78	0.07
Electrical machinery, equipm. & parts	0.85	0.35	0.98	0.71	0.25	0.59	0.00
Transport: Rail	0.84	0.78	0.55	0.93	0.24	0.35	0.69
Transport: Vehicles	0.14	0.40	0.35	0.09	0.68	0.45	0.45
Transport: Aerospace	0.62	0.36	0.33	0.35	0.41	0.77	0.52
Transport: Shipbuilding	0.95	0.16	0.13	0.38	0.44	0.31	0.51
Precision instruments	0.88	0.77	0.78	0.69	0.82	0.69	0.28
Miscellaneous	0.73	0.72	0.25	0.40	0.29	0.20	0.09

Notes: p-values of first order autocorrelation from the models reported in tables 9-11.

A2.2. R-squared values for goods imports from the world models

	North America	BRIC	High-income Asia	Middle-income Asia	Middle East	Large European	Central European
Agriculture products	0.913	0.758	0.547	0.797	0.779	0.740	0.929
Foodstuffs	0.870	0.927	0.840	0.721	0.762	0.861	0.968
Mineral products	0.927	0.921	0.600	0.730	0.831	0.645	0.721
Chemical/related industries	0.940	0.731	0.812	0.960	0.865	0.865	0.852
Pharmaceuticals	0.980	0.786	0.898	0.927	0.735	0.961	0.910
Basic manufacturing	0.947	0.940	0.875	0.961	0.773	0.925	0.955
Textiles and footwear	0.922	0.726	0.862	0.835	0.693	0.852	0.933
Boilers, engines and turbines	0.992	0.846	0.711	0.830	0.851	0.804	0.905
Machinery, equipm. & parts	0.956	0.871	0.893	0.889	0.775	0.934	0.971
ICT and office machines	0.976	0.743	0.863	0.809	0.767	0.892	0.961
Electrical machinery, equipm. & parts	0.930	0.805	0.886	0.826	0.666	0.926	0.955
Transport: Rail	0.914	0.663	0.707	0.727	0.570	0.579	0.819
Transport: Vehicles	0.944	0.677	0.736	0.922	0.765	0.834	0.949
Transport: Aerospace	0.875	0.778	0.763	0.730	0.856	0.761	0.798
Transport: Shipbuilding	0.825	0.899	0.694	0.705	0.832	0.853	0.832
Precision instruments	0.922	0.859	0.866	0.913	0.845	0.972	0.946
Miscellaneous	0.980	0.884	0.858	0.944	0.902	0.871	0.970

Notes: R-squared of the models are reported in tables 9-11.

A2.3. Serial correlation tests for services imports from the world models

	North America	BRIC	High-income Asia	Middle-income Asia	Large European	Central European
Services	0.474	0.475	0.044	0.731	0.426	0.129
Services: Transport	0.405	0.350	0.997	0.041	0.308	0.096
Services: Travel	0.155	0.821	0.746	0.518	0.685	0.403
Services: Other commercial activities	0.916	0.034	0.867	0.436	0.728	0.080

Notes: p-values of first order autocorrelation from the models reported in table 14.

A2.4. R-squared values for services imports from the world models

	North America	BRIC	High-income Asia	Middle-income Asia	Large European	Central European
Services	0.812	0.804	0.916	0.940	0.913	0.861
Services: Transport	0.909	0.750	0.855	0.963	0.788	0.800
Services: Travel	0.863	0.773	0.830	0.871	0.830	0.794
Services: Other commercial activities	0.793	0.830	0.860	0.853	0.823	0.773

Notes: R-squared of the models reported in table 14.

A2.5. Serial correlation tests for goods imports from the UK models

	North America	BRIC	High-income Asia	Middle-income Asia	Middle East	Large European	Central European
Agriculture products	0.91	0.38	0.06	0.54	0.04	0.03	0.76
Foodstuffs	0.99	0.70	0.36		0.64	0.89	0.04
Mineral products	0.00	0.65	0.01	0.09	0.93	0.62	0.72
Chemical/related industries	0.46	0.53	0.79	0.28	0.61	0.76	0.11
Pharmaceuticals	0.07	0.94	0.38	0.22	0.46	0.33	0.89
Basic manufacturing	0.73	0.09	0.83	0.50	0.09	0.72	0.06
Textiles and footwear	0.94	0.01	0.45	0.21	0.46	0.34	0.08
Boilers, engines and turbines	0.51	0.17	0.07	0.93	0.59	0.46	0.71
Machinery, equipm. & parts	0.36	0.63	0.57	0.77	0.34	0.27	0.39
ICT and office machines	0.12	0.01	0.29	0.38	0.37	0.22	0.16
Electrical machinery, equipm. & parts	0.00	0.22	0.78	0.70	0.59	0.60	0.41
Transport: Rail	0.16	0.76	0.56	0.52		0.24	0.24
Transport: Vehicles	0.44	0.35	0.77	0.80	0.08	0.38	0.42
Transport: Aerospace	0.86	0.83	0.81	0.03	0.71	0.74	0.17
Transport: Shipbuilding	0.06	0.72	0.15	0.58	0.94	0.20	0.48
Precision instruments	0.18	0.61	0.25	0.10	0.07	0.33	0.05
Miscellaneous		0.49	0.03	0.15	0.36	0.44	0.21

Notes: p-values of first order autocorrelation from the models reported in tables 16-19.

A2.6. R-squared values for goods imports from the UK models

	North America	BRIC	High-income Asia	Middle-income Asia	Middle East	Large European	Central European
Agriculture products	0.933	0.834	0.827	0.864	0.718	0.911	0.799
Foodstuffs	0.940	0.916	0.818		0.930	0.863	0.897
Mineral products	0.951	0.750	0.761	0.865	0.751	0.593	0.854
Chemical/related industries	0.900	0.968	0.942	0.914	0.913	0.813	0.873
Pharmaceuticals	0.816	0.897	0.862	0.941	0.729	0.866	0.926
Basic manufacturing	0.991	0.925	0.917	0.912	0.840	0.886	0.877
Textiles and footwear	0.968	0.851	0.864	0.813	0.808	0.710	0.826
Boilers, engines and turbines	0.915	0.775	0.699	0.707	0.761	0.754	0.909
Machinery, equipm. & parts	0.968	0.885	0.901	0.785	0.760	0.891	0.842
ICT and office machines	0.882	0.787	0.702	0.834	0.827	0.793	0.863
Electrical machinery, equipm. & parts	0.901	0.814	0.873	0.773	0.709	0.792	0.949
Transport: Rail	0.842	0.848	0.570	0.747		0.656	0.802
Transport: Vehicles	0.894	0.796	0.732	0.756	0.750	0.641	0.736
Transport: Aerospace	0.839	0.735	0.721	0.802	0.651	0.611	0.844
Transport: Shipbuilding	0.963	0.829	0.709	0.696	0.760	0.837	0.784
Precision instruments	0.903	0.720	0.844	0.858	0.704	0.800	0.909
Miscellaneous		0.882	0.755	0.688	0.798	0.736	0.848

Notes: R-squared of the models reported in tables 16-19.

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