



Asymmetries in international trade in goods statistics: UK measured against non-EU partners, 2015 to 2017

About this release

This release includes commentary on the asymmetries between the UK and the UK's top trading partners. Detailed tables of the asymmetries can be found at www.uktradeinfo.com

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Summary

- Asymmetries are the differences between the published trade statistics of the reporting country and its partner countries. Each country collects data on their own international trade-in-goods for both imports and exports, simplistically the 'mirror flow' collected by the partner countries should match (i.e. one country's export should mirror the partner countries import). In reality, it is often the case that the figures do not match and this is referred to as an 'asymmetry'.
- The total asymmetry in 2017 between UK reported imports from the UK's largest non-EU partners and their reported exports to the UK was -\$0.5bn. The asymmetry was -\$5.7bn in 2015, and -\$4.8bn in 2016.
- The total asymmetry in 2017 between UK reported exports to the UK's largest non-EU partners and their reported imports from the UK was \$11bn. The asymmetry was \$23bn in 2015, and \$11bn in 2016.
- The relative asymmetry in 2017 between UK reported imports from the UK's largest non-EU partners and their reported exports to the UK was -0.2%. The asymmetry was -2.4% in 2015, and -1.8% in 2016.
- The relative asymmetry in 2017 between UK reported exports from the UK's largest non-EU partners and their reported imports to the UK was 6.3%, the asymmetry was 12% in 2015, and 6.8% in 2016.

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1. Introduction

Asymmetries are the differences between the published trade statistics of the reporting country and its partner countries. Each country collects data on their own international trade-in-goods for both imports and exports, simplistically the 'mirror flow' collected by the partner countries should match i.e. one country's export should mirror the partner countries import. In reality, it is often the case that the figures do not match and this is referred to as an 'asymmetry'.

For example, there may be a difference between what the United Kingdom (UK) records as imports from China, and what China records as exports to the UK. This difference or asymmetry can be measured. Further information on how asymmetries are measured can be found in Annex 1: Measures of asymmetry.

This paper is an asymmetry study covering trade in goods between the UK and its largest non-EU partner countries (measured by total value of imports and exports) for the calendar years 2015, 2016 and 2017. The data used in the compilation of this report has been extracted from United Nations International Trade Statistics [Database](#). Additional tables supporting this paper can be found in the accompanying statistical dataset.

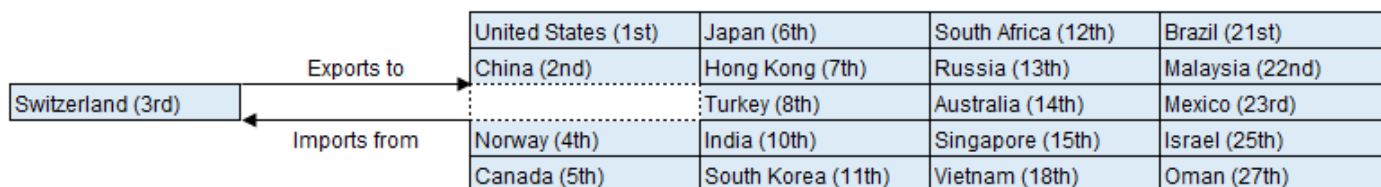
International trade in goods data detailing trade between the UK and non-EU countries are collected from UK Customs entries made by importing and exporting businesses via the Customs Handling of Import and Export Freight (CHIEF) system.

Both ONS and HMRC are undertaking a series of investigations into asymmetries. Previously published papers in this series are:

- **Article 1** - [Asymmetries in trade data - A UK perspective:](#)
Published on 13th July 2017, by ONS
- **Article 2** - [Trade asymmetries between the UK and EU Member States, 2014 to 2016:](#)
Published on 7th November 2017, by HMRC
- **Article 3** - [Asymmetries in trade data - diving deeper into UK bilateral trade data:](#)
Published on 29th January 2018, by ONS
- **Article 4** - [Asymmetries in international trade in goods statistics: UK measured against its non-EU partners, 2014 to 2016](#)
Published on 15th May 2018, by HMRC
- **Article 5** - [Asymmetries in trade data: extending analysis of UK bilateral trade data](#)
Published on 30th August 2018, by ONS
- **Article 6** - [Asymmetries in international trade in goods statistics: UK measured against its non-EU partners, 2015 to 2017](#)
Published on 13th November 2018, by HMRC

2. Trade in goods asymmetries between the UK's largest trading partners by trade value, 2015 to 2017

This section explores the asymmetries of the UK's top 20 trading partners by value (according to the available data from the UN Comtrade database), comparing each partner's trade flow against the mirror flow of the top 20 block. For example, China's imports from the UK's top 20 block against exports to China from the UK's top 20 block, this is shown in diagram below.



At the time of extracting the data for analysis (12 April 2019), some of the UK's top 20 trading partners did not have published data for 2017. These trading partners have been replaced with the UK's next largest partner where data is available. Also Bangladesh (24th) and Nigeria (26th) had no data for 2016, and were replaced with Israel and Oman.

Country	Last published data	Replaced with
UAE (9th)	2016	Brazil (21st)
Saudi Arabia (16th)	2016	Malaysia (22nd)
Qatar (17th)	2016	Mexico (23rd)
Taiwan (19th)	No data	Israel (25th)
Thailand (20th)	2016	Oman (27th)

2.1 Imports: UK's largest non-EU trading partner's share of absolute asymmetries

For each of these 21 trading partners, Graph 2.1 shows the import absolute asymmetries between each partner and the remaining block, for the years 2015 to 2017, together with its average import value with this block.

- The top five countries by average value of imports between 2015 and 2017 were USA, China, Hong Kong, Japan and Canada. These accounted for 59% of the total absolute asymmetry for imports in 2017. Within this, the four largest importers (USA, China, Hong Kong and Japan) also had the four largest shares of total absolute asymmetry, accounting for 57% between them in 2017. The USA accounted for 23%. Despite Canada being the 5th largest importer, it only accounted for 1.8%.
- The smallest five countries by average value of imports were Brazil, South Africa, Israel, Norway, and Oman, they accounted for 9.2% of the total absolute asymmetry in 2017. Of these, Oman had the smallest average import value at \$6.7bn and accounted for 2.1% of the absolute asymmetry.
- A notable decrease was seen for Hong Kong over the three year time series. In 2015, Hong Kong had the largest share of the total absolute asymmetry of 21%, this decreased to 14% in 2016, and further still to 10% in 2017, the 4th largest share of total absolute asymmetry.
- Overall, the UK's share of absolute asymmetry remained consistently low. The UK had a share of 0.4% in 2015. This decreased to 0.1% in 2016, this increased to 1.0% in 2017, this equated to the 5th smallest average share of absolute asymmetry, despite the UK having the 8th largest average import value.

2.2 Imports: UK's largest non-EU trading partner's relative asymmetries

Graph 2.2 shows the imports relative asymmetries between each partner within this block for the years 2015 to 2017.

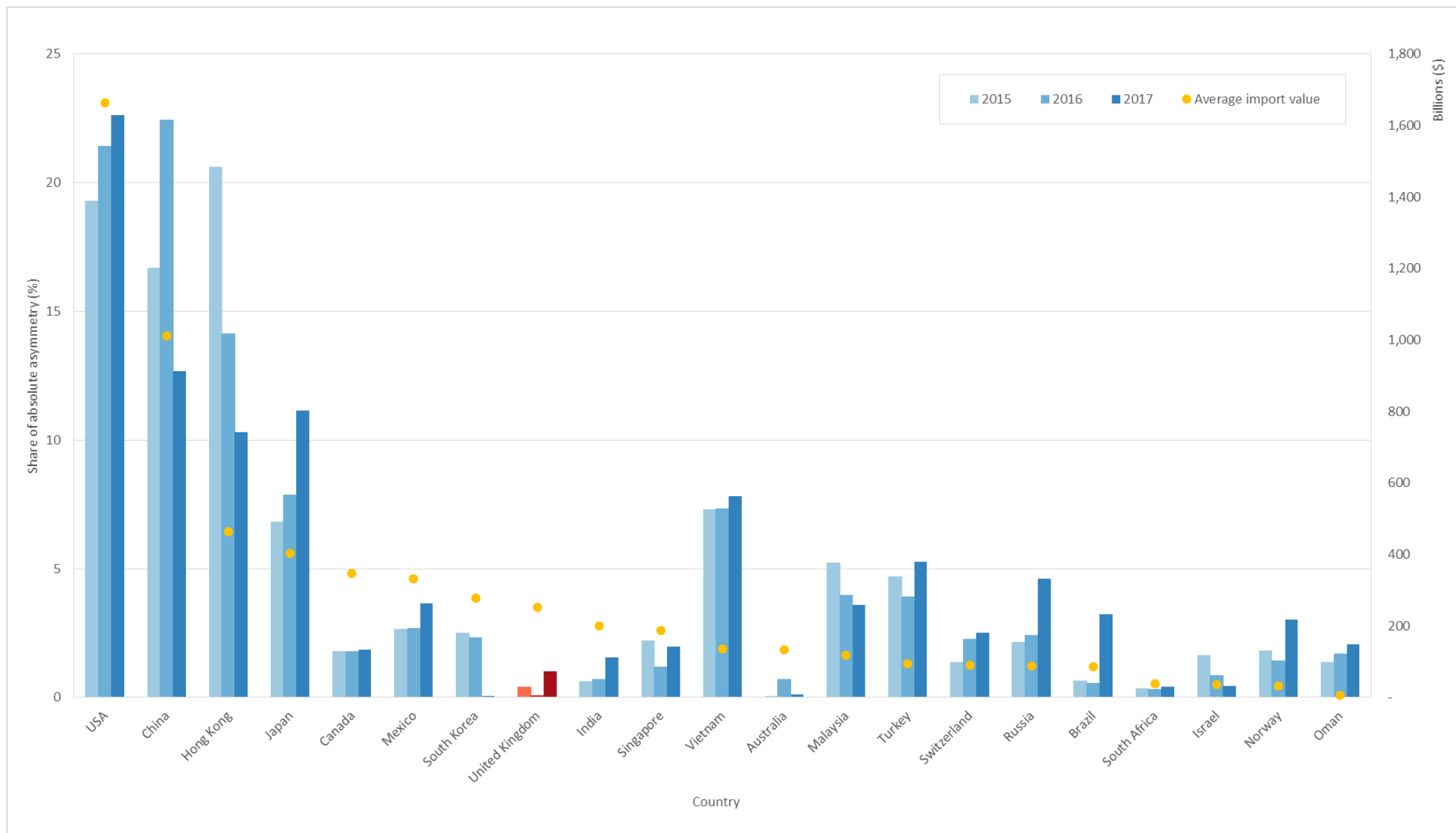
- As seen in graph 2.1 the USA was the largest importer during this period, however its relative asymmetry across the time series was consistently low. In 2015 the USA had a relative asymmetry of 5.4%, in 2016 this increased slightly to 5.7%, and in 2017 this decreased to 5.2%.
- As seen in graph 2.1, Oman was the smallest importer during this period, but its relative asymmetry across the time series was the largest. In 2015 Oman had a relative asymmetry of -57%, in 2016 this was -77%, and in 2017 this was -74%.
- In 2015 the relative asymmetry for China was 7.4%, in 2016 this changed to a negative relative asymmetry of -10%, and in 2017 changed back to a positive asymmetry of 4.5%.
- The UK's relative asymmetry across the time series was consistently low with 0.7% in 2015, -0.1% in 2016 and 1.6% in 2017.

2.3 Imports: UK's largest non-EU trading partner's average relative asymmetries and import value

Graph 2.3 shows the imports relative average asymmetry (regardless of sign) between each partner within this block for the years 2015 to 2017, together with the average total trade value.

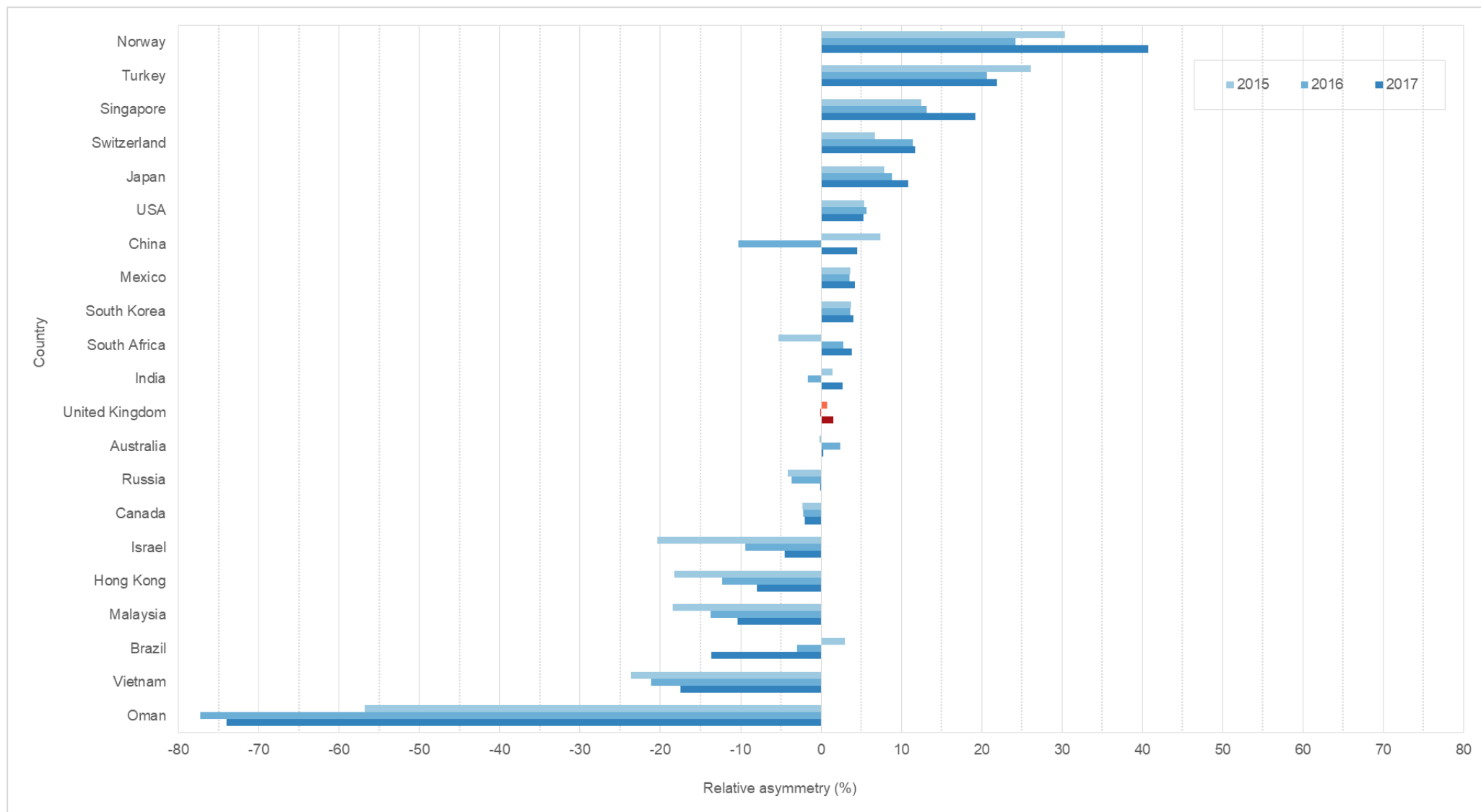
- The USA and China, both large importers, had comparatively small relative asymmetries. In contrast, countries such as Hong Kong and Japan showed much larger relative asymmetries compared with their import trade value.
- Japan had an average import value between 2015 and 2017 of \$404bn, with an average relative asymmetry of 9.2%. In comparison, Canada had the next largest average import value at \$348bn, its average relative asymmetry was -2.1%.
- The UK was the eighth largest importer of the largest partner block between 2015 and 2017 with an average import value of \$253bn. During this period it had one of the lowest average relative asymmetry at 0.7%.

Graph 2.1 Imports: UK's largest non-EU trading partners by value, share of absolute asymmetries, 2015 to 2017, ordered by average import value



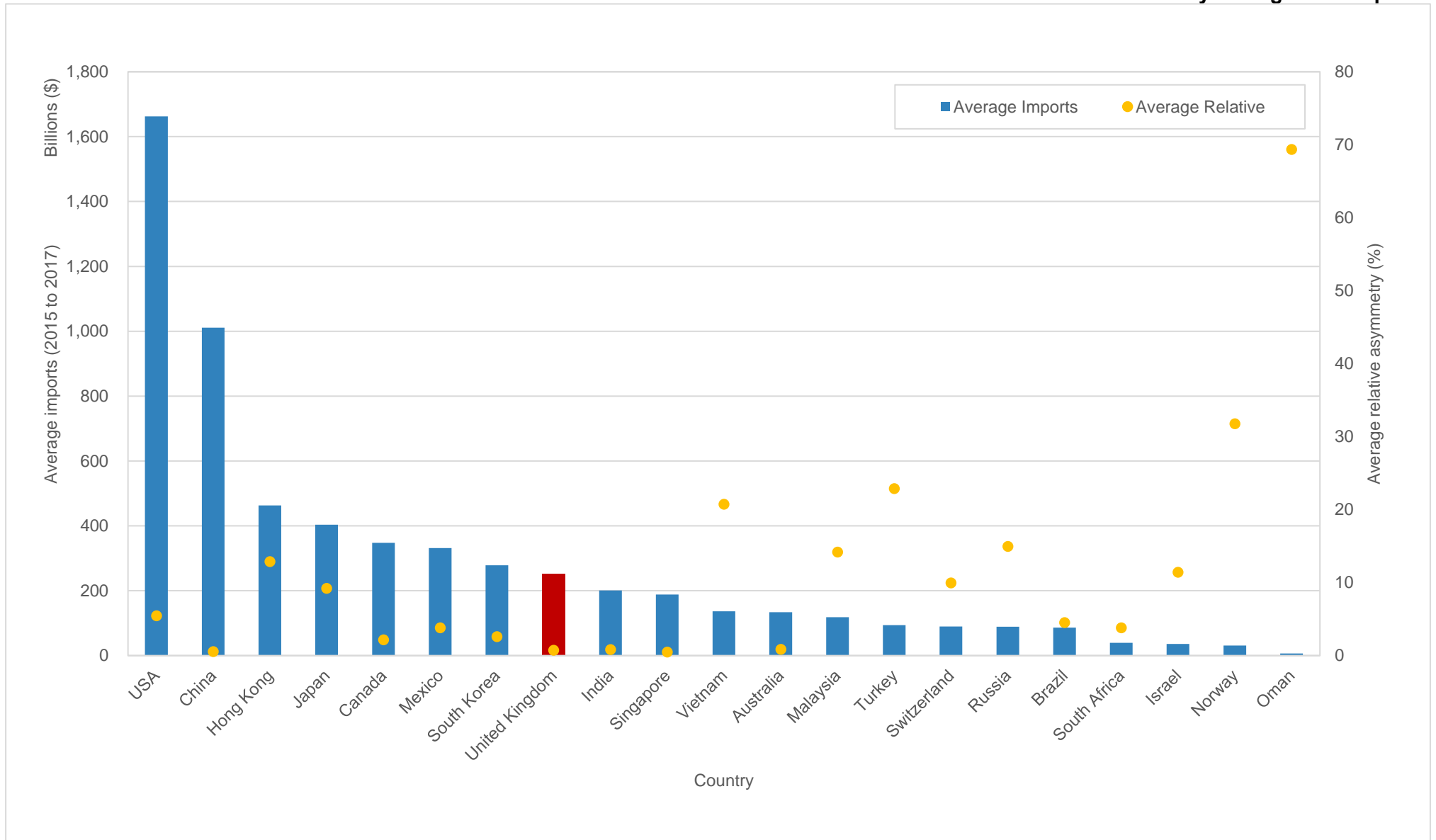
Source: UN Comtrade, DESA/UNSD, extracted April 2019

Graph 2.2 Imports: UK's largest non-EU trading partners by value, relative asymmetries, 2015 to 2017, ordered by 2017 value (%)



Source: UN Comtrade, DESA/UNSD, extracted April 2019

Graph 2.3 Imports: UK's largest non-EU trading partners by trade value, average total imports versus average relative asymmetries, 2015 to 2017, ordered by average total imports.



Source: UN Comtrade, DESA/UNSD, extracted April 2019

2.4 Exports: UK's largest non-EU trading partner's share of absolute asymmetries

For each of these 21 trading partners, Graph 2.4 shows the export absolute asymmetries between each partner and the remaining block, for the years 2015 to 2017, together with its average export value with this block.

- The top five countries by average value of exports between 2015 and 2017 were China, USA, Japan, Hong Kong and South Korea. These accounted for 69% of the total absolute asymmetry for exports in 2017. Within this, China and Hong Kong accounted for 55% between them in 2017. South Korea accounted for 3.2%.
- The smallest five countries by average value of exports were Israel, Turkey, Norway, South Africa and Oman, they accounted for 4.8% of the total absolute asymmetry in 2017. Of these, South Africa had the 2nd smallest average export value at \$33bn and accounted for 2.3% of the absolute asymmetry.
- In 2016 a notable decrease was seen for China. In 2015, China had a 21% share of the total absolute asymmetry, this decreased to 15% in 2016. However, this increased in 2017 to 25%.
- Overall, the UK's share of absolute asymmetry remained consistently low. The UK had a share of 1.3% in 2015. This decreased to 0.6% in 2016, and decreased further to 0.5% in 2017, this equated to the UK being ranked 16th in terms of share of absolute asymmetry, despite the UK ranking 9th in terms of average export value.

2.5 Exports: UK's largest non-EU trading partner's relative asymmetries

Graph 2.5 shows the exports relative asymmetries between each partner within this block for the years 2015 to 2017. It is worth noting the change in scale of the relative asymmetry axis in graph 2.5 compared with that of graph 2.2. In graph 2.2, the scale is +/- 80% whereas in graph 2.5 the scale is +/- 180%. This was driven by the large asymmetries of Hong Kong and Oman

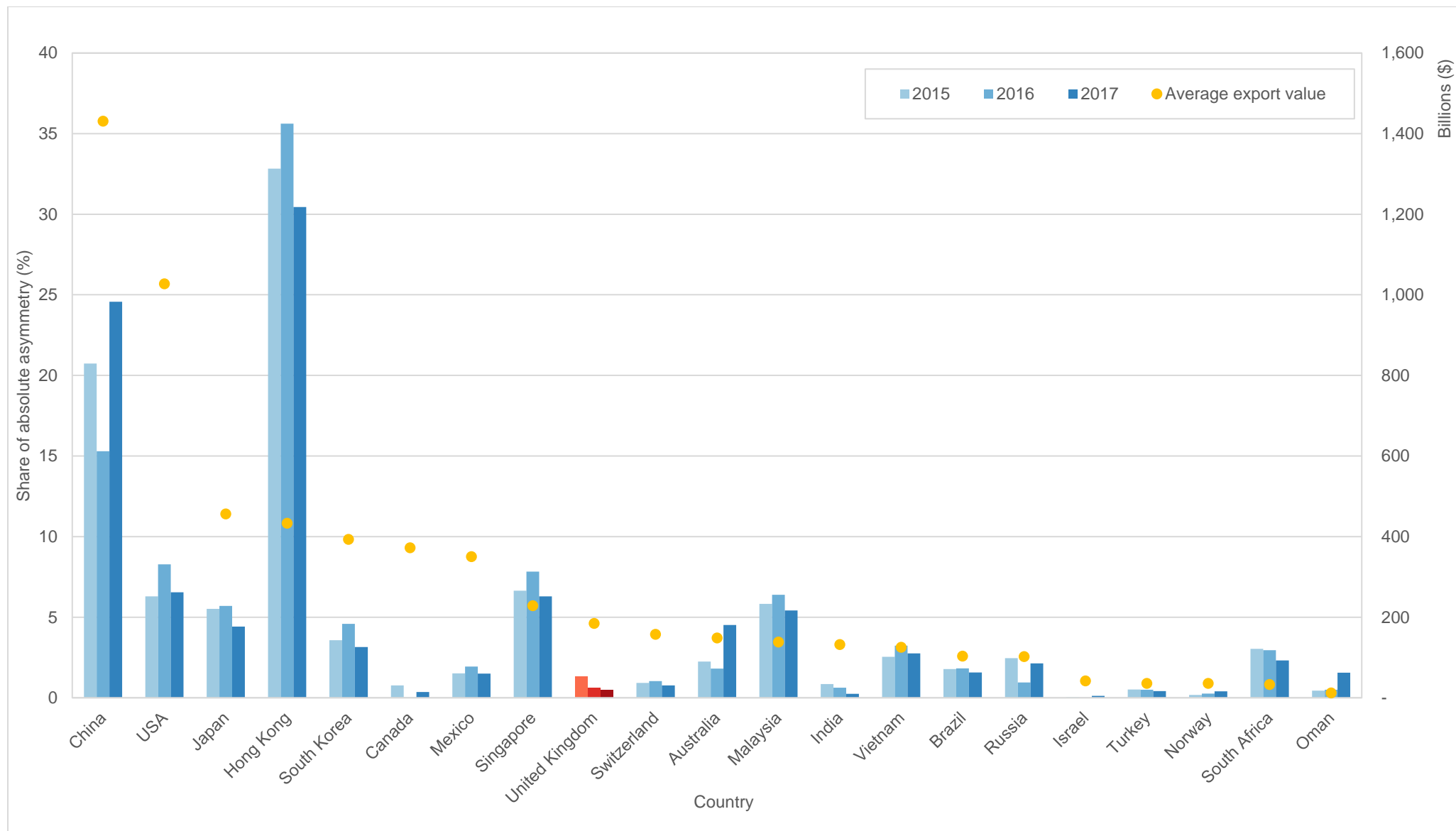
- As seen in graph 2.4 Hong Kong was the 4th largest exporter during this period. Its relative asymmetry across the time series was consistently the largest. In 2015 Hong Kong had a relative asymmetry of 160%, in 2016 this decreased to 149%, and in 2017 this increased to 154%.
- As seen in graph 2.4, the USA was the 2nd largest exporter during this period, but its relative asymmetry across the time series was comparatively small. In 2015 the USA had a relative asymmetry of 7.3%, in 2016 this was 8.9%, and in 2017 this was 8.2%.
- Canada had a small relative asymmetry in comparison with its total exports value across the time series (average exports of \$372bn). In 2015 Canada had a relative asymmetry of -2.3%, in 2016 this was 0.0%, and in 2017 this was -1.2%.
- The UK's relative asymmetry across the time series was consistently low in comparison to its largest trading partners, with 7.7% in 2015, 3.9% in 2016 and 3.7% in 2017.

2.6 Exports: UK's largest non-EU trading partner's average relative asymmetries and export value

Graph 2.6 shows the exports relative average asymmetry (regardless of sign) between each partner within this block for the years 2015 to 2017, together with the average total trade value.

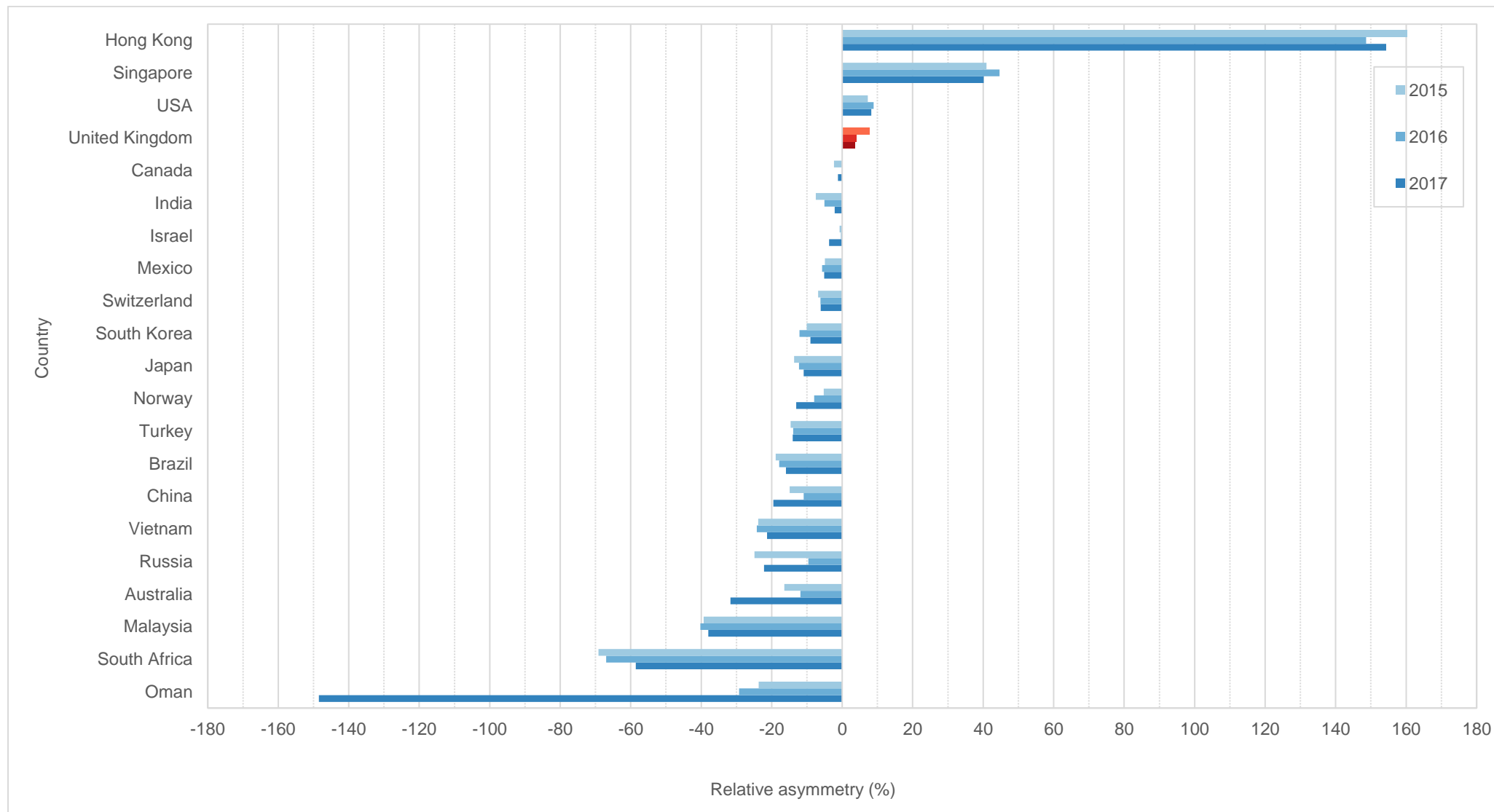
- China and the USA, both large exporters, had comparatively small relative asymmetries. In contrast, Hong Kong (ranked 4th for export value) showed a much larger relative asymmetry compared with their export trade value.
- Mexico had an average export value between 2015 and 2017 of \$350bn, with an average relative asymmetry of -5.2%. In comparison, Singapore had the next largest average export value at \$229bn, its average relative asymmetry was 42%.
- The UK was the 9th largest exporter within their largest non-EU trading partners between 2015 and 2017 with an average export value of \$185bn. During this period it had one of the lowest average relative asymmetries at 5.1%.

Graph 2.4 Exports: UK's largest non-EU trading partners by value, share of absolute asymmetries, 2015 to 2017, ordered by average export value



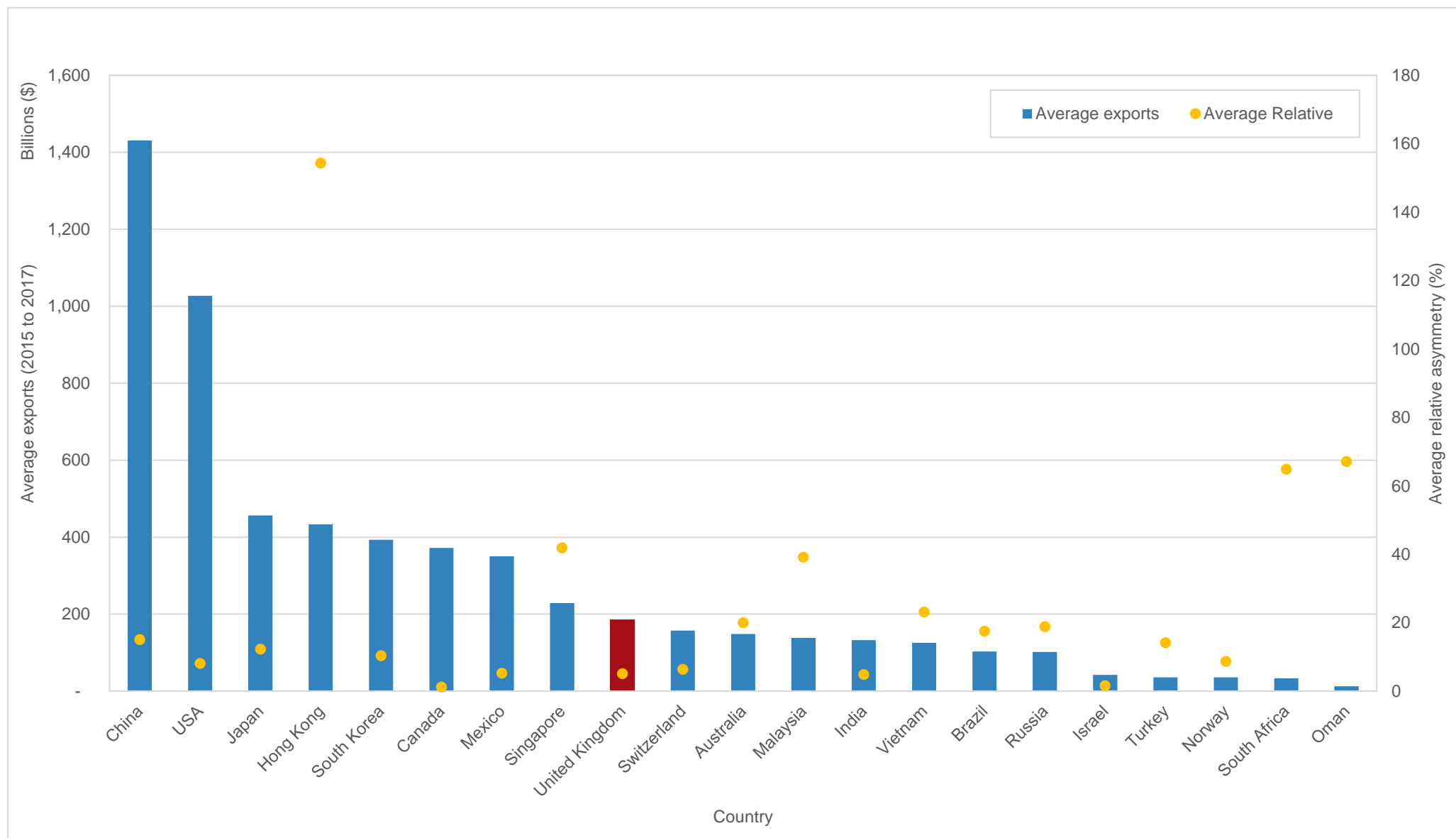
Source: UN Comtrade, DESA/UNSD, extracted April 2019

Graph 2.5 Exports: UK's largest non-EU trading partners by trade value, relative asymmetries (2015 to 2017), ordered by 2017 value (%)



Source: UN Comtrade, DESA/UNSD, extracted April 2019

Graph 2.6 Exports: UK's largest non-EU trading partners by value, average total exports versus average relative asymmetries (2015 to 2017), ordered by average total exports



Source: UN Comtrade, DESA/UNSD, extracted April 2019

3. Trade in goods asymmetries with the UK's largest trading partners by trade value, 2015 to 2017

This section explores the asymmetries between the UK and its largest non-EU trading partners by trade value. Where the last section looked at each country and measured the asymmetries between the block as a whole, this section is focussed on the UK versus each of its trading partners. As this section is at country level, we can also investigate the top 10 goods (using HS2 Chapters) behind the asymmetries. Again, we study the absolute and relative measures of asymmetry.

3.1 Imports: UK asymmetries by partner country

Table 3.1 shows the asymmetries between UK reported imports from its largest non-EU trading partners and their reported exports to the UK for the years 2015 to 2017.

- In 2015 the UK's total absolute asymmetry was \$30,679m, in 2016 this increased to \$33,017m, in 2017 this increased to \$33,929m.
- Malaysia, Vietnam and Oman were among the countries with the smallest average absolute asymmetry between 2015 and 2017, with an average of \$165m, \$138m and \$36m respectively.
- The asymmetry between UK and Singapore showed the largest decrease between 2015 and 2017. In 2015 the asymmetry was \$1,829m, in 2016 this decreased to \$1,106m, in 2017 this decreased further to \$550m.
- The asymmetry between UK and South Africa showed the largest increase between 2015 and 2017. In 2015 the asymmetry was \$2,620m, in 2016 this increased to \$6,628m, in 2017 this decreased to \$4,911m.

Table 3.1.1 shows the countries with the largest absolute asymmetries, for 2015, 2016 and 2017. Switzerland, South Africa, Hong Kong, and Israel remained in the top five through all three years. China were 3rd in 2015 and 2016, they dropped to 6th in 2017.

Table 3.1.1 Top 5 countries by largest absolute asymmetries for UK imports, 2015 to 2017

	2015	2016	2017
Rank	Country	Country	Country
1	Hong Kong	South Africa	Switzerland
2	Switzerland	Switzerland	South Africa
3	China	China	Hong Kong
4	South Africa	Hong Kong	Israel
5	Israel	Israel	South Korea

Table 3.1.2 shows the countries with the largest relative asymmetries, for 2015, 2016 and 2017. Israel, South Africa, Hong Kong and Oman remained in the top five largest relative asymmetries by size through all three years.

Table 3.1.2 Top 5 countries by largest relative asymmetries for UK imports, 2015 to 2017

	2015	2016	2017
Rank	Country	Country	Country
1	Israel	South Africa	Israel
2	Hong Kong	Israel	South Africa
3	Singapore	Oman	Hong Kong
4	South Africa	Singapore	South Korea
5	Oman	Hong Kong	Oman

3.2 Imports: Top 10 chapters by share of total absolute asymmetry, 2015 to 2017

Table 3.2 shows the top 10 imports products in order of their share of total absolute asymmetry for the years 2015 to 2017.

- Chapters consistently in the top 10 through all three years were 84 (Mechanical appliances), 30 (Pharmaceutical products), 85 (Electronic equipment), 99 (Other products), 87 (Motor vehicles) and 88 (Aircraft). It is worth noting that Chapter 99 will often appear within both the absolute and relative asymmetry tables. Chapter 99 is used to capture 'other products'. This may include low value consignments, where the goods have been aggregated and classified to a single commodity (9950 0000), and also includes mixed consignments of motor vehicles or aircraft parts (9990 8700). Goods delivered to and from offshore installations also fall within this category.
- In 2015 the top 10 chapters accounted for 75% of the total absolute asymmetry for all chapters, in 2016 this increased to 76%, in 2017 this increased further to 77%.

3.3 Imports: Top 10 chapters by relative asymmetry, 2015 to 2017

Table 3.3 shows the top 10 imports chapters by relative asymmetry for the years 2015 to 2017.

- Chapters consistently in the top 10 through all three years were 31 (Fertilizers), 18 (Cocoa), 14 (Other vegetable products), 99 (Other products) and 47 (Waste paper and wood pulp).
- Chapter 45 (Cork) had the largest relative asymmetry in 2017, this did not appear in the top 10 in 2015 or 2016.
- Chapter 31 (Fertilizers) remained in 3rd place throughout the time series. In 2015 it had a relative asymmetry of 99%, in 2016 this decreased to 92%, and in 2017 this increased to 99%.

Table 3.1 Asymmetries between UK imports from UK's largest non-EU trading partners and UK's largest non-EU trading partner's exports to the UK, 2015 to 2017

Country	2015			2016			2017		
	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Relative asymmetry (%)	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Relative asymmetry (%)	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Relative asymmetry (%)
Switzerland	3,464.7	11.3	-29.0	6,070.7	18.4	-20.5	4,930.0	14.5	-34.1
South Africa	2,620.3	8.5	57.0	6,628.3	20.1	102.4	4,911.2	14.5	82.8
Hong Kong	4,202.5	13.7	-83.8	3,573.5	10.8	-38.0	3,969.3	11.7	-54.1
Israel	2,479.1	8.1	-90.1	2,559.7	7.8	-97.4	3,804.4	11.2	-116.5
South Korea	1,549.7	5.1	-21.9	972.6	2.9	-15.1	3,323.6	9.8	-47.7
China	3,412.5	11.1	5.6	3,911.8	11.8	6.8	3,149.0	9.3	5.4
USA	1,963.1	6.4	3.4	1,823.2	5.5	3.2	2,585.5	7.6	4.5
Norway	2,372.1	7.7	-11.9	1,075.4	3.3	-6.0	1,643.3	4.8	7.4
Russia	2,178.0	7.1	38.8	1,727.3	5.2	-28.2	1,588.5	4.7	24.7
Canada	1,765.9	5.8	-15.2	523.0	1.6	4.0	1,235.2	3.6	8.7
Japan	541.1	1.8	-5.2	662.7	2.0	-5.0	615.2	1.8	-4.6
Singapore	1,829.1	6.0	-76.2	1,106.1	3.4	-42.7	550.4	1.6	-19.8
Turkey	510.3	1.7	4.7	521.7	1.6	4.4	385.5	1.1	3.9
Australia	95.8	0.3	3.4	455.8	1.4	-6.3	349.5	1.0	7.4
Brazil	566.0	1.8	17.7	348.5	1.1	11.5	286.3	0.8	9.6
India	434.8	1.4	4.8	31.0	0.1	0.4	225.0	0.7	2.5
Mexico	178.6	0.6	8.7	695.8	2.1	-24.1	206.9	0.6	8.7
Malaysia	246.1	0.8	9.8	121.6	0.4	5.6	126.5	0.4	5.4
Oman	34.5	0.1	53.9	31.5	0.1	60.6	41.0	0.1	-44.0
Vietnam	235.4	0.8	4.9	176.4	0.5	3.5	2.5	0.0	0.0
Total	30,679.5	100.0	-2.4	33,016.6	100.0	-1.8	33,928.9	100.0	-0.2

Table 3.2 Top 10 imports chapters by share of total absolute asymmetry, 2015 to 2017

2015			2016			2017		
Chapter	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Chapter	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Chapter	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)
84	8,868.1	20.3	84	10,999.4	20.8	84	12,123.5	22.1
30	4,410.4	10.1	99	5,505.8	10.4	30	5,729.7	10.5
99	4,117.9	9.4	30	5,112.5	9.7	27	4,184.4	7.6
87	3,135.8	7.2	71	3,702.0	7.0	89	3,695.0	6.7
85	2,760.3	6.3	87	3,578.7	6.8	85	3,122.2	5.7
89	2,578.4	5.9	85	2,705.8	5.1	71	2,857.7	5.2
61	2,291.8	5.2	61	2,436.1	4.6	99	2,784.0	5.1
88	1,709.7	3.9	62	2,183.7	4.1	87	2,674.6	4.9
62	1,607.3	3.7	97	2,033.2	3.9	88	2,620.3	4.8
95	1,343.0	3.1	88	1,902.9	3.6	97	2,230.1	4.1
Sum of top 10	32,822.6	75.0	Sum of top 10	40,160.2	76.1	Sum of top 10	42,021.5	76.7
Unallocated	58.8	0.1	Unallocated	92.1	0.2	Unallocated	0.0	0.0
Sum of others	10,906.7	24.9	Sum of others	12,503.1	23.7	Sum of others	12,766.1	23.3
Total	43,788.1	100.0	Total	52,755.4	100.0	Total	54,787.6	100.0

Source: UN Comtrade, DESA/UNSD, extracted April 2019

Chapter description

84 - Mechanical appliances	89 - Ships, boats and floating structures	71 - Precious metals
30 - Pharmaceutical products	61 - Knitwear	97 - Art and antiques
99 - Other products	88 - Aircraft	27 - Mineral fuels
87 - Motor vehicles	62 - Clothes, not knitted	
85 - Electronic equipment	95 - Toys, games and consoles	

Table 3.3 Top 10 imports chapters by relative asymmetry, 2015 to 2017

2015			2016			2017		
Chapter	Absolute asymmetry (\$m)	Relative asymmetry (%)	Chapter	Absolute asymmetry (\$m)	Relative asymmetry (%)	Chapter	Absolute asymmetry (\$m)	Relative asymmetry (%)
99	4,117.9	-132.1	93	143.6	-123.2	45	3.3	128.3
45	3.0	117.3	99	5,505.8	-109.5	89	3,695.0	-118.4
31	135.2	99.2	31	95.4	92.0	31	115.0	98.9
89	2,578.4	-97.8	26	574.3	77.6	93	136.6	-98.9
86	340.6	-79.7	18	84.5	-75.1	18	90.7	-80.7
26	844.3	73.4	14	7.0	69.8	97	2,230.1	-79.7
80	21.7	68.7	97	2,033.2	-69.3	14	6.5	67.1
18	77.4	-67.5	24	50.7	60.8	99	2,784.0	-64.8
14	7.5	62.5	47	82.1	58.1	47	93.7	60.2
47	115.6	60.2	30	5,112.5	-52.2	30	5,729.7	-59.0
Sum of top 10	8,241.6	-76.6	Sum of top 10	13,689.0	-63.3	Sum of top 10	14,884.7	-70.6
Unallocated	58.8	-200.0	Unallocated	92.1	-200.0	Unallocated	0.0	-200.0
Sum of others	35,487.8	0.1	Sum of others	38,974.3	3.0	Sum of others	39,902.9	6.1
Total	43,788.1	2.4	Total	52,755.4	-1.8	Total	54,787.6	-0.2

Source: UN Comtrade, DESA/UNSD, extracted April 2019

Chapter description

99 - Other products

45 - Cork

31 - Fertilizers

89 - Ships, boats and floating structures

26 - Ores

80 - Tin and articles thereof

18 - Cocoa

14 - Other vegetable products

93 - Arms and ammunition

97 - Art and antiques

24 - Tobacco

30 - Pharmaceutical products

3.4 Exports: UK asymmetries by partner country

Table 3.4 shows the asymmetries between UK reported exports from its largest non-EU trading partners and their reported imports for the years 2015 to 2017.

- In 2015 the UK's total absolute asymmetry was \$28,428m, in 2016 this decreased to \$17,678m, in 2017 this increased to \$21,564m.
- Russia, Japan and Vietnam were among the countries with the smallest average absolute asymmetry between 2015 and 2017, with an average of \$190m, \$160m and \$75m respectively.
- The asymmetry between UK and the USA had the largest decrease between 2015 and 2017. In 2015 the asymmetry was \$10,494m, in 2016 this decreased to \$6,416m, in 2017 this decreased further to \$5,238m.
- The asymmetry between UK and Turkey had the largest increase between 2015 and 2017. In 2015 the asymmetry was \$143m, in 2016 this increased to \$852m, in 2017 this increased further to \$3,015m.

Table 3.4.1 shows the countries with the largest absolute asymmetries for 2015, 2016 and 2017. The USA remained the largest of the top five countries for all three years.

Table 3.4.1 Top 5 countries by largest absolute asymmetries for UK exports, 2015 to 2017

	2015	2016	2017
Rank	Country	Country	Country
1	USA	USA	USA
2	China	Hong Kong	Turkey
3	Switzerland	Israel	Israel
4	Canada	Turkey	Oman
5	South Korea	Singapore	Hong Kong

Table 3.4.2 shows the countries with the largest relative asymmetries for 2015, 2016 and 2017. Oman and Israel were among the top five countries for all three years.

Table 3.4.2 Top 5 countries by largest relative asymmetries for UK exports, 2015 to 2017

	2015	2016	2017
Rank	Country	Country	Country
1	Oman	Israel	Oman
2	China	Oman	Israel
3	Israel	Hong Kong	Turkey
4	Vietnam	Mexico	Mexico
5	Canada	South Africa	India

3.5 Exports: Top 10 chapters by share of total absolute asymmetry, 2015 to 2017

Table 3.5 shows the top 10 exports chapters by share of total absolute asymmetry between the years 2015 and 2017.

- Chapters consistently in the top 10 through all three years were 84 (Mechanical appliances), 88 (Aircraft), 71 (Precious metals), 30 (Pharmaceutical products), 99 (Other products), 97 (Arts and antiques), 85 (Electronic equipment) and 29 (Organic chemicals).
- In 2015 the top 10 chapters accounted for 88% of the total absolute asymmetry for all chapters, in 2016 this decreased to 80%, in 2017 this increased to 81%.

3.6 Exports: Top 10 chapters by relative asymmetry, 2015 to 2017

Table 3.6 shows the top 10 exports chapters by relative asymmetry between the years 2015 and 2017.

- Chapters consistently in the top 10 through all three years were 26 (Ores), 46 (Wickerwork and basketwork) 17 (Sugars) and 97 (Arts and antiques).
- Chapter 26 (Ores) has been in the top two throughout the time series. In 2015 it was 2nd with a relative asymmetry of 163%, in 2016 it was 1st with a relative asymmetry of 156%, and in 2017 it was 2nd with a relative asymmetry of 103%.

Table 3.4 Asymmetries between UK exports to UK's largest non-EU trading partners and UK's largest non-EU trading partner's imports from the UK, 2015 to 2017

Country	2015			2016			2017		
	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Relative asymmetry (%)	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Relative asymmetry (%)	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Relative asymmetry (%)
USA	10,494.1	36.9	16.4	6,415.5	36.3	11.0	5,238.1	24.3	9.3
Turkey	142.9	0.5	-2.6	851.7	4.8	14.8	3,014.9	14.0	37.4
Israel	685.8	2.4	-35.5	2,187.2	12.4	-84.9	2,768.5	12.8	-94.7
Oman	256.2	0.9	44.6	314.0	1.8	62.9	1,908.4	8.9	133.5
Hong Kong	528.9	1.9	5.4	2,503.8	14.2	32.3	1,304.5	6.0	15.0
South Korea	1,037.8	3.7	15.6	746.2	4.2	13.4	1,176.8	5.5	17.0
China	8,691.7	30.6	37.3	539.2	3.0	-2.9	949.1	4.4	-4.3
India	602.7	2.1	10.6	561.4	3.2	13.5	905.6	4.2	18.9
Switzerland	1,572.0	5.5	4.7	688.3	3.9	3.5	899.9	4.2	4.5
Singapore	418.1	1.5	7.2	803.2	4.5	13.9	668.2	3.1	11.4
Canada	1,322.1	4.7	-20.2	9.6	0.1	0.2	621.7	2.9	-9.5
Mexico	392.3	1.4	-18.3	418.0	2.4	-21.8	435.9	2.0	-19.7
Australia	445.8	1.6	8.0	8.0	0.0	-0.1	330.9	1.5	5.9
Russia	193.9	0.7	5.1	47.2	0.3	1.4	330.1	1.5	-8.5
Japan	74.5	0.3	1.1	106.4	0.6	-1.6	299.4	1.4	4.1
Malaysia	224.4	0.8	11.5	177.5	1.0	10.6	245.1	1.1	14.4
South Africa	616.1	2.2	20.2	506.6	2.9	21.0	241.7	1.1	9.2
Norway	100.6	0.4	-2.1	469.6	2.7	12.0	207.8	1.0	-5.2
Brazil	475.6	1.7	15.7	252.4	1.4	10.4	16.0	0.1	0.7
Vietnam	152.3	0.5	-23.4	72.3	0.4	-10.5	1.2	0.0	-0.2
Total	28,427.7	100.0	11.7	17,678.1	100.0	6.8	21,563.7	100.0	6.3

Source: UN Comtrade, DESA/UNSD, extracted April 2019

Table 3.5 Top 10 exports chapters by share of total absolute asymmetry 2015 to 2017

2015			2016			2017		
Chapter	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Chapter	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)	Chapter	Absolute asymmetry (\$m)	Share of total absolute asymmetry (%)
71	10,326.0	22.3	84	5,237.3	13.2	84	6,766.4	17.4
30	7,075.1	15.3	99	4,787.0	12.0	88	4,015.9	10.3
99	6,586.4	14.2	71	4,655.7	11.7	71	3,575.8	9.2
97	5,694.7	12.3	97	4,174.0	10.5	30	3,402.0	8.7
84	5,365.5	11.6	30	3,623.5	9.1	99	3,400.2	8.7
88	2,592.2	5.6	88	3,411.9	8.6	97	3,301.1	8.5
29	1,182.9	2.6	87	1,954.5	4.9	27	2,634.6	6.8
85	894.4	1.9	27	1,563.3	3.9	87	1,883.4	4.8
62	555.1	1.2	29	1,373.1	3.5	85	1,455.9	3.7
33	549.6	1.2	85	1,220.3	3.1	29	1,157.6	3.0
Sum of top 10	40,822.0	88.3	Sum of top 10	32,000.7	80.5	Sum of top 10	31,593.1	81.0
Unallocated	35.5	0.1	Unallocated	21.7	0.1	Unallocated	0.0	0.0
Sum of others	5,375.9	11.6	Sum of others	7,739.7	19.5	Sum of others	7,406.1	19.0
Total	46,233.5	100.0	Total	39,762.0	100.0	Total	38,999.1	100.0

Source: UN Comtrade, DESA/UNSD, extracted April 2019

Chapter description

71 - Precious metals	84 - Mechanical appliances	62 - Clothes, not knitted
30 - Pharmaceutical products	88 - Aircraft	33 - Cosmetic products
99 - Other products	29 - Organic chemicals	87 - Motor vehicles
97 - Art and antiques	85 - Electronic equipment	27 - Mineral fuels

Table 3.6 Top 10 exports chapters by relative asymmetry 2015 to 2017

2015			2016			2017		
Chapter	Absolute asymmetry (\$m)	Relative asymmetry (%)	Chapter	Absolute asymmetry (\$m)	Relative asymmetry (%)	Chapter	Absolute asymmetry (\$m)	Relative asymmetry (%)
99	6,586.4	-186.1	26	156.8	155.7	93	188.5	-116.9
26	184.1	162.9	93	261.6	-135.2	26	106.2	103.5
97	5,694.7	94.7	36	22.0	-110.8	36	24.8	-100.5
61	414.6	92.8	99	4,787.0	-107.2	80	6.8	-91.5
52	35.1	83.8	52	31.0	94.2	10	30.5	-91.1
67	3.6	79.9	46	1.4	94.0	54	104.8	-80.9
45	1.8	79.0	28	491.1	-91.0	46	0.8	78.1
46	1.0	74.3	17	143.6	-91.0	42	163.2	75.2
17	114.2	-71.1	61	321.6	88.4	17	97.3	-74.2
62	555.1	67.9	97	4,174.0	87.6	97	3,301.1	74.0
Sum of top 10	13,590.6	1.7	Sum of top 10	10,390.0	-9.6	Sum of top 10	4,024.0	59.2
Unallocated	35.5	-200.0	Unallocated	21.7	-200.0	Unallocated	0.0	-200.0
Sum of others	32,607.3	12.4	Sum of others	29,350.3	7.9	Sum of others	34,975.1	4.6
Total	46,233.5	11.7	Total	39,762.0	6.8	Total	38,999.1	6.3

Source: UN Comtrade, DESA/UNSD, extracted April 2019

Chapter description

99 - Other products

26 - Ores

97 - Art and antiques

61 - Knitwear

52 - Cotton

67 - Feather and hair articles

45 - Cork

46 - Wickerwork and basketwork

17 - Sugars

62 - Clothes, not knitted

93 - Arms and ammunition

36 - Explosives and pyrotechnics

28 - Inorganic chemicals

80 - Tin and articles thereof

10 - Cereals

54 - Man-made filaments

42 - Leather goods

Annex 1: Measures of asymmetry

There are two types of asymmetries for trade in goods that are referred to in this report: the **imports asymmetry** and the **exports asymmetry**.

The **imports asymmetry** is the difference between the declarant country's imports from the partner country and the partner country's exports to the declarant country. If this asymmetry is positive it means that the declarant country's imports from the partner country are greater than the partner country's exports to the declarant country.

The **exports asymmetry** is the difference between the declarant country's exports to the partner country and the partner country's imports from the declarant country. If this asymmetry is positive it means that the declarant country's exports to the partner country are greater than the partner country's imports from the declarant country.

As an example, the UK's imports asymmetry with China is the difference between what the UK records as imports from China and what China records as exports to the UK. If the value of UK imports minus China exports is negative, it suggests that the UK is recording less goods as received from China, than China is recording as exported to the UK.

If we use D to represent the declarant country and P to represent the partner country, we can set out the main indicators used to calculate the asymmetry. Note that for the purposes of this report the UK will always be the declarant.

Indicators of Asymmetry

(1) Absolute Asymmetry:

$$= | \text{Value (D)} - \text{Value (P)} |$$

This is the absolute difference between the value of recorded by the declarant and their partner country (mirror value).

(2) Relative Asymmetry (%):

$$= \frac{\text{Value (D)} - \text{Value (P)}}{0.5 (\text{Value (D)} + \text{Value (P)})} \times 100$$

The relative asymmetry looks at the difference between the value reported by the declarant country and the value reported by the partner country with respect to the mean of those two flows. This method makes no assumption about which value (D or P) is the correct value and instead looks at the asymmetry with respect to the average of the two values shown in percent.

(3) Share of Total Absolute Asymmetry (%):

$$= \frac{| \text{Value (D)} - \text{Value (P)} |}{\sum | \text{Value (D)} - \text{Value (P)} |} \times 100$$

This percentage dictates the contribution a country or HS¹ Chapter is having on the absolute total of the asymmetries within a certain flow, e.g. Chapter 45 may be responsible for 10 per cent of the total UK imports asymmetry.

Note: The values used within the tables in this report are quoted in US Dollars. UK declarations are made in pounds sterling and converted to US dollars by UN Comtrade. The data that UN Comtrade receives from each country is compiled in the local currency and is then converted to US Dollars using a monthly exchange rate.

Unallocated trade: Whilst the vast majority of trade declared between countries provides detail at value, product and country levels, there is provision for countries to apply suppressions.

For trade reported by the declarant (UK imports and exports), there is some trade 'not allocated' to a country. For example 'countries & territories not specified in the framework of Intra-Community trade' and 'countries & territories not specified for commercial or military reasons in the framework of Intra-Community trade' are identified as 'unallocated'.

For trade reported by our partners (imports and exports), the chapter total does not add up to the country total and is therefore referred to as unallocated.

¹ HS Chapter as defined in the UN Comtrade database