The CPB World Trade Monitor

Contents

Introduction

The CPB World Trade Monitor (WTM) is an instrument for bringing together, aggregating, and summarizing worldwide monthly data on international trade and industrial production. Its purpose is to report monthly developments in trade and production at the earliest possible date, covering a sample of countries as large as possible. Country coverage is sufficient to identify monthly movements at the global level as well as at that of major economic regions. The CPB publishes the outcomes on its website every month. The text at hand provides a technical description of the system that has been developed at the CPB to compile the WTM.

1 Sources and methods: outline

1.1 Overall system design

The CPB World Trade Monitor (WTM) is two monitors in one: a monitor for developments in global international trade and another for developments in global industrial production. Its purpose is to report monthly developments in trade and production at the earliest possible date, covering a sample of countries as large as possible. The lag between real events and publication of preliminary estimates of trade and production growth is usually two months.

The system channels two flows of data, one on trade and another on production, from the collection of data from a variety of sources to the compilation of monthly time series at the country level and the presentation of regionally aggregated results. Time series start in January 2000.[1] In the WTM, 'trade' is trade in commodities (elsewhere referred to as 'merchandise trade'). 'Production' is industrial production, that is: value added in mining, manufacturing, and utilities (elsewhere referred to as 'industry excluding construction').

1.2 Data processing stages

The twofold nature of the WTM is reflected in the formal setup of the system, which consists of two programs that are contained in their own directory and that are run separately. Shared procedures that are used in both branches of the WTM for carrying out specific computational tasks are stored in a common library. Both the process of compiling trade time series and that of compiling production time series consist of the same four steps:

1. Standardization of data collected from the internet.
2. Selection of source time series at the country level and compilation of country-level time series.
3. Regional aggregation.
4. Summarization of the results in the form of tables and charts for the purpose of publication.

These steps are called, rather prosaically, WTM 1, WTM 2, WTM 3, and WTM 4. Each step is described in some detail here.

[1] The aggregated series that are published monthly at the CPB website start in January 1991. The data from January 1991 up to and including December 1999 have been compiled using a previous version of the WTM system, which means there is a methodological break from December 1999 to January 2000. The data prior to January 2000 has been 'frozen', that is, it will not be revised anymore.

WTM 1

Time series downloaded from internet sources and stored in Excel format are read into the system. The system assigns standardized variable names that identify, among other things, economic category (import, export, production, et cetera), geographic entity (country or region), dimension (unit of measurement, denomination, level versus change et cetera), as well as the data source. The data includes monthly, quarterly, and yearly time series. (Yearly time series are collected only as background information.) For trade, over 3300 source series are processed. For production, the number of series is just over 750.

WTM 2

So-called generic monthly series are compiled from selected source series for each country. Among other things, this entails the standardization of frequency (monthly), denomination (US dollar), indexation, and seasonal and working day adjustment. For trade, this step includes the compilation of consistent series of values, prices, and volumes. In addition, various techniques are used at the country level to fill in missing observations for the most recent month or months. For many countries, a secondary source series is used to supplement the primary source series with the most recent values.

WTM 3

Country data are aggregated regionally. This includes filling in country level figures that are still missing at this stage by computing them from regional growth rates.

WTM 4

Time series undergo final processing for the purpose of publication. This includes, among other things, putting out the data file containing regional outcomes (level time series) that is published monthly at the CPB's website and the charts and tables that are shown in the CPB's monthly brief on developments in world trade and production.

1.3 Methodological issues

Country coverage

The production monitor covers 81 countries worldwide. These countries account for about 97% of global industrial production.[2] The trade monitor covers 96 individual countries plus the region Sub-Saharan Africa, which is treated as one entity. Coverage of world trade is almost 99%.[3] For details on the country classification that is applied in the WTM, see chapter 2.

Consistency: industrial production

In the production data, one consistency issue concerns industrial classification. The source series used for most countries relate to industrial production, which is value added in

[2] In 2005 coverage is 97.6%; in 2010 it is 97.2%. Source: United Nations Statistics Division, National Accounts Estimates of Main Aggregates, supplemented with value added figures for Taiwan from National Statistics Republic of China (Taiwan).

[3] In 2005 coverage is 98.9%. Source: International Trade and Commodity Statistics (ITCS), Organisation of Economic Cooperation and Development / United Nations. ITCS figures for 2010 are not complete at the time of writing.

mining, manufacturing, and utilities. For fourteen oil exporting countries, oil production is used as a proxy for industrial production, as industrial production data is not available for all of these countries and where it is, it is considered less reliable than the oil production data. In another four cases, series for manufacturing production are used as a proxy for lack of a better alternative.

Another consistency issue is seasonal adjustment. By far most country source series that are input into WTM 1 have been adjusted for seasonal fluctuation. Where this is not the case, the WTM system adjusts for seasonal fluctuation by applying the so-called X12 procedure.[4] From processing stage WTM 2 onward, all production series are seasonally adjusted. Likewise from processing stage WTM 2 onward, all industrial production indices, both at the country and at the regional level, have the same base year (currently 2005).

Consistency: international trade

The remarks above also apply to the trade data: in a few cases the WTM system adjusts source series for seasonal fluctuation. Most source series have been seasonally adjusted already.[5] An additional adjustment is made to trade data pertaining to countries where the celebration of the Chinese New Year significantly affects economic activity. A final adjustment relates trade data for countries in Latin America, which are explicitly adjusted for working days.[6] From processing stage WTM 2 onward, all trade flow series are seasonally and working day adjusted.

In the context of trade data, consistency also refers to the relationship between values, volumes, and prices. This type of consistency is ensured at both the country level and the regional level by either computing volume from value and price or by computing price from value and volume.

From processing stage WTM 2 onward, trade series have the same base year (currently 2005). This applies to value series in base year prices, volume indices, and price indices, both at the country and at the regional level. (Value series in current prices obviously do not have a base year.) Value series, both those in current and those in base year prices, as well as prices series are in dollars.[7]

Finally, consistency requires the equality of world imports and world exports (value, volume, and price). In fact, this equality holds only approximately in the WTM, as not all of world imports and world exports are covered. Coverage is so high however, that deviations from

[4] This happens exclusively to the fourteen oil exporting countries for which oil production is used as a proxy for industrial production. The adjustment is made in WTM 2.

[5] The WTM system adjusts the value series for China (export and import), Indonesia (export and import), and Kazachstan (export only). All these series are taken from source Thomson Reuter Datastream. The adjustment is made in WTM 2.

[6] Details of both the correction for the Chinese New Year and the correction for working days in Latin American countries are given in paragraph 4.3.

[7] The exception is the data that the WTM system compiles for delivery to the Directorate General of Economic and Monetary Affairs of the Economic Commission in Brussels, which is in Euros.

the equality must be negligible. Nonetheless, due to measurement errors and incompleteness of the data, it is not unusual to find diverging movements in the preliminary estimates of the world totals for the most recent one or two months. As inconvenient as this may be, this is the price paid for having monthly figures at the earliest possible date. Over the course of a few months, reported imports and export tend to move closely together.[8]

Choice of data sources

Not all data collected in WTM 1 is used. As noted, WTM 2 makes a selection from the data available for each country. There are three main reasons for this approach. First, it enables the system to supplement missing values in preferred source time series in the last month or months of the monitoring period with recent observations from alternative series. Second, having a relatively broad collection of source data limits the dependency on specific sources in the longer term. Experience shows that data that are available on the internet today may not be available tomorrow, so having alternative data sources at hand is a safety measure. Third, it enables comparing figures from different sources, which is part of ongoing system maintenance.

Table 1.1 Data sources

INDUSTRIAL PRODUCTION
Eurostat
International Energy Agency
Organisation for Economic Cooperation and Development
Thomson Reuter Datastream
United Nations Economic Commission for Europe
World Bank Global Economic Monitoring System
National statistical offices of Argentina, Belarus, Israel, Japan, Jordan, Kazakhstan, Mexico
INTERNATIONAL TRADE
Eurostat
Hamburg Institute of International Economics
International Monetary Fund International Financial Statistics
Organisation for Economic Cooperation and Development
Thomson Reuter Datastream
United Nations Statistics Division
World Bank Global Economic Monitoring System
Bank of Japan
Central Bank of the Republic of China (Taiwan)
Department of Statistics Singapore
South African Reserve Bank
Swiss Ministry of Finance

[8] The possibility of imposing consistency by mechanically adjusting imports and exports is being studied.

Data sources do not always agree. A time series published at one website may look rather different than what is reported to be the same series at another site. This pertains particularly to international trade statistics. Generally, confusion arises from measurement issues and methodological revisions, but in specific cases the source of disparities is often unclear. Where alternative data sources are available, care is taken to use sources that are relatively well documented and that yield plausible and relatively stable outcomes. In other words, time series that are not drastically revised every now and then and that do not show erratic jumps are preferred. Developments over a longer time period can also be instructive in assessing data quality. In some cases the choice is obvious, while in other cases it is rather less clear. The production part of the WTM is relatively straightforward, as for each country just one index series is compiled. In the trade branch however, sources must be found for trade value and either trade volume or trade price, both at the export and import side. In a few cases hybrid solutions are used, where different sources are used to complete the trade statistics for one country.

A detailed, by-country overview of sources and methods is given in chapter 4. A full list of sources is shown in table 1.1.

Regional aggregation: international trade

In the trade part of the WTM, aggregation is hardly an issue. Country value series may simply be added in order to compile regional aggregates. This applies both to value series in current dollar prices and value series in base year dollar prices. The dollar price series for regional aggregates are computed by dividing value series in current prices by value series in base year prices.

Regional aggregation: industrial production

Aggregating country production series requires the availability of appropriate country weights, as country level production series are index series. Regional production indices are computed using fixed base year weights. The weights are country shares in global nominal, dollar denominated value added in industry.[9]

In the light of the widespread use of chain-linked, rolling weights-based indices, the application of fixed base year weights deserves comment. Apart from the practical consideration that the use of rolling weights requires the availability of nominal production data all through the monitoring period rather than for one year only, the case for preferring chain-linked indices over fixed base indices in the WTM is not too compelling. In the production data, fixed weights are applied to indices, that is: level variables. As a result, the growing relative importance of countries where production growth is relatively high over an extended period of time – as it is in several large emerging economies for instance – is reflected in the increasing value of such countries' indices themselves. Applying rolling weights will give similar aggregate outcomes, as long as real exchange rates in terms of value added prices of industrial production do not change too much. Put the other way round, differences do arise if both volume growth and price rises in one region exceed those in

[9] The figures are shown in table 2.7.

another, prices being measured in one currency. In the mid-term such swings in real exchange rates tend to be temporary, particularly with respect to tradables.

2 Country classification

Countries and regions

Countries covered in respectively the trade and production branches of the WTM are listed in table 2.1 and table 2.2. Within the system, countries are identified using the two-character codes from the international standard 'ISO 3166-1 alpha-2' which is part of *Codes for the representation of names of countries and their subdivisions – Part 1: Country codes and which is maintained by the International Organization for Standardization*.[10] For the ISO codes of countries covered in the WTM, see table 2.3.

For country groups another set of codes is used, each of which consists of one character and one digit. Country aggregates distinguished in the WTM are listed in table 2.4 and table 2.5. The first list includes aggregates that appear in CPB publications and aggregates that are used internally (within the WTM system). The second includes aggregates that the WTM system compiles for compatibility with the nomenclature used at the Directorate General for Economic and Financial Affairs (DG ECFIN) of the European Commission.

In the WTM, regional aggregates are static. That is: the composition of country groups does not change over time. For instance, the Euro Area comprises the same countries from January 2000 till the present, including countries that joined the Eurosystem after 2000 (in chronological order: Greece, Slovenia, Cyprus, Malta, and Slovakia).

Country weights

The weights used for aggregating industrial production are listed in table 2.7. They are for 2005, the current base year in the WTM.

[10] http://www.iso.org/iso/home.html.

Table 2.1 Countries covered, international trade

ADVANCED ECONOMIES	EMERGING ECONOMIES			
	Central and Eastern Europe	Asia excluding Japan	Latin America	Africa and Middle East
Australia	Armenia	Bangladesh	Argentina	Algeria
Austria	Azerbaijan	Cambodia	Bolivia	Egypt
Belgium	Belarus	China	Brazil	Iran (a)
Canada	Bulgaria	Hong Kong	Chile	Iraq
Cyprus	Croatia (b)	India	Colombia	Israel
Denmark	Czech Republic	Indonesia	Costa Rica	Kuwait
Estonia	Hungary	Korea, Republic of	Dominican Republic	Libya (c)
Finland	Kazakhstan	Lao (d)	Ecuador	Morocco
France	Latvia	Malaysia	Guatemala	Oman
Germany	Lithuania	Pakistan	Guyana	Qatar
Greece	Macedonia (e)	Philippines	Haiti	Saudi Arabia
Iceland	Poland	Singapore	Jamaica	South Africa
Ireland	Romania	Sri Lanka	Mauritius	Tunisia
Italy	Russian Federation	Taiwan	Mexico	United Arab Emirates
Japan	Turkey	Thailand	Nicaragua	Yemen
Luxembourg	Ukraine	Viet Nam	Panama	
Malta	Uzbekistan		Paraguay	
Netherlands			Peru	
New Zealand			Trinidad and Tobago	
Norway			Uruguay	
Portugal				
Slovakia				
Slovenia				
Spain				
Sweden				
Switzerland				
United Kingdom				
United States				

(a) Local name: Hrvatska.
(b) Islamic Republic of Iran.
(d) Former Yugoslav Republic of Macedonia.
(c) Lao People's Democratic Republic.
(e) Libyan Arab Jamahiriya.

Notes

- All 17 countries that presently make up the Euro Area are covered in the international trade series of the WTM.
- All countries that are part of the Euro Area are classified as advanced economies, including those that are geographically considered part of Central and Eastern Europe.
- The WTM covers 38 countries in Sub-Saharan Africa. With the exception of South Africa these countries are dealt with as one entity, based on aggregate data published by the World Bank. The 37 other countries are:

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Comoros, Congo (Democratic Republic of), Congo (Republic of), Cote D'Ivoire, Equatorial Guinea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Seychelles, Sierra Leone, Sudan, Tanzania (United Republic of), Uganda, Zambia, Zimbabwe

Table 2.2 Countries covered, industrial production

ADVANCED ECONOMIES	EMERGING ECONOMIES			
	Central and Eastern Europe	Asia excluding Japan	Latin America	Africa and Middle East
Australia	Armenia	China	Argentina	Algeria
Austria	Belarus	Hong Kong	Brazil	Angola
Belgium	Bulgaria	India	Chile	Egypt
Canada	Croatia (a)	Indonesia	Colombia	Gabon
Cyprus	Czech Republic	Korea, Republic of	Ecuador	Iran (b)
Denmark	Hungary	Malaysia	Mexico	Iraq
Estonia	Kazakhstan	Pakistan	Peru	Israel
Finland	Latvia	Philippines	Trinidad and Tobago	Jordan
France	Lithuania	Singapore	Uruguay	Kuwait
Germany	Poland	Taiwan	Venezuela	Libya (c)
Greece	Romania	Thailand		Morocco
Iceland	Russian Federation			Nigeria
Ireland	Turkey			Oman
Italy	Ukraine			Qatar
Japan				Saudi Arabia
Luxembourg				South Africa
Netherlands				Syrian Arab Republic
New Zealand				Tunisia
Norway				United Arab Emirates
Portugal				
Slovakia				
Slovenia				
Spain				
Sweden				
Switzerland				
United Kingdom				
United States				

(a) Local name: Hrvatska.
(b) Islamic Republic of Iran.
(c) Libyan Arab Jamahiriya.

Notes:
- Of the 17 countries that presently make up the Euro Area, only Malta is not covered in the industrial production series of the WTM.
- All countries that are part of the Euro Area are classified as advanced economies, including those that are geographically considered part of Central and Eastern Europe.

Table 2.3 ISO codes of countries covered in the WTM

Name	Code	Name	Code
Algeria	dz	Israel	il
Angola	ao	Italy	it
Argentina	ar	Jamaica	jm
Armenia	am	Japan	jp
Australia	au	Jordan	jo
Austria	at	Kazakhstan	kz
Azerbaijan	az	Korea, Republic of	kr
Bangladesh	bd	Kuwait	kw
Belarus	by	Lao People's Democratic Republic	la
Belgium	be	Latvia	lv
Bolivia	bo	Libyan Arab Jamahiriya	ly
Brazil	br	Lithuania	lt
Bulgaria	bg	Luxembourg	lu
Cambodia	kh	Macedonia, Former Yugoslav Republic of	mk
Canada	ca	Malaysia	my
Chile	cl	Malta	mt
China	cn	Mauritius	mu
Colombia	co	Mexico	mx
Costa Rica	cr	Morocco	ma
Croatia (local name: Hrvatska)	hr	Netherlands	nl
Cyprus	cy	New Zealand	nz
Czech Republic	cz	Nicaragua	ni
Denmark	dk	Nigeria	ng
Dominican Republic	do	Norway	no
Ecuador	ec	Oman	om
Egypt	eg	Pakistan	pk
Estonia	ee	Panama	pa
Finland	fi	Paraguay	py
France	fr	Peru	pe
Gabon	ga	Philippines	ph
Germany	de	Poland	pl
Greece	gr	Portugal	pt
Guatemala	gt	Qatar	qa
Guyana	gy	Romania	ro
Haiti	ht	Russian Federation	ru
Hong Kong	hk	Saudi Arabia	sa
Hungary	hu	Singapore	sg
Iceland	is	Slovakia	sk
India	in	Slovenia	si
Indonesia	id	South Africa	za
Iran (Islamic Republic of)	ir	Spain	es
Iraq	iq	Sri Lanka	lk
Ireland	ie	Sweden	se

Table2.3 ISO codes of countries covered in the WTM (continued)

Name	Code	Name	Code
Switzerland	ch	Trinidad And Tobago	tt
Syrian Arab Republic	sy	Tunisia	tn
Taiwan	tw	Turkey	tr
Thailand	th	Ukraine	ua

Table 2.4 Regional aggregates: CPB classification

CLASSIFICATION USED IN PUBLICATIONS

Code	Name	
i1	Advanced economies	
d1	Emerging economies	
w1	World	(w1 = i1 + d1)
e6	Euro Area	
a1	Asia excluding Japan	
t1	Central and Eastern Europe	
l1	Latin America	
f3	Africa and Middle East	
r1	Other countries in WTM	
w1	World	(w1 = e6 + a1 + t1 + l1 + f3 + r1)

CLASSIFICATION USED WITHIN THE SYSTEM

Code	Name	
f0	Sub-Saharan Africa excluding South Africa	
za	South Africa	
f1	Sub-Saharan Africa	(f1 = f0 + za)
f4	Middle East and North Africa: oil producers	
f5	Middle East and North Africa: other	
f2	Middle East and North Africa	(f2 = f4 + f5)
f1	Sub-Saharan Africa	
f2	Middle East and North Africa	
f3	Africa and Middle East	(f3 = f1 + f2)

Table 2.5 Regional aggregates: DG ECFIN classification (a)

Nr	Code	Name	Group	Nr	Code	Name	Group
1	at	Austria	EA (b)	28	hr	Croatia (c)	EU candidates
2	be	Belgium	EA	29	mk	Macedonia (d)	EU candidates
3	cy	Cyprus	EA	30	tr	Turkey	EU candidates
4	ee	Estonia	EA	31	is	Iceland	other Europe
5	fi	Finland	EA	32	no	Norway	other Europe
6	fr	France	EA	33	ch	Switzerland	other Europe
7	de	Germany	EA	34	au	Australia	other advanced
8	gr	Greece	EA	35	ca	Canada	other advanced
9	ie	Ireland	EA	36	jp	Japan	other advanced
10	it	Italy	EA	37	nz	New Zealand	other advanced
11	lu	Luxembourg	EA	38	us	United States	other advanced
12	mt	Malta	EA	39	ru	Russian Federation	CIS (e)
13	nl	Netherlands	EA	40	t3	Other CIS	CIS
14	pt	Portugal	EA	41	cn	China	emerging Asia
15	sk	Slovakia	EA	42	in	India	emerging Asia
16	si	Slovenia	EA	43	hk	Hong Kong	emerging Asia
17	es	Spain	EA	44	kr	Korea, Republic of	emerging Asia
18	bg	Bulgaria	EU (f)	45	id	Indonesia	emerging Asia
19	cz	Czech Republic	EU	46	sg	Singapore	emerging Asia
20	dk	Denmark	EU	47	tw	Taiwan	emerging Asia
21	hu	Hungary	EU	48	a4	Other Asia	emerging Asia
22	lv	Latvia	EU	49	br	Brazil	Latin America
23	lt	Lithuania	EU	50	mx	Mexico	Latin America
24	pl	Poland	EU	51	l2	Other Latin America	Latin America
25	ro	Romania	EU	52	f1	Sub-Saharan Africa	AME(g)
26	se	Sweden	EU	53	f2	Middle East and North Africa	AME
27	gb	United Kingdom	EU				
54	e2	European Union, 27 member states					
55	e6	Euro Area					
56	e7	European Union candidate countries					
57	t2	Commonwealth of Independent States					
58	a1	Emerging Asia					
59	l1	Latin America					
60	f3	Middle East and Africa					
61	i2	Industrialized economies (1-38)					
62	d2	Developing economies (39-53)					
63	w1	World					
64	w2	World excluding European Union					
65	w3	World excluding Euro Area					

(a) Directorate General for Economic and Financial Affairs of the European Commission
(b) Euro Area.
(c) Local name: Hrvatska.
(d) Former Yugoslav Republic of Macedonia.
(e) Commonwealth of Independent States.
(f) European Union, 27 member states.
(g) Africa and Middle East.

Table 2.6 Full list of regional aggregates

Code	Name	Used in WTM	Used in ECFIN tables
a1	Emerging Asia (Asia excluding Japan)	x	x
a2	Asian Newly Industrialized Countries Hong Kong, Korea (Republic of), Singapore, Taiwan (a)		
a4	Other Asia Asia excluding *a2*, China, India, Indonesia, Japan		x
d1	Emerging economies	x	
d2	Developing countries		x
e2	European Union, 27 member states		x
e6	Euro Area	x	x
e7	European Union candidate countries		x
f0	Sub-Saharan Africa excluding South Africa	x (internal)	
f1	Sub-Saharan Africa	x (internal)	x
f2	Middle East and North Africa	x (internal)	x
f3	Africa and Middle East	x	x
f4	Middle East and North Africa: oil producers	x (internal)	
f5	Middle East and North Africa: other	x (internal)	
i1	Advanced economies	x	
i2	Industrialized countries		x
l1	Latin America	x	x
l2	Other Latin America Latin America excluding Brazil and Mexico		x
r1	Other countries in WTM world excluding *a1*, *e6*, *f3*, *l1*, *t1*	x	
t1	Central and Eastern Europe	x	
t2	Commonwealth of Independent States		x
t3	Commonwealth of Independent States excluding Russian Federation		x
w1	World	x	x
w2	World excluding European Union		x
w3	World excluding Euro Area		x

(a) Aggregate is not used anymore and retained for documentation only.

Table 2.7 Weights used for aggregating industrial production

			Production 2005 (a) %	Import 2005 (b) %
Advanced economies		Australia	1.47	1.12
		Austria	0.63	1.12
		Belgium	0.65	2.99
		Canada	2.78	2.97
		Cyprus	0.02	0.06
		Denmark	0.43	0.69
		Estonia	0.03	0.10
		Finland	0.43	0.55
		France	2.93	4.50
		Germany	6.27	7.29
		Greece	0.27	0.51
		Iceland	0.02	0.05
		Ireland	0.44	0.66
		Italy	3.24	3.60
		Japan	10.10	4.82
		Luxembourg	0.04	0.16
		Netherlands	1.05	2.90
		New Zealand	0.21	0.25
		Norway	1.02	0.52
		Portugal	0.30	0.57
		Slovakia	0.12	0.32
		Slovenia	0.08	0.18
		Spain	1.83	2.71
		Sweden	0.75	1.04
		Switzerland	0.76	1.18
		United Kingdom	3.34	4.88
		United States	21.08	16.20
		Total	60.28	61.95
Emerging economies	Asia excluding Japan	China	9.38	6.69
		Hong Kong	0.10	2.81
		India	1.59	1.32
		Indonesia	1.12	0.54
		Korea, Republic of	2.31	2.44
		Malaysia	0.62	1.08
		Pakistan	0.25	0.24
		Philippines	0.30	0.46
		Singapore	0.34	1.87
		Taiwan	1.03	1.31
		Thailand	0.67	1.12
		Total	17.72	19.87

Table 2.7 Weights used for aggregating industrial production (continued)

			Production 2005 (a) %	Import 2005 (b) %
Emerging economies	Central and Eastern Europe	Armenia	0.01	0.02
		Belarus	0.09	0.16
		Bulgaria	0.06	0.17
		Croatia	0.08	0.17
		Czech Republic	0.36	0.72
		Hungary	0.25	0.62
		Kazakhstan	0.17	0.16
		Latvia	0.02	0.08
		Lithuania	0.06	0.15
		Poland	0.65	0.95
		Romania	0.25	0.38
		Russian Federation	2.13	0.92
		Turkey	0.98	1.09
		Ukraine	0.23	0.34
		Total	5.34	5.92
Emerging economies	Latin America	Argentina	0.52	0.27
		Brazil	1.84	0.69
		Chile	0.38	0.31
		Colombia	0.36	0.20
		Ecuador	0.10	0.09
		Mexico	2.24	2.07
		Peru	0.20	0.12
		Trinidad and Tobago	0.08	0.05
		Uruguay	0.03	0.04
		Venezuela	0.68	0.20
		Total	6.43	4.04
Emerging economies	Africa and Middle East	Algeria	0.52	0.19
		Angola	0.22	0.02
		Egypt	0.29	0.19
		Gabon	0.05	0.01
		Iran (Islamic Republic of)	0.85	0.36
		Iraq	0.30	0.03
		Israel	0.20	0.42
		Jordan	0.03	0.10
		Kuwait	0.49	0.07
		Libyan Arab Jamahiriya	0.36	0.04
		Morocco	0.11	0.19
		Nigeria	0.46	0.05

Table 2.7 Weights used for aggregating industrial production (continued)

			Production 2005 (a) %	Import 2005 (b) %
Emerging economies	Africa and Middle East	Oman	0.18	0.08
		Qatar	0.31	0.09
		Saudi Arabia	1.84	0.56
		South Africa	0.62	0.51
		Syrian Arab Republic	0.08	0.07
		Tunisia	0.07	0.12
		United Arab Emirates	0.84	0.76
		Total	7.84	3.88
Total advanced economies			60.28	61.95
Total emerging economies			37.34	33.71
All economies in WTM			97.62	95.66

(a) Share in global value added in mining, manufacturing, and utilities. Source: National Accounts Estimates of Main Aggregates, United Nations Statistics Division, supplemented with value added figure for Taiwan from National Statistics Republic of China (Taiwan).

(b) Share in global merchandise imports. Source: Commodity Trade Statistics Database, United Nations Statistics Division, supplemented with import value figures from Global Economic Monitor, World Bank and World Development Indicators, World Bank.

3 Technical specifications

3.1 Programming platform

The WTM system has been developed using the Integrated Statistical Information System (Isis). Isis was developed at the CPB and the University of Aarhus for the purpose of processing economic data (especially data in time series form), running econometric models and for generating tabular output. For the specific task of adjusting time series for seasonal fluctuations, the WTM uses the econometric software package EViews. The WTM system is operated by DOS batch files. Data are stored both in Isis database format (for internal use at the CPB) and in Excel format (Microsoft Office Excel 2007; for easy access for both users at the CPB and customers in the outside world).

3.2 Directory structure and data storage

The directory structure of the WTM is shown in table 3.1. The two main directories below the system's root WTM are WTM_INPRO and WTM_TRADE, which contain respectively the production and the trade branches of the system. The four successive stages of data processing set out in section 1.2 are reflected literally in the directory structure within these two main directories. Procedures shared by the trade and the production monitor are stored in directory WTMX_ISI. Final output is placed in WTMX_OUT. The batch files that start up the system are in the system's root WTM.

Data that pertain to one monitoring issue are stored separately. This applies to data at all processing stages. It is accomplished by incorporating the calendar month of the monitoring issue (the 'report month') into all pertinent file names. Apart from that, file names refer to either the production monitor or the trade monitor, to the processing stage, and the data frequency. For example, the data files put out by WTM 1 of the production monitor for the purpose of compiling the December 2012 WTM report are:[11]

```
wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_2012m12_m.xis
wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_2012m12_q.xis
wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_2012m12_y.xis
```

[11] Such files usually contain data that run beyond the report month, as there is a lag of about two months between real events and publication. In this example the publication, which reports about December 2012, is prepared in February 2012. By that time, January 2013 figures for various countries are available.

Table 3.1 Directory structure (a)

WTM \	
WTM_INPRO \	MODULE INDUSTRIAL PRODUCTION
WTM0 \	INPRO external data (input for WTM1)
WTM_DATA_DS \	data from Thomson Reuter Datastream
WTM_DATA_EU \	data from Eurostat
WTM_DATA_IE \	data from International Energy Agency
WTM_DATA_NS \	data from national sources
WTM_DATA_OE \	data from OECD
WTM_DATA_UN \	data from United Nations Economic Commission for Europe
WTM_DATA_WB \	data from World Bank Global Economic Monitor
WTM1 \	INPRO processing stage 1
WTM_CLOG \	catalogue files used for categorising external data
WTM_DATA \	data output (input for WTM2)
WTM_ISIS \	ISIS program files
WTM_TEMP \	temporary files
WTM2 \	INPRO processing stage 2
WTM_DATA \	data output (input for WTM3)
WTM_ISIS \	ISIS program files
WTM_TEMP \	temporary files
WTM3 \	INPRO processing stage 3
WTM_DATA \	data output (input for WTM4)
WTM_ISIS \	ISIS program files
WTM_TEMP \	temporary files
WTM4 \	INPRO processing stage 4
WTM_DATA \	final data output
WTM_ISIS \	ISIS program files
WTM_TEMP \	temporary files
wtminpro_clog.xlsx	INPRO country catalogue
wtminpro_clog_ecfin.xlsx	INPRO country catalogue used for putting out data in ECFIN format
wtminpro_weights.xlsx	regional import and production shares (put out by WTM3)

(a) Directory names in upper case; file names in lower case. 'TRADE' stands for international trade; 'INPRO' stands for industrial production.

Table 3.1 Directory structure (a) (continued)

WTM \	
WTM_TRADE \	MODULE INTERNATIONAL TRADE
WTM0 \	TRADE external data (input for WTM1)
WTM_DATA_DS \	data from Thomson Reuter Datastream
WTM_DATA_EU \	data from Eurostat
WTM_DATA_FS \	data from IMF International Financial Statistics
WTM_DATA_HW \	data from Hamburg Institute of International Economics
WTM_DATA_NS \	data from national sources
WTM_DATA_OE \	data from OECD
WTM_DATA_UN \	data from United Nations CTS Database (b)
WTM_DATA_WB \	data from World Bank Global Economic Monitor
WTM1 \	TRADE processing stage 1
WTM_CLOG \	catalogue files used for categorising external data
WTM_DATA \	data output (input for WTM2)
WTM_ISIS \	ISIS program files
WTM_TEMP \	temporary files
WTM2 \	TRADE processing stage 2
WTM_DATA \	data output (input for WTM3)
WTM_ISIS \	ISIS program files
WTM_TEMP \	temporary files
WTM3 \	TRADE processing stage 3
WTM_DATA \	data output (input for WTM4)
WTM_ISIS \	ISIS program files
WTM_TEMP \	temporary files
WTM4 \	TRADE processing stage 4
WTM_DATA \	final data output
WTM_ISIS \	ISIS program files
WTM_TEMP \	temporary files
wtmtrade_clog.xlsx	TRADE country catalogue
wtmtrade_clog_ecfin.xlsx	TRADE country catalogue used for putting out data in ECFIN format

(a) Directory names in upper case; file names in lower case. 'TRADE' stands for international trade; 'INPRO' stands for industrial production.
(b) Commodity Trade Statistics Database, United Nations Statistics Division.

Table 3.1 Directory structure (a) (continued)

WTM \	
WTMX_DOC \	documentary files
WTMX_EVW \	EViews program files
WTMX_ISI \	system files containing functions and procedures
WTMX_OUT \	output files used for monthly WTM publication
DATA_ECFIN \	data delivered to DG ECFIN
wtminpro_yyyymmm_ecfin.xlsx	template for INPRO time series delivered to DG ECIN
wtmtrade_yyyymmm_ecfin.xlsx	template for TRADE time series delivered to DG ECIN
DATA_WWW \	data published on internet
wtm_yyyymm.xlsx	template for time series published on internet
wtm_yyyymm_memo.docx	template for monthly brief published on internet
wtm_inpro4_plot1.eps	INPRO chart 1 shown in brief
wtm_inpro4_plot2.eps	INPRO chart 2 shown in brief
wtm_inpro4_plot3.eps	INPRO chart 3 shown in brief
wtm_trade4_plot1.eps	TRADE chart 1 shown in brief
wtm_trade4_plot2.eps	TRADE chart 2 shown in brief
wtm_trade4_plot3.eps	TRADE chart 3 shown in brief
wtminpro4_table.xlsx	INPRO summary table shown in brief
wtmtrade4_table.xlsx	TRADE summary table shown in brief
wtminpro1.bat	batch file that operates INPRO stage 1
wtminpro2.bat	batch file that operates INPRO stage 2
wtminpro3.bat	batch file that operates INPRO stage 3
wtminpro4.bat	batch file that operates INPRO stage 4
wtmtrade1.bat	batch file that operates TRADE stage 1
wtmtrade2.bat	batch file that operates TRADE stage 2
wtmtrade3.bat	batch file that operates TRADE stage 3
wtmtrade4.bat	batch file that operates TRADE stage 4
wtminprox_ini.isi	ISIS program file containing settings for INPRO
wtmtradex_ini.isi	ISIS program file containing settings for TRADE

(a) Directory names in upper case; file names in lower case. 'TRADE' stands for international trade; 'INPRO' stands for industrial production.

Similar but slightly more specific naming conventions apply to data that is downloaded from the internet, that is, the external data that is the point of departure for WTM 1. Names of external data files identify the data source and the report month for which they are to be used. Furthermore, they refer to either the production monitor or the trade monitor. Finally, they include an acronym of the type of data they contain. For example, data taken from the OECD's website to be used in the production monitor are stored in the following four files:[12]

```
oe2012m12_inpro_industry_monthly_sa.xlsx
oe2012m12_inpro_industry_quartly_sa.xlsx
oe2012m12_inpro_manufact_monthly_sa.xlsx
oe2012m12_inpro_manufact_quartly_sa.xlsx
```

The reference in file names to the report month enables the system to find the appropriate data at each processing stage. In addition, it enables proper documentation of past monitor issues, as all data used for a particular issue is retained separately.

3.3 Running the system

Data input

All data is taken from internet sources and all data is stored in Excel format, as this format is available at all websites that are used for the WTM.[13] In the case of the OECD and the IMF, data is downloaded by running customized queries. In other cases such as Eurostat and the World Bank, data is made available to the system by downloading entire files and renaming them appropriately according to the system's naming conventions. At other sites, the data must be selected manually. All of this work takes place outside the system and is outside the scope of this document.

Setting parameters

There are only two system files which must be amended regularly by the user. These are the following two, small Isis program files:

```
wtm\wtminprox_ini.isi
wtm\wtmtradex_ini.isi
```

In these files, the system's most basic parameters are specified. (The acronym 'ini' stands for initialization.) Among a few other things, the parameters include the initial and final month of the monitoring period (the latter is the report month) and the base year. The initial month will hardly ever change, while the base year will be moved forward every so many years. The report month however must be set correctly each time the system is being run. The code contained in the first of the two initialization files is shown in figure 3.1. (The contents of the

[12] The first two characters identify the data source. For a full list of the codes used for this purpose, see table 3.7.

[13] The alternative of downloading data in CSV format and developing code for its conversion into the desired format is technically more attractive. Unfortunately, only a minority of the sources used in the WTM offer this possibility. Therefore, and for the sake of uniformity, Excel is used as the data transfer platform for all external data.

other file are quite similar.) The report month parameter is called `t_mnth_rprt_last`. In the illustration it is set at December 2012.

Figure 3.1 Initialization file for industrial production monitor

```
(* ------------------------------------------------------------------------------
 * WTM INPRO Part 2 : settings
 *
 * Name             : WTMINPROX_INI.ISI
 * Date             : 2013.02.27
 * ------------------------------------------------------------------------------
 *)

(* Initial and final month of time series; base year.
 *)

t_mnth_data_frst  = 2000.01m                                                    ;
t_mnth_rprt_last  = 2012.12m                                                    ;

t_year_base       = 2000y                                                       ;

t_mnth_arcv_frst  = 1991.01m                                                    ;

(* Compile differences from previous month (INPRO 1-4).
 *)

b_store_dif       = false                                                       ;

(* Put out data source by source (INPRO 1).
 *)

b_store_by_source = false                                                       ;

(* Put out data in ECFIN format (INPRO 3).
 *)

b_store_ecfin_old = false                                                       ;
b_store_ecfin_new = true                                                        ;

(* Environment variable set by WTMINPRO?.BAT: filelog.
 *)

getenv(varnam = "filelog"; vardat = s_log_sys)                                  ;

(* ------------------------------------------------------------------------------
 *)
```

The system obviously needs many more parameters to run properly. Most of these parameters change only incidentally however. This applies to, among other things, country classification (chapter), choice of data source at the country level (chapter 4), and technical specifications of external data files. Such parameters are never embedded in the system's program code, but are read from file instead.[14] The names of such system files include the acronym 'clog', which stands for 'catalogue'. Two central catalogue files in the system are:

[14] The advantage of organizing things this way is that having to change the program code is avoided as much as possible. As an example, consider the specifications of external data files. These are spreadsheets that are downloaded from the internet, so their lay-out is generally 'given'. The parameters necessary for reading such files correctly include sheet names and corner cells. The supplier of the data may change its lay-out from one day to the next. When that happens, it is far

```
wtm\wtm_inpro\wtminpro_clog.xlsx
wtm\wtm_trade\wtmtrade_clog.xlsx
```

These files contain full lists of the countries covered in respectively the production and the trade monitor, along with a specification of the country level data sources, and definitions of the regional aggregates used in the WTM. In addition, the catalogue file that relates to production contains the base year weights that are used for regional aggregation.

The catalogue files that contain the technical specifications of external data files are stored in:

```
wtm\wtm_inpro\wtm1\wtm_clog\
wtm\wtm_trade\wtm1\wtm_clog\
```

As explained in footnote 14, the information contained in these files includes technical specifications of the lay-out of external data files, such as file names, sheet names, and start cells. Apart from that, these files include information on the nomenclature regarding time series in the WTM, which enables the system to use standardized names as soon as external data is read (WTM 1).

Running the program

When the specifications in the initialization files have been set, the system is ready to be run. The production monitor must be run first, the trade monitor last. This is because WTM 2 of the trade monitor uses data output of the production monitor.[15] The system is put to run by activating batch files. For both the production monitor and the trade monitor there are four batch files, which operate the successive four parts of the system, which are separate programs (see the bottom part of table 3.1).

---

more convenient to modify a set of parameters that are contained in a specific file than it is to modify specifications that are hard-coded in program code.

[15] The data is industrial production series for countries belonging to sub-region Middle East and North Africa: oil producers (f4). These series are used to estimate export volume growth for the countries concerned. This is the only instance of data streaming from one branch of the monitor to the other.

Table 3.2 Output files, industrial production

Stage	File (a)	Status (b)
WTM 1	time series (dif: difference from previous month's issue)	
	wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_YYYYmMM_m.xlsx	standard
	wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_YYYYmMM_q.xlsx	standard
	wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_YYYYmMM_y.xlsx	standard
	wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_YYYYmMM_m_dif.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_YYYYmMM_q_dif.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_data\wtminpro1_YYYYmMM_y_dif.xlsx	optional
	time series by data source (c)	
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ds_m.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ds_q.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ds_y.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_eu_m.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_eu_q.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_eu_y.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ie_m.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ie_q.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ie_y.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ns_m.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ns_q.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_ns_y.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_oe_m.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_oe_q.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_oe_y.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_un_m.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_un_q.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_un_y.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_wb_m.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_wb_q.xlsx	optional
	wtm\wtm_inpro\wtm1\wtm_temp\wtminpro1_YYYYmMM_wb_y.xlsx	optional
WTM 2	time series (dif: difference from previous month's issue)	
	wtm\wtm_inpro\wtm2\wtm_data\wtminpro2_YYYYmMM_m.xlsx	standard
	wtm\wtm_inpro\wtm2\wtm_data\wtminpro2_YYYYmMM_m_dif.xlsx	optional

Table 3.2 Output files, industrial production (continued)

Stage	File (a)	Status (b)
WTM 3	time series (dif: difference from previous month's issue)	
	wtm\wtm_inpro\wtm3\wtm_data\wtminpro3_YYYYmMM_m.xlsx	standard
	wtm\wtm_inpro\wtm3\wtm_data\wtminpro3_YYYYmMM_m_dif.xlsx	optional
	time series in ECFIN format	
	wtm\wtmx_out\data_ecfin\wtminpro_YYYYmMM_ecfin_tmp.xlsx	optional
WTM 4	time series (dif: difference from previous month's issue)	
	wtm\wtm_inpro\wtm4\wtm_data\wtminpro4_YYYYmMM_m.xlsx	standard
	wtm\wtm_inpro\wtm4\wtm_data\wtminpro4_YYYYmMM_m_dif.xlsx	optional
	time series: import weighted data, national data, production weighted data (d)	
	wtm\wtm_inpro\wtm4\wtm_data\wtminpro4_YYYYmMM_m_sm.xlsx	standard
	wtm\wtm_inpro\wtm4\wtm_data\wtminpro4_YYYYmMM_m_sn.xlsx	standard
	wtm\wtm_inpro\wtm4\wtm_data\wtminpro4_YYYYmMM_m_sp.xlsx	standard
	time series in internet format (e)	
	wtm\wtmx_out\data_www\wtm_YYYYmMM_tmp.xlsx	standard
	charts and table embedded in monthly brief	
	wtm\wtmx_out\wtm_inpro4_plot1.jpg	standard
	wtm\wtmx_out\wtm_inpro4_plot2.jpg	standard
	wtm\wtmx_out\wtm_inpro4_plot3.jpg	standard
	wtm\wtmx_out\wtm_inpro4_table.xlsx	standard

(a) The file name specifies the report month (YYYYmMM; for example 2012m12) and the data frequency: monthly (_m), quarterly (_q), yearly (_y).
(b) The options are switched on or off in the initialization file wtm\wtminprox_ini.
(c) For the codes used in the file names to identify data sources, see table 3.7.
(d) Codes in file names: _sm: import weighted data; _sn: national (unweighted) data; _sp: production weighted.
(e) File published monthly at the CPB's website.

Table 3.3 Output files, international trade

Stage	File (a)	Status (b)
WTM 1	time series (dif: difference from previous month's issue)	
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m.xlsx	standard
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_q.xlsx	standard
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_y.xlsx	standard
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_dif.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_q_dif.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_y_dif.xlsx	optional
	time series by region	
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_a1_mport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_a1_xport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_e6_mport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_e6_xport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_f3_mport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_f3_xport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_l1_mport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_l1_xport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_r1_mport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_r1_xport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_t1_mport.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_data\wtmtrade1_YYYYmMM_m_reg_t1_xport.xlsx	optional
	time series by data source (c)	
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_ds_m.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_ds_q.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_ds_y.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_eu_m.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_eu_q.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_eu_y.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_fs_m.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_fs_q.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_fs_y.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_hw_m.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_hw_q.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_hw_y.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_ns_m.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_ns_q.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_ns_y.xlsx	optional

Table 3.3 Output files, international trade (continued)

Stage	File (a)	Status (b)
WTM 1	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_oe_m.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_oe_q.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_oe_y.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_un_m.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_un_q.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_un_y.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_wb_m.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_wb_q.xlsx	optional
	wtm\wtm_trade\wtm1\wtm_temp\wtmtrade1_YYYYmMM_wb_y.xlsx	optional
WTM 2	time series (dif: difference from previous month's issue)	
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m.xlsx	standard
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_a1_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_a1_xport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_e6_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_e6_xport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_f1_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_f1_xport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_f2_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_f2_xport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_f4_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_f4_xport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_f5_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_f5_xport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_l1_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_l1_xport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_r1_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_r1_xport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_t1_mport.xlsx	optional
	wtm\wtm_trade\wtm2\wtm_data\wtmtrade2_YYYYmMM_m_dif_t1_xport.xlsx	optional
WTM 3	time series (dif: difference from previous month's issue)	
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m.xlsx	standard
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif.xlsx	optional

Table 3.3 Output files, international trade (continued)

Stage	File (a)	Status (b)
WTM 3	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_a1_mport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_a1_xport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_e6_mport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_e6_xport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_f3_mport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_f3_xport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_l1_mport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_l1_xport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_r1_mport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_r1_xport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_t1_mport.xlsx	optional
	wtm\wtm_trade\wtm3\wtm_data\wtmtrade3_YYYYmMM_m_dif_t1_xport.xlsx	optional
	time series in ECFIN format	
	wtm\wtmx_out\data_ecfin\wtmtrade_YYYYmMM_ecfin_tmp.xlsx	optional
WTM 4	time series (dif: difference from previous month's issue)	
	wtm\wtm_trade\wtm4\wtm_data\wtmtrade4_YYYYmMM_m.xlsx	standard
	wtm\wtm_trade\wtm4\wtm_data\wtmtrade4_YYYYmMM_m_dif.xlsx	optional
	time series in internet format (d)	
	wtm\wtmx_out\data_www\wtm_YYYYmMM_tmp.xlsx	standard
	charts and table embedded in monthly brief	
	wtm\wtmx_out\wtm_trade4_plot1.jpg	standard
	wtm\wtmx_out\wtm_trade4_plot2.jpg	standard
	wtm\wtmx_out\wtm_trade4_plot3.jpg	standard
	wtm\wtmx_out\wtm_trade4_table.xlsx	standard

(a) The file name specifies the report month (YYYYmMM; for example 2012m12) and the data frequency: monthly (_m), quarterly (_q), yearly (_y).
(b) The options are switched on or off in the initialization file wtm\wtmtradex_ini.isi.
(c) For the codes used in the file names to identify data sources, see table 3.7.
(d) File published monthly at the CPB's website.

Data output

All files put out by the system at its four stages of data processing are listed in table 3.2 and table 3.3 (international trade). The output includes data (time series), charts, and tables. Only data in Excel format are shown in the tables. At each processing stage time series are stored in Isis database format as well. These files are used internally by the system. For the purpose of inspecting outcomes, it is generally more convenient to use the Excel files.

The most important data output files are (`YYYYmMM` indicates the report month, for example 2012m12):

```
wtm\wtmx_out\data_ecfin\wtminpro_YYYYmMM_ecfin_tmp.xlsx
wtm\wtmx_out\data_ecfin\wtmtrade_YYYYmMM_ecfin_tmp.xlsx
wtm\wtmx_out\data_www\wtm_YYYYmMM_tmp.xlsx
```

The first two files, which contain respectively time series of industrial production and time series of international trade, are delivered to Directorate General for Economic and Financial Affairs (DG ECFIN) of the European Commission. The files contain country level time series as well as regional aggregates in a predefined format. For the geographical classification applied here, see table 2.5.

The last of the above three files is the data file that is published at the CPB's website each month. It contains aggregated time series of both international trade and industrial production, stored in separate sheets. For the geographical classification, see the upper part of table 2.4. The time series run from January 1991. The present WTM system compiles time series from January 2000 onward. The data before January 2000 are taken from a previous version of the system.

A template of the monthly brief, a Word document, is stored as:

```
wtm\wtmx_out\wtm_yyyymmm_memo.docx
```

The charts and tables that are shown in the brief are embedded in the document. The underlying files to which the document is linked are (in this order):

```
wtm\wtmx_out\wtm_trade4_plot1.jpg
wtm\wtmx_out\wtm_trade4_plot2.jpg
wtm\wtmx_out\wtm_trade4_plot3.jpg
wtm\wtmx_out\wtm_trade4_table.xlsx

wtm\wtmx_out\wtm_inpro4_plot1.jpg
wtm\wtmx_out\wtm_inpro4_plot2.jpg
wtm\wtmx_out\wtm_inpro4_plot3.jpg
wtm\wtmx_out\wtm_inpro4_table.xlsx
```

These files contain the charts and tables that the system has last put out. That is: they are overwritten each time the production or the trade monitor is run.[16]

3.4 Variable names

The tables in this section explain naming conventions used in the WTM. The first table is of a purely technical nature; the others show the naming rules for economic time series.

Table 3.4 Variable names: control variables

Symbol (a)	Meaning
b_	Boolean
n_	number
s_	text
t_	time
v_	name (such as variable name)

(a) Initial two characters of variable name.

[16] Including the report month in the names of these files would necessitate adjusting the links in the template each time the report month changes, which would defy the purpose of using embedded files.

Table 3.5 Variable names: time series, full lay-out

Position	Symbol	Meaning
1-3	aaa	stem: economic category; see table 3.6
4	_	separator
5-6	aa	country or country aggregate; see table 2.3 and table 2.6
7	_	separator
8	v	value in current prices
	q	value in constant prices or quantity
	p	price
	u	unit value
	r	real price
9	n	denomination: not applicable
	d	denomination: dollars (currency units per dollar in case of exchange rate)
	e	denomination: euros (currency units per euro in case of exchange rate)
	l	denomination: national currency (dollars per unit of currency in case of exchange rate)
10	m	frequency: monthly data
	q	frequency: quarterly data
	y	frequency: yearly data
	r	three months moving average
	w	twelve months moving average
11	u	level: unitary
	t	level: thousands
	m	level: millions
	b	level: billions
	i	index
	p	percentage change on preceding period
	y	percentage change on twelve months ago
12	_	separator
13	n	not working day, not seasonally adjusted
	w	working day, not seasonally adjusted
	t	seasonally, not working day adjusted
	s	seasonally and working day adjusted
14	n	un-weighted / national datum
	p	production weighted regional average
	m	import weighted regional average
15	_	separator
16-17	aa	data source; see table 3.7
18-19	aa	original data source if 16-17 is ds (Thomson Reuter Datastream); see table 3.8

Table 3.6 Variable names: time series, positions 1-3 (economic category)

Symbol	Meaning	
tgz	goods trade (world average of imports and exports): total	
tgr	goods trade (world average of imports and exports): primary commodities excluding fuels (a)	
tgf	goods trade (world average of imports and exports): fuels	
tgm	goods trade (world average of imports and exports): manufactures	
mgz	import of goods, customs or balance of payments basis	
mge	import of goods, customs basis: extra-trade Euro Area countries	
mgi	import of goods, customs basis: intra-trade Euro Area countries	
mgs	import of goods and services, national accounts basis	
xgz	export of goods, customs or balance of payments basis	
xge	export of goods, customs basis: extra-trade Euro Area countries	
xgi	export of goods, customs basis: intra-trade Euro Area countries	
xgs	export of goods and services, national accounts basis	
ipz	industrial production: mining, manufacturing and utilities (b)	
ipu	industrial production: mining and manufacturing	
ipm	industrial production: manufacturing	
ipc	industrial production: mining, manufacturing, utilities, and construction (c)	
ipo	industrial production: crude oil	
hpc	HWWI spot price index: primary commodities (d)	(= hfl + hpr)
hfl	HWWI spot price index: fuels	
hpr	HWWI spot price index: primary commodities excluding fuels (a)	(= hfd + hir)
hfd	HWWI spot price index: food	
hir	HWWI spot price index: industrial raw materials	(= har + hnf + hos)
har	HWWI spot price index: agricultural raw materials	
hnf	HWWI spot price index: non-ferro metals	
hos	HWWI spot price index: iron ore and steel scrap	
erb	nominal bilateral exchange rate	

(a) Also referred to as 'other raw materials' or 'non-oil commodities'.
(b) Also referred to as 'industry' or 'industry excluding construction'.
(c) Also referred to as 'industry and construction'.
(d) HWWI: Hamburg Institute of International Economics.

Table 3.7 Variable names: time series, positions 16-17 (data source)

Code	Meaning
ds	Thomson Reuter Datastream
eu	Eurostat
fs	International Monetary Fund International Financial Statistics
ie	International Energy Agency
hw	Hamburg Institute of International Economics
ns	national source
oe	Organisation for Economic Cooperation and Development
un	United Nations Economic Commission for Europe
wb	World Bank Global Economic Monitoring System

Table 3.8 Variable names: time series, positions 18-19 (data source) (a)

Code	Meaning
eb	European Central Bank
ei	Economist Intelligence Unit
eu	Eurostat
fs	International Monetary Fund International Financial Statistics
ns	national source
oe	Organisation for Economic Cooperation and Development

(a) These codes are used to identify the original data source if the direct source is Thomson Reuter Datastream, as indicated by code ds in positions 16-17.

4 Country-level data sources and computations

4.1 Data collection: overview

The source time series used in the trade part and the production part of the WTM are listed in respectively table 4.1 and table 4.2. Differences in the lay-out of the two tables reflect the fact that in the production data only one time series is compiled for each country (industrial production), whereas in the trade data six series are compiled (value, price, and volume at both the export and the import side). The two tables list the countries covered and specify the data used at country level. The specifications include the economic category, the data source, and the frequency of the time series (which is monthly in nearly all cases). The source series are collected in WTM 1. Country-level computations, including the completion of primary series on the basis of the most recent observations of secondary series, take place in WTM 2. Details of these computations are set out in paragraphs 4.2 and 4.3.

Industrial production

Eurostat series are used where available. This covers 20 advanced economies and 9 emerging economies (countries in Central and Eastern Europe plus Turkey). Of these 29 countries, 26 are European Union member states. (Malta is the one member state not covered.) The other three are Croatia, Norway, and Turkey. Series for the other advanced economies are from the OECD with the exception of the one for the United States, which is taken from Thomson Reuter Datastream. Most series for emerging economies are from Datastream (21 countries) and the World Bank (17). The remaining emerging countries are covered by data from the United Nations, the OECD, and national sources.

In most cases the source series is a series of industrial production. For 4 countries manufacturing production is used as a proxy and for 14 oil-producing countries oil production is used.

International trade

Eurostat series are used where available. These cover all of the 27 European Union member states, 20 advanced economies and 7 emerging economies in Central and Eastern Europe. Of the other advanced economies, Japan and the United States are covered by data from Thomson Reuter Datastream, while data for the remaining advanced countries is taken from the World Bank and the OECD. For the bulk of emerging countries data from the World Bank is used. For three emerging economies, including China, series from Datastream are used.

The primary source for exchange rates (not mentioned in table 4.2) is the IMF. For countries for which the IMF does not publish exchange rates data from the World Bank is used.

4.2 Country-level computations: industrial production

For many countries, two source series are mentioned in table 4.1. In these cases the most recent observations of the second series mentioned are used to extrapolate the first wherever this is appropriate.[17] This happens in WTM 2.[18] In addition, the following specific computations are made there:

- Missing observations at the end of the production series for Iceland, Morocco, and Switzerland are extrapolated on the basis of aggregate industrial production for the European Union as reported by Eurostat. The data lag for Iceland and Morocco is usually one or two months, the lag for Switzerland is longer.
- Missing observations at the end of the production series for Australia, Canada, and New Zealand are extrapolated on the basis of industrial production in the United States. The data lag for these countries is one or two months.

4.3 Country-level computations: international trade

For each country six series are compiled: import and export value, import and export price, and import and export volume. At both the import and export side, two of the three variables are used to compute the third variable. The starting point is always trade value. Either volume is computed from value and price, or price is computed from value and volume. In table 4.2, the data source for trade value is mentioned under 'Source 1'. The second source, for either price or volume, is mentioned under 'Source 2'. The third variable – the one that is computed – is not mentioned. These computations are made in WTM 2. In addition, several country-specific techniques are applied in WTM 2 in order to extend the country series as much as possible, that is, to fill in missing observations at the end of the series. The correction for the Chinese New Year and the correction for working days in Latin America are also made in WTM 2. The country-specific computations are set out below. An overview of the calculation methods applied in the trade branch of the WTM is given in table 4.3.

European Union member countries

The time series from Eurostat for European Union member countries are completed up to and including the report month.[19] The computations described below take place at the country level. They are applied to the original, euro-denominated extra-European Union and intra-European Union trade data that Eurostat reports. The results are converted into dollar-denominated figures. At the time of compilation the country series are usually fully complete up to and including the month prior to the report month, while the figures for the report

[17] It is appropriate if values are missing at the end of the first series and the second series has more recent observations than the first. Series end in the month prior to the month in which the system is being run.

[18] Program file: `wtm \ wtm_inpro \ wtm2 \ wtm_isis \ wtminpro2_02_process.isi`.

[19] Program file: `wtm \ wtm_trade \ wtm2 \ wtm_isis \ wtmtrade2_02_process_03_eu.isi`.

month itself are complete with the exception of intra-union price changes. So the procedure generally serves only to fill in missing observations of intra-union price changes for the report month. The technical requirement is that the extra-union value series be complete up to and including the report month. The procedure includes the following steps:

- Missing observations of extra-union prices are extrapolated by applying zero change from the last available observation onward.
- Missing observations of intra-union value series are extrapolated by applying zero change from the last available observation onward. Missing observations of intra-union prices are extrapolated on the basis of extra-union price changes.
- Now that both extra-union and intra-union values and prices are complete, missing extra-union and intra-union volume indices are computed from value and price changes. Furthermore, extra-union and intra-union value series in base year prices are computed.
- For each country, intra-union and extra-union value series (both those in current prices and those in base year prices) are aggregated. The country price series are computed from the values in current prices and the values in base year prices.

China, Hong Kong, Korea, Singapore, and Taiwan

In these five countries, seasonal fluctuation in economic activity due to the celebration of the Chinese New Year is deemed significant. The adjustment runs as follows.[20] Where the successive January and February value figures in current prices are available, both figures are replaced with their average. Volume figures are computed from value (adjusted) and price (unadjusted). At the time when the WTM is being finalized for publication, value data for the countries mentioned is available usually up to and including one month ahead of the report month. So when a first estimate for January is made, averages for the months January and February can usually be computed.

Russian Federation

The series for Russia are based on World Bank data. Sometimes only the World Banks' trade value series are complete up to and including the report month, while the price and volume series lag behind one month. If that is the case, the missing observations of import and export prices are extrapolated by applying zero change from the last available observation onward.[21] The volume series are computed from the value and price series. The extrapolation is made in order to prevent WTM 3 from computing missing observations for Russia from regional growth rates, that is, growth rates for the regional aggregate Central and Eastern Europe. As Russia represents about a quarter of the region's imports and about a third of its exports, this might seriously distort the outcomes.

[20] Program file: `wtm \ wtm_trade \ wtm2 \ wtm_isis \ wtmtrade2_02_process_07.isi`.

[21] Program file: `wtm \ wtm_trade \ wtm2 \ wtm_isis \ wtmtrade2_02_process_05_wb.isi`.

Latin America

The adjustments made to the series for countries in Latin America include a correction for working days and extrapolation of missing observations.[22] Just as in the case of Russia, the extrapolation is made in order to prevent WTM 3 from computing missing observations for the larger economies in the region, Argentina and Brazil in particular, from regional growth rates.

All source series for Latin American countries are from the World Bank. These series are seasonally but not working day adjusted. Furthermore, the publication lags for some of the smaller countries are considerable and sometimes even for the larger economies the figures for the report month are incomplete. The following adjustments are made to all Latin American country series:

- A working day correction is applied to trade value. It is made on the basis of the value series for Mexico, which is the only country in the region for which working day-corrected series are available, namely from the OECD. The proportion between adjusted and non-adjusted levels of Mexican monthly nominal exports and imports is applied to the World Bank nominal exports and imports series for all countries in the region in order to arrive at working day-adjusted series.
- Missing observations at the end of the trade value series are extrapolated by applying zero change from the last available observation onward. The value series are then smoothed by applying a moving average to the most recent observations. At the export side, a two-month moving average is applied to the last two observations; at the import side, a three-month moving average is applied to the last three observations. The parameters have been established experimentally with the objective of minimizing revisions to the first estimate of trade volume growth in the region.
- Missing observations at the end of the price series are computed from current value changes (possibly extrapolated) and average volume change. Average volume change is computed over the period for which data is available, starting in January 2000.
- Volume series are computed from value and price series.

South Africa

The trade series for South Africa must be complete up to and including the report month because of the way in which the series for the region Sub-Saharan Africa are compiled (see chapter 5). The most recent observations of trade prices are sometimes missing at the time of compilation. Missing observations at the end of the price series are extrapolated by applying zero change from the last available observation onward. Volume series are computed from value and price series.

[22] Program file: `wtm\wtm_trade\wtm2\wtm_isis\wtmtrade2_02_process_05_wb.isi`.

Table 4.1 Source time series, industrial production

Country		Category	Source (a)	
1	Algeria	production: oil	ds / ie	(m)
2	Angola	production: oil	ds / ie	(m)
3	Argentina	production: industry	ds / ns	(m)
4	Armenia	production: industry	wb	(m)
5	Australia	production: industry	oe	(q)
6	Austria	production: industry	eu	(m)
7	Belarus	production: industry	un / ns	(m)
8	Belgium	production: industry	eu	(m)
9	Brazil	production: industry	ds	(m)
10	Bulgaria	production: industry	eu	(m)
11	Canada	production: industry	oe	(m)
12	Chile	production: industry	wb	(m)
13	China	production: industry	wb	(m)
14	Colombia	production: industry	wb	(m)
15	Croatia (b)	production: industry	eu	(m)
16	Cyprus	production: industry	eu	(m)
17	Czech Republic	production: industry	eu	(m)
18	Denmark	production: industry	eu	(m)
19	Ecuador	production: industry	ds	(m)
20	Egypt	production: industry	ns / wb	(m)
21	Estonia	production: industry	eu	(m)
22	Finland	production: industry	eu	(m)
23	France	production: industry	eu	(m)
24	Gabon	production: oil	ds / ie	(m)
25	Germany	production: industry	eu	(m)
26	Greece	production: industry	eu	(m)
27	Hong Kong	production: industry	wb	(m)
28	Hungary	production: industry	eu	(m)
29	Iceland	production: industry	oe	(m)
30	India	production: industry	wb	(m)
31	Indonesia	production: industry	wb	(m)
32	Iran (c)	production: oil	ds / ie	(m)
33	Iraq	production: oil	ds / ie	(m)
34	Ireland	production: industry	eu	(m)
35	Israel	production: industry	ds / ns	(m)
36	Italy	production: industry	eu	(m)
37	Japan	production: industry	oe / ns	(m)
38	Jordan	production: industry	wb / ns	(m)
39	Kazakhstan	production: industry	un / ns	(m)
40	Korea, Republic of	production: industry	ds	(m)
41	Kuwait	production: oil	ds / ie	(m)
42	Latvia	production: industry	eu	(m)

Table 4.1 Source time series, industrial production (continued)

Country		Category	Source (a)	
43	Libya (d)	production: oil	ds / ie	(m)
44	Lithuania	production: industry	eu	(m)
45	Luxembourg	production: industry	eu	(m)
46	Malaysia	production: industry	wb	(m)
47	Mexico	production: industry	oe / ns	(m)
48	Morocco	production: manufacturing	ns / wb	(m)
49	Netherlands	production: industry	eu	(m)
50	New Zealand	production: industry	oe	(q)
51	Nigeria	production: oil	ds / ie	(m)
52	Norway	production: industry	eu	(m)
53	Oman	production: oil	ds / ie	(m)
54	Pakistan	production: industry	wb	(m)
55	Peru	production: industry	wb	(m)
56	Philippines	production: industry	wb	(m)
57	Poland	production: industry	eu	(m)
58	Portugal	production: industry	eu	(m)
59	Qatar	production: oil	ds / ie	(m)
60	Romania	production: industry	eu	(m)
61	Russian Federation	production: industry	oe /	(m)
62	Saudi Arabia	production: oil	ds / ie	(m)
63	Singapore	production: industry	wb	(m)
64	Slovakia	production: industry	eu	(m)
65	Slovenia	production: industry	eu	(m)
66	South Africa	production: manufacturing	ds	(m)
67	Spain	production: industry	eu	(m)
68	Sweden	production: industry	eu	(m)
69	Switzerland	production: industry	oe	(q)
70	Syrian Arab Republic	production: oil	ds / ie	(m)
71	Taiwan	production: industry	wb	(m)
72	Thailand	production: manufacturing	ds	(m)
73	Trinidad And Tobago	production: industry	wb	(m)
74	Tunisia	production: industry	wb	(m)
75	Turkey	production: industry	eu	(m)
76	Ukraine	production: manufacturing	un / ds	(m)
77	United Arab Emirates	production: oil	ds / ie	(m)
78	United Kingdom	production: industry	eu	(m)
79	United States	production: industry	ds	(m)
80	Uruguay	production: industry	wb	(m)
81	Venezuela	production: oil	ds / ie	(m)

(a) For the codes used to identify data sources, see table 3.7. Between brackets: frequency (**m**onthly or **q**uarterly).

(b) Local name: Hrvatska.
(c) Islamic Republic of Iran.
(d) Libyan Arab Jamahiriya.

Table 4.2 Source time series, international trade

Country		Source 1 (a)		Source 2 (a)		
1	Algeria	trade value: wb	(m)	price:	wb	(m)
2	Argentina	trade value: wb	(m)	price:	wb	(m)
3	Armenia	trade value: wb	(m)	price:	wb	(m)
4	Australia	trade value: wb	(m)	price:	wb / ds (h)	(q)
5	Austria	trade value: eu	(m)	volume:	eu	(m)
6	Azerbaijan	trade value: wb	(m)	price:	wb	(m)
7	Bangladesh	trade value: wb	(m)	price:	wb	(m)
8	Belarus	trade value: wb	(m)	price:	wb	(m)
9	Belgium	trade value: eu	(m)	volume:	eu	(m)
10	Bolivia	trade value: wb	(m)	price:	wb	(m)
11	Brazil	trade value: wb	(m)	price:	wb	(m)
12	Bulgaria	trade value: eu	(m)	volume:	eu	(m)
13	Cambodia	trade value: wb	(m)	price:	wb	(m)
14	Canada	trade value: wb	(m)	price:	wb	(m)
15	Chile	trade value: wb	(m)	price:	wb	(m)
16	China	trade value: ds	(m)	price:	wb / ds (i)	(m)
17	Colombia	trade value: wb	(m)	price:	wb	(m)
18	Costa Rica	trade value: wb	(m)	price:	wb	(m)
19	Croatia (b)	trade value: wb	(m)	price:	wb	(m)
20	Cyprus	trade value: eu	(m)	volume:	eu	(m)
21	Czech Republic	trade value: eu	(m)	volume:	eu	(m)
22	Denmark	trade value: eu	(m)	volume:	eu	(m)
23	Dominican Republic	trade value: wb	(m)	price:	wb	(m)
24	Ecuador	trade value: wb	(m)	price:	wb	(m)
25	Egypt	trade value: wb	(m)	price:	wb	(m)
26	Estonia	trade value: eu	(m)	volume:	eu	(m)
27	Finland	trade value: eu	(m)	volume:	eu	(m)
28	France	trade value: eu	(m)	volume:	eu	(m)
29	Germany	trade value: eu	(m)	volume:	eu	(m)
30	Greece	trade value: eu	(m)	volume:	eu	(m)
31	Guatemala	trade value: wb	(m)	price:	wb	(m)
32	Guyana	trade value: wb	(m)	price:	wb	(m)
33	Haiti	trade value: wb	(m)	price:	wb	(m)
34	Hong Kong	trade value: wb	(m)	price:	wb	(m)
35	Hungary	trade value: eu	(m)	volume:	eu	(m)
36	Iceland	trade value: wb	(m)	price:	wb	(m)
37	India	trade value: wb	(m)	price:	wb	(m)
38	Indonesia	trade value: ds	(m)	price:	ds	(m)
39	Iran (c)	trade value: wb	(m)	price:	wb	(m)
40	Iraq	trade value: wb	(m)	price:	wb	(m)
41	Ireland	trade value: eu	(m)	volume:	eu	(m)
42	Israel	trade value: wb	(m)	price:	wb	(m)
43	Italy	trade value: eu	(m)	volume:	eu	(m)

Table 4.2 Source time series, international trade (continued)

Country		Source 1 (a)		Source 2 (a)		
44	Jamaica	trade value: wb	(m)	price:	wb	(m)
45	Japan	trade value: ds	(m)	volume:	ns	(m)
46	Kazakhstan	trade value: ds	(m)	price:	wb (j)	(m)
47	Korea, Republic of	trade value: wb	(m)	price:	fs	(m)
48	Kuwait	trade value: wb	(m)	price:	wb	(m)
49	Lao (d)	trade value: wb	(m)	price:	wb	(m)
50	Latvia	trade value: eu	(m)	volume:	eu	(m)
51	Libya (e)	trade value: wb	(m)	price:	wb	(m)
52	Lithuania	trade value: eu	(m)	volume:	eu	(m)
53	Luxembourg	trade value: eu	(m)	volume:	eu	(m)
54	Macedonia (f)	trade value: wb	(m)	price:	wb	(m)
55	Malaysia	trade value: wb	(m)	price:	wb	(m)
56	Malta	trade value: eu	(m)	volume:	eu	(m)
57	Mauritius	trade value: wb	(m)	price:	wb	(m)
58	Mexico	trade value: wb	(m)	price:	wb	(m)
59	Morocco	trade value: wb	(m)	price:	wb	(m)
60	Netherlands	trade value: eu	(m)	volume:	eu	(m)
61	New Zealand	trade value: wb	(m)	price:	wb / ds (k)	(q)
62	Nicaragua	trade value: wb	(m)	price:	wb	(m)
63	Norway	trade value: wb	(m)	price:	wb / oe (l)	(q)
64	Oman	trade value: wb	(m)	price:	wb	(m)
65	Pakistan	trade value: wb	(m)	price:	wb	(m)
66	Panama	trade value: wb	(m)	price:	wb	(m)
67	Paraguay	trade value: wb	(m)	price:	wb	(m)
68	Peru	trade value: wb	(m)	price:	wb	(m)
69	Philippines	trade value: wb	(m)	price:	wb	(m)
70	Poland	trade value: eu	(m)	volume:	eu	(m)
71	Portugal	trade value: eu	(m)	volume:	eu	(m)
72	Qatar	trade value: wb	(m)	price:	wb	(m)
73	Romania	trade value: eu	(m)	volume:	eu	(m)
74	Russian Federation	trade value: wb	(m)	price:	wb	(m)
75	Saudi Arabia	trade value: wb	(m)	price:	wb	(m)
76	Singapore	trade value: wb	(m)	price:	fs / ns (m)	(m)
77	Slovakia	trade value: eu	(m)	volume:	eu	(m)
78	Slovenia	trade value: eu	(m)	volume:	eu	(m)
79	South Africa	trade value: wb	(m)	price:	ds / ns (n)	(m)
80	Spain	trade value: eu	(m)	volume:	eu	(m)
81	Sri Lanka	trade value: wb	(m)	price:	wb	(m)
82	Sweden	trade value: eu	(m)	volume:	eu	(m)
83	Switzerland	trade value: oe / ns (g)	(m)	volume:	oe / ns (o)	(m)
84	Taiwan	trade value: wb	(m)	price:	ns	(m)
85	Thailand	trade value: wb	(m)	price:	wb / ds (p)	(m)
86	Trinidad and Tobago	trade value: wb	(m)	price:	wb	(m)

Table 4.2 Source time series, international trade (continued)

Country		Source 1 (a)		Source 2 (a)		
87	Tunisia	trade value: wb	(m)	price:	wb	(m)
88	Turkey	trade value: wb	(m)	price:	wb	(m)
89	Ukraine	trade value: wb	(m)	price:	wb	(m)
90	United Arab Emirates	trade value: wb	(m)	price:	wb	(m)
91	United Kingdom	trade value: eu	(m)	volume:	eu	(m)
92	United States	trade value: ds	(m)	price:	ds	(m)
93	Uruguay	trade value: wb	(m)	price:	wb	(m)
94	Uzbekistan	trade value: wb	(m)	price:	wb	(m)
95	Viet Nam	trade value: wb	(m)	price:	wb	(m)
96	Yemen	trade value: wb	(m)	price:	wb	(m)

(a) Economic category; source(s); frequency (between brackets: **m**onthly or **q**uarterly). For codes used to identify data sources, see table 3.7.

(b) Local name: Hrvatska.
(c) Islamic Republic of Iran.
(d) Lao People's Democratic Republic.
(e) Libyan Arab Jamahiriya.
(f) Former Yugoslav Republic of Macedonia.

(g) Series from OE supplemented with figures from NS where possible at both the export and import side.
(h) Export prices from WB; import prices from DS.
(i) WB: 2000m01-2004m12; DS: 2005m01-latest.
(j) Export prices are not available for Kazachstan; the export prices for the Russian Federation are used as a proxy.
(k) Export prices from WB; import prices from DS.
(l) Export prices from WB; import prices from OE.
(m) Series from FS supplemented with figures from NS where possible at both the export and import side.
(n) Series from DS supplemented with figures from NS where possible at both the export and import side.
(o) Series from OE supplemented with figures from NS where possible at both the export and import side.
(p) Export prices from WB; import prices from DS.

Table 4.3 Summary of calculation methods for trade data

Principle data source (a)		Calculation method
EU	Eurostat	compute price from value and volume
OE	OECD (b)	compute volume from value and price
WB	World Bank	compute volume from value and price
DS	Thomson Reuter Datastream	compute volume from value and price (c)
World Bank data cover most emerging economies in the WTM. The methodology applied to the region Africa and Middle East differs from the one applied elsewhere. Details are given in chapter 5. It is summarized here as follows:		
Africa and Middle East (f3)		
	Sub-Saharan Africa (f1)	
	South Africa (za)	compute volume from value and price
	Sub-Saharan Africa excluding South Africa (f0)	compute price from value and volume
	Middle East and North Africa (f2)	compute price from value and volume

(a) 'Source 1' in table 4.2.
(b) Switzerland is the only country for which the OECD is the principle data source.
(c) One of the countries covered is Japan. Japan is exceptional in that price is computed from value and volume.

5 Estimation of trade flows in Africa and the Middle East

The region Africa and Middle East is exceptional in that some of the time series for this part of the world are estimated at a certain level of regional aggregation. That is: the regional series are not fully built up from country data, as happens everywhere else in the WTM. This applies only to the trade data – the topic of this chapter; the production data for this region comprise separate series for each country covered. Africa and Middle East consists of the two sub-regions Middle East and North Africa (MENA) and Sub-Saharan Africa. Middle East and North Africa is further sub-divided into (major) oil producing countries and others (see table 2.4).

The data source for the trade series for Africa and Middle East is the World Bank, the only exception being trade prices for South Africa (see paragraph 5.2).The computations set out in this chapter are made in WTM 2.[23]

5.1 Import and export series for Middle East and North Africa

5.1.1 Imports

The compilation of import series for MENA takes place at the country level, but partly on the basis of aggregate data, namely the import price series for MENA from the World Bank and an additional series of estimated import prices (also for MENA) that includes one or more recent observations.

- Country series of import value in current prices are taken from the World Bank.
- Country series of import value in base year prices are taken from the World Bank where they are available. Where they are not, country series are computed from the country import value in current prices and the aggregate import price series for MENA from the World Bank.
- Missing observations at the end of the country series of value in base year prices are extrapolated on the basis of average monthly country volume growth, computed for the longest period possible from the base year onward.
- Missing observations at the end of the country value series in current prices are extrapolated on the basis of volume growth (possibly extrapolated in the previous step) and an estimated regional import price series for MENA. This aggregate import price series is a weighted average of the world price index of manufactures (compiled in the WTM), the HWWI price index of fuels, and the HWWI price index of primary commodities. (HWWI: Hamburg Institute of International Economics.)

[23] Program file: `wtm\wtm_trade\wtm2\wtm_isis\wtmtrade2_02_process_05_wb.isi`.

- Country import prices are computed from country import value in current prices and country import value in base year prices.
- The series of import value in current prices and import value in base year prices for MENA are computed by summing the country series. The aggregate price series is computed from the aggregate value series in current prices and the aggregate value series in base year prices.

5.1.2 Exports

At the export side, Middle East and North Africa is divided into MENA oil producing countries and MENA other countries. The compilation of import series for MENA takes place at the country level. For countries belonging to MENA oil producing countries an estimated regional export price series is used however. No use is made of aggregate data for MENA from the World Bank.

Country export value in base year prices

- MENA oil producing countries:
  Country series of export value in base year prices are estimated by applying the country index of industrial production (taken from the production monitor compiled for the same report month) to the base year country export value from the World Bank. The resulting series are always complete up to and including the report month, as the production indices are available for the whole monitoring period.
- MENA oil producing countries:
  The regional series of export value in base year prices is computed by summing the country series.
- MENA other countries:
  Country series of export value in base year prices are taken from the World Bank. Missing observations at the end of the series are extrapolated on the basis of regional volume growth in MENA oil producing countries.
- MENA other countries:
  The regional series of export value in base year prices is computed by summing the country series.

Country export value in current prices

- MENA oil producing countries:
  Country series of export value in current prices are estimated by multiplying the series of country export value in base year prices by an estimated regional export price series for MENA oil producing countries. This aggregate price series is a weighted average of the world price index of manufactures (compiled in the WTM), the HWWI price index of fuels, and the HWWI price index of primary commodities.
- MENA oil producing countries:
  The regional series of export value in current prices is computed by summing the country series.
- MENA other countries:

Country series of export value in current prices are taken from the World Bank. Missing observations at the end of the series are extrapolated on the basis of regional value growth in MENA oil producing countries.

- MENA other countries:
  The regional series of export value in current prices is computed by summing the country series.

Country export prices

- MENA all countries:
  Country export prices are computed from country values in current prices and country values in base year prices.

Regional export series

- The series of export value in current prices and the series of export value in base year prices for the region Middle East and North Africa are computed by summing the series for the two sub-regions. The aggregate price series is computed from the aggregate value series in current prices and the aggregate value series in base year prices.

5.2 Import and export series for Sub-Saharan Africa

Of countries in Sub-Saharan Africa, South Africa is the only country for which separate trade series are compiled. South African trade makes up in between a quarter and a third of Sub-Saharan trade flows. Other countries in the region are dealt with as one entity. The series for that entity are based on aggregate data from the World Bank, which cover 38 countries in Sub-Saharan Africa, South Africa included.[24] The estimation procedure runs as follows:

South Africa

- South African trade values in current prices are taken from the World Bank. These series are generally up-to-date at both the import and the export side.
- South African import and export prices are taken from Thomson Reuter Datastream, supplemented with the most recent observation from the South African Reserve Bank. Missing observations at the end of the series are extrapolated by applying zero change from the last observation onward.
- South African trade values in base year prices are computed from values in current prices and prices.

Sub-Saharan Africa excluding South Africa

- The World Bank series of trade value for South Africa, both those in current prices and those in base year prices, are subtracted from the respective aggregate series for the region Sub-Saharan Africa that the World Bank compiles.
- The price series for the region Sub-Saharan Africa excluding South Africa are computed from values in current prices and values in base year prices.

[24] The other 37 countries are listed at the bottom of table 2.1.

- Missing observations at the end of the value series in base year prices for Sub-Saharan Africa excluding South Africa are extrapolated on the basis of average monthly volume growth in the region, computed for the longest period possible from the base year onward.
- Missing observations at the end of the price series for Sub-Saharan Africa excluding South Africa are extrapolated using estimated regional export and import price series. These aggregate price series are weighted averages of the world price index of manufactures (compiled in the WTM), the HWWI price index of fuels, and the HWWI price index of primary commodities.
- Missing observations at the end of the value series in current prices for Sub-Saharan Africa excluding South Africa are computed from (possibly extrapolated) price and volume changes.

Sub-Saharan Africa

- The series of trade value in current prices and trade value in base year prices for the region Sub-Saharan Africa are computed by adding the series for South Africa to the series for the region Sub-Saharan Africa excluding South Africa. The aggregate price series for Sub-Saharan Africa is computed from the aggregate value series in current prices and the aggregate value series in base year prices.

5.3 Summary

A summary of the computations made to compile trade data for the region Africa and Middle East is given in table 5.1.

Table 5.1 Summary of calculation methods for trade data for Africa and Middle East (a)

Region / country		Calculation method
Sub-Saharan Africa (f1)		
South Africa (za)		1 Trade values in current prices are from World Bank. 2 Trade prices are from Thomson Reuter Datastream. 3 Volumes are computed from values and prices.
Sub-Saharan Africa excluding South Africa (f0)		1 Trade values in current prices are from World Bank. 2 Trade values in base year prices are from World Bank. 3 Prices are computed from values and volumes.
Middle East and North Africa (f2)		
Import		1 Import values in current prices are from World Bank. 2 Import values in base year prices are either directly from World Bank or they are computed from country import value and regional import price from World Bank. 3 Import prices are computed from values and volumes.
Export	MENA oil producers (f4)	1 Export values in base year prices are estimated on basis of industrial production plus 'mark-up'. 2 Export values in current prices are computed from values in base year prices and estimated regional export price series. 3 Export prices are computed from values and volumes.
Export	MENA other (f5)	1 Export values in base year prices are from World Bank. 2 Import values in current prices are from World Bank. 3 Import price are computed from values and volumes.

(a) The estimation of missing observations is not explained here. For that, see the text in this chapter.