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NATIONAL ACCOUNTS STATISTICS IN
UNIDO DATA BASE

Sources and methods for updating and extension

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SYMBOLS

DRPA: Office for Development Research and Policy Analysis of the United
        Nations

UNSO: United Nations Statistical Office

IMF: International Monetary Fund

IFS: International Financial Statistics, Vol.XLII, No.2, February 1989

UNSOCT: UNSO tape containing GDP by kind of activity and expenditure at 1980
        prices, supplied to UNIDO in March, 1989

WT: World Tables, 1988-89 Edition, Internal Version, Volumes I and II -
        tape was supplied to UNIDO in June, 1989

NATIONAL ACCOUNTS STATISTICS IN

UNIDO DATA BASE*

Sources and methods for updating and extension

Main Sources of NAS for UNIDO Data Base

The UNIDO data base, though concerned primarily with industrial
statistics, maintains some national accounts statistics, especially on GDP and
its industrial origin and expenditure components. Until 1983 the main source
of information for UNIDO was the Office for Development Research and Policy
Analysis of the United Nations (DRPA). The information was furnished every
year in the form of a machine readable tape. The DRPA later on released the
figures in the publication entitled 'Handbook of World Development
Statistics'. The data in the DRPA tape lagged behind by about two years. For
instance, the tape supplied in 1983 contained figures up to and including 1981.

The industrial origin of GDP was given in the tape by 7 sectors and
subsectors, namely, (i) agriculture, (ii) total industry, (iii) mining and
quarrying, (iv) manufacturing, (v) electricity and gas, (vi) construction, and
(vii) services. On the expenditure side the components distinguished were
(i) government consumption, (ii) private comsumption (iii) gross capital
formation, (iv) exports and, (v) imports. The figures were expressed in
US dollars but DRPA provided exchange rates so that data could be readily
converted into national currency. The DRPA tape contained data both in
current prices as well as in constant prices, after rescaling the components
from the original price base to 1975. The GDP was also rescaled directly with
the result that the sum of components did not tally with the directly rescaled
GDP.

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The DRPA provided very long time-series data, starting from 1950 in the case of expenditure components and 1960 in the case of industrial origin.

The supply of DRPA data was however discontinued in 1983. Instead, the United Nations Statistical Office (UNSO) started furnishing national accounts statistics in constant prices. The original price base in the time-series data is rescaled to 1980 on the lines followed by DRPA. The figures are again expressed in US dollar but exchange rates are not provided. Apparently, UNSO, unlike DRPA directly rescaled GDP in market prices only, even in the case of those countries which prepare GDP by industrial origin at factor cost. India is an example. In that country GDP by industry of origin is worked out at factor cost. As rescaling would not disturb the identity (sum of industrial origin components = GDP) at least for the year 1980 the rescaled components should add up to directly rescaled GDP at factor cost. The figures however show that the identity does not hold good even in 1980 as is clear from the figures reproduced below:

India - 1980:   Industrial Origin of GDP in Millions of 1980 US Dollars

GDP	AGR	TIA	MFG	CONST	WHOLE	TRANS	OTHER	SUM
172,723	59,111	32,456	27,526	7,776	18,712	7,280	30,111	155,444

The difference between the sum of components and the GDP seems entirely due to difference in prices. While the sum is at factor cost the GDP is perhaps at market prices i.e. factor cost plus net indirect taxes. The difference in other years would be partly due to difference in prices used and partly due to rescaling procedure. The difference can be minimized by taking GDP equal to the sum of rescaled components. In other words, for all those countries which prepare figures of industrial origin components at factor cost it would be more appropriate to work out structure and structural changes with reference

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to the sum of rescaled components. In the case of India the structure will
come to the following:

India: Industrial Structure of the Economy

Year	Share as percentage of GDP			Share as percentage of the sum		
	AGR	MFG	TIA	AGR	MFG	TIA
1970	40.0	14.8	17.2	44.5	16.5	19.1
1975	38.5	15.0	17.6	42.6	16.6	19.5
1980	34.2	15.9	18.8	38.0	17.7	20.9
1985	29.7	17.9	21.3	33.8	20.4	24.3
1986	27.7	18.7	22.3	31.7	21.4	25.5

Apparently the two structures are markedly different.

It may however be noted that in a large number of countries sectoral
figures by industrial origin are not always exclusively either at factor
prices or at market prices. Adjustment for items like imputed bank service
charges, import duties, value added tax and other indirect taxes (other than
commodity taxes) is done at the aggregate level to make the sum of sectoral
values equal to GDP at market prices. The first item, namely imputed bank
service charges is a negative entry, while all other items are generally
positive. Therefore, the sum of sectoral values would normally be less than
GDP at market prices, both at current prices as well as at constant prices.
This would particularly be the case in 1980, the price base of national
accounts statistics in UNSOCT. Few countries however follow different
practices. The price used to value sectoral 'product' is inclusive of all
indirect taxes (net of subsidies) i.e. it is market price. In these countries
the only adjustment needed at the aggregate level is on account of imputed
bank service charges which being a negative entry make the sum of sectoral

values higher than the GDP at market prices even in 1980. Examples are
Netherlands Antilles and Nicaragua. The figures for the two countries are
produced below:

GDP by Kind of Activity

		Netherlands Antilles: 1980 (mill NA Guilders)	Nicaragua: 1978 (mill Cordobas)	
		at current prices	at current prices	at 1958 prices
1.	Agriculture	11.5	3701.2	1594.0
2.	Mining	11.5	45.5	13.4
3.	Manufacturing	159.8	3149.0	1598.0
4.	Electricity	40.3	302.5	210;7
5.	Construction	186.8	429.2	199.9
6.	Trade	531.8	3540.3	1260.8
7.	Transport	353.8	795.8	301.4
8.	Finance, insurance	293.4	1176.5	507.2
9.	Community services	161.7	766.1	302.2
	Total, industries	1739.1	13906.1	5987.6
	producers of govt. services	404.1	1081.9	384.1
	Other producers	...	...	...
	Sub-total	2143.2	14988.0	6371.7
	Less: imputed bank service charges	69.2	...	35.4
	Plus: import duties	...	...	...
	Plus: value added tax	...	...	...
	Equals: GDP	2074.0	14988.0	6336.3

Sources: National accounts Statistics: Main Aggregates and Detailed Tables,
1985, (NAS, 85).

Clearly the sum of sectoral values in the UNSOCT leads to the sub-total of
the above table. It can be less, equal to, or more than GDP at market prices
depending on the type of prices used to value sectoral product and the
treatment of imputed bank service charges. Logically, therefore, structure
should be computed in relation with the sub-total. In that case, prices in
the numerator and the denominator will have the same concept and scope. The

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only distortion will be due to imputed bank sevice charges which however consitute a very small proportion of the sub-total in most of the countries.

The sectoral figures in the UNSOCT still need some clarification. For instance, in the case of Djibouti and Morocco, the sum of industrial origin components in 1980 is higher than GDP at market prices though NAS 85 show big positive adjustments as in the following figures:

<u>NAS: GDP by Kind of Economic Acitivity, 1980</u>

	Djibouti (mill.Francs)	Morocco (000 mill.Dirhams)
Sub-total	46 516	67.19
Less: imputed bank service charges	1 993	1.41
Plus: import duties	9 004	4.24
Plus: value added tax	...	...
Plus: other adjustments	...	...
GDP	53 527	70.16
Sub-total/GDP (per cent)	86.9	95.8
Sum/GDP (per cent) – UNSOCT	103.3	102.0

One plausible explanation for this situation seems to be that the UNSO has distributed import duties among the sectors before entering the data on the tape. If this adjustment is carried out on the above figures the sub-total/GDP ratios will come to 103.7 in the case of Djibouti and 101.8 in the case of Morocco. The two figures are very close to the UNSOCT. The position may however be clarified by the UNSO.

The UNSO has also made some more changes in presentation of data when compared with the DRPA. The UNSOCT does not provide information separately on 'mining and quarrying' and 'electricity and gas'. On the other hand, the 'services' sector is disaggregated into 'trade', 'transport' and 'others'. It is however not clear from the figures whether rescaled 'total industrial

activity' is obtained as the sum of rescaled components, namely mining and quarrying, manufacturing and electricity and gas or by direct rescaling.

On the expenditure side, the UNSOCT provides information on 'gross fixed capital formation' as against gross capital formation which was included in the DRPA tape. In the absence of figures of 'changes in stocks', the rescaled GDP cannot be cross-checked against the sum of rescaled components.

Other international sources of national accounts statistics:

International Monetary Fund: In its monthly publication entitled "International Financial Statistics", the IMF presents national accounts statistics on a limited number of items - exports, imports, government consumption, gross fixed capital formation, increase in stocks, private consumption, GDP, national expenditure, national income at market prices (all at current prices) and GDP at 1980 prices. All values are expressed in national currencies. However, exchange rates are available from the same source to convert the figures into US dollars.

The IMF data will have very limited use for UNIDO, as industrial origin of GDP is not given at all and expenditure components at 1980 prices are not provided. Nevertheless figures of GDP in 1980 prices may be used to update data from the UNSOCT.

World Bank: The World Tables (1988-89 edition) brought out by the World Bank provide quite detailed data on national accounts. The indicators included are: GNP, GDP at market prices, GDP at factor cost, industrial origin of GDP and expenditure on GDP. The industrial origin of GDP distinguishes 4 sectors and sub-sectors: agriculture, industry, manufacturing (a sub-sector of industry) and services. The expenditure components are: exports, imports, private consumption, general government consumption; gross

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domestic investment and fixed investment (a sub-component of gross domestic investment). Data are presented both at current prices and at 1980 prices. The currencies used for valuation are national. The WT however include foreign exchange rates.

Comparison of national accounts statistics from various sources:

A detailed survey of the various sources shows that no single source provides adequate data needed by UNIDO; handicaps are on account of (i) incomplete coverage of countries; (ii) lack of details; (iii) gaps in time-series data, and (iv) time-lag. A more up-to-date and complete time-series can perhaps be developed on the basis of all the sources together. In that case it becomes of the utmost importance to examine whether the concepts and definitions adopted by these sources are in conformity. For this purpose a comparison of data from various sources is made in the following sections in respect of India and Colombia.

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Comparison of GDP and Expenditure Components

INDIA

A. National Accounts Statistics: Main Aggregates and Detailed Tables, 1985
(billion Rs)

Expenditure on GDP, in current prices	1981	1982	1983	1984	1985	1986	1987
1. Government consumption	152.76	180.16	207.88	240.62	282.71		
2. Private consumption	1024.04	1127.30	1346.09	1453.27	1628.70		
3. Gross capital formation	362.29	404.76	472.55	538.44	615.18		
(a) Increase in stocks	64.46	55.57	66.94	80.16	79.07		
(b) Gross fixed capital formation	297.83	349.19	405.61	458.28	536.11		
4. Exports	102.56	116.68	132.40	159.57	...		
5. Less: imports	148.16	158.06	176.14	195.30	...		
6. Statistical discrepancy	(-)16.65	(-)19.48	(-)42.17	(-)52.75	...		
GDP	1476.84	1651.36	1940.61	2143.85	2435.51		

B. International Financial Statistics, Vol.XLII, No.2, Feb.1989

	1981	1982	1983	1984	1985	1986	1987
1. Government consumption	153.6	182.7	211.4	243.5	292.6	349.2	
2. Private consumption	1135.6	1254.6	1456.1	1603.2	1743.8	1966.0	
3. Gross capital formation	415.8	415.6	481.8	543.0	681.8	718.6	
(a) Increase in stocks	101.2	57.9	83.1	94.5	136.3	84.8	
(b) Gross fixed capital formation	314.6	357.7	398.7	448.5	545.5	633.8	
5. Exports	102.6	116.7	132.4	159.6	150.7	...	
6. Less: imports	148.2	158.1	176.1	195.3	218.6	...	
7. Statistical discrepancy	...	...	...	...	...	...	
GDP	1594.2	1775.9	2072.7	2295.4	2617.3	2927.9	
(Sum of components)	(1659.4)	(1811.5)	(2105.6)	(2354.0)	(2650.3)	(3033.8)	

C. World Tables, 1988-89 Edition, Internal Version, Volume I

	1981	1982	1983	1984	1985	1986	1987
1. Government consumption	153.5	182.7	211.4	243.5	292.6	349.2	410.8
2. Private consumption	1077.2	1226.3	1427.5	1563.8	1725.2	1923.9	2097.6
3. Gross capital formation	415.7	415.6	481.8	542.9	681.8	718.6	782.5
(a) Increase in stocks	101.2	57.9	83.1	94.4	136.3	84.8	81.1
(b) Gross fixed capital formation	314.5	357.7	398.7	448.5	545.5	633.8	701.4
4. Exports	101.7	107.9	126.7	156.4	155.4	182.0	220.4
5. Less: imports	154.0	156.7	174.7	211.3	237.6	245.8	284.1
6. Statistical discrepancy	...	...	...	...	...	...	...
GDP	1594.2	1775.9	2072.7	2295.4	2617.3	2927.9	3227.3
(Total of components)	(1594.1)	(1775.8)	(2072.7)	(2295.3)	(2617.4)	(2927.9)	(3227.2)

A comparison of the figures shows that:

(i)   National accounts data – GDP and its expenditure – published in the International Financial Statistics and the World Tables are generally in conformity; differences are primarily due to presentation. For instance, IFS do not give statistical discrepancies and therefore the components do not total up to GDP. In the case of World Tables, statistical discrepancy is absorbed in the private consumption component, making it differei : from corresponding figures in IFS.

(ii) Differences in the figures of exports and imports seem to arise from differences in concepts. While World Tables include figures based on 'customs clearance' concept, the IFS perhaps make some adjustment to bring them to 'balance of payment' concept.

(iii) Figures published in the National Accounts Statistics: Main Aggregates and Detailed Tables (NAS85) are at variance with the World Tables and the IFS. One major reason for the difference is perhaps the time-lag. While NAS were compiled some tim~ in or before 1987, the figures included in the WT and the IFS reflect the position as in early 1989. During this period many countries would have revised their earlier estimates.

COLOMBIA

A. National Accounts Statistics 85
(mill.pesos)

Expenditure on GDP, in current prices	1981	1982	1983	1984	1985	1986	1987
1. Government consumption	206 874	272 766	334 565	421 635	...	...	...
2. Private consumption	1 430 105	1 810 438	2 208 216	2 705 868	...	...	...
3. Gross capital formation	408 927	511 625	607 566	717 016	...	...	...
(a) Increase in stocks	58 879	75 534	82 719	76 926	...	...	...
(b) Gross fixed capital formation	350 048	436 091	524 847	640 090	...	...	...
4. Exports	257 482	299 444	339 988	489 258	...	...	...
5. Less: imports	320 615	396 975	436 198	505 195	...	...	...
6. Statistical discrepancy	...	...	...	...	...	...	...
GDP	1 982 773	2 497 298	3 054 137	3 828 582	...	...	...

B. International Financial Statistics
(billion pesos)

	1981	1982	1983	1984	1985	1986	1987
1. Government consumption	206.9	272.8	334.6	425.6	531.3	667.4	846.4
2. Private consumption	1437.7	1819.7	2196.9	2721.9	3425.4	4379.4	5672.1
3. Gross capital formation							
(a) Increase in stocks	58.9	75.5	82.7	76.9	75.1	19.3	24.4
(b) Gross fixed capital formation	408.9	511.5	607.6	731.4	945.6	1203.0	1672.2
4. Exports	235.0	272.5	319.5	458.4	685.7	1259.7	1674.7
5. Less: imports	305.7	379.4	404.4	480.7	622.0	808.1	1086.1
6. Statistical discrepancy	...	...	...	...	...	...	...
GDP	1982.8	2497.3	3054.1	3856.6	4965.9	6701.4	8779.4
(Sum of components)	(2041.7)	(2572.7)	(3130.9)	(3933.5)	(5041.1)	(6720.7)	(8803.7)

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C. World Tables
(billion pesos)

	1981	1982	1983	1984	1985	1936	1987
1. Government consumption	206.9	272.8	334.6	425.6	531.3	667.4	846.4
2. Private consumption	1437.7	1819.7	2196.9	2721.9	3425.4	4379.4	5672.2
3. Gross capital formation	408.9	511.6	607.6	731.4	945.5	1203.0	1672.2
(a) Increase in stocks							
(b) Gross fixed capital formation							
4. Exports	235.0	272.5	319.4	458.3	685.7	1259.7	1674.7
5. Less: imports	305.7	379.4	404.4	480.7	622.0	808.1	1036.0
6. Statistical discrepancy	...	...	...	...	...	...	...
GDP	1982.8	2497.3	3054.1	3856.6	4965.9	6701.4	8779.4
(Sum of components)	(1982.8)	(2497.2)	(3054.1)	(3856.5)	(4965.9)	(6701.4)	(8779.5)

(i)   It appears that IFS by mistake has shown the figures of 'gross capital formation' against 'gross fixed capital formation'. When the mistake is corrected the figures become identical with World Tables.

(ii)   Sum of components, i.e. GDP in all the three sources, is the same, though the figures for components as included in NAS 85 differ from those published in IFS and WT. It appears that both IFS and WT have revised the figures of exports and imports, and the difference has been carried to private consumption, which most probably is obtained as residual.

(iii) Data for 1984 as given in NAS85 seem to have been revised, perhaps by the country, and IFS and WT have incorporated the revised set of data.

(iv)   NAS85 does not include figures even for 1985.

<u>Comparison of National Accounts Statistics:</u>

<u>World Tables vis-a-vis UNSOCT</u>

<u>INDIA: Expenditure on GDP - 1980</u>

	WT (bill.Rs)	UNSOCT[1] (bill.Rs)
1. Government consumption	130.8	130.8
2. Private consumption	946.9	979.2
3. Gross captial formation	329.3	-
(a) Increase in stocks	66.5	-
(b) Gross fixed capital formation	262.8	262.8
4. Exports	88.5	90.3
5. Less: imports	137.4	136.0
GDP	1358.1	1358.1
(Sum of components less: change in stocks)	(1291.6)	(1327.1)

(1) There is a very large difference in private consumption figures. The Indian data on the expenditure of GDP carry statistical discrepancy. While the UNSOCT does not include the discrepancy in presentation of data, the World Bank has adjusted it in the private consumption.

(2) The differences in the figures of exports and imports may be due to (i) revision of data - World Tables give the latest position; and/or (ii) difference in concepts - national accounts concept versus balance of payments concept.

<u>India: GDP by Kind of Activity - 1980</u>

	WT (bill.Rs)	UNSOCT[1] (bill.Rs)
1. Agriculture	464.8	464.8
2. Industry	316.3	316.3
Manufacturing	216.4	216.5
3. Services	441.1	441.1
GDP	1222.2	1358.1
(Sum of components)	(1222.2)	(1222.2)

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[1] The figures in the UNSO tape are in US$. Conversion has been done at the rate of US$1 = RS7.863.

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The figures from the two sources are identical, except for rounding. GDP in the UNSOCT differs from the sum because of the type of prices used for valuation. While GDP is at market prices, the sum is at factor cost. For this reason figures of GDP from the two sources will not match in any year. In addition, different methods used by the two sources in re-basing the GDP from the original base to the new base 1980 would have created differences; the World Tables rely on partial re-basing, while UNSO uses direct re-basing. Thus in the case of India there are only two causes: (i) prices and (ii) re-basing method. A careful selection of indicators will make the figures of GDP from the two sources comparable as in the following table:

India: GDP at 1980 Factor Cost, 1980-1986
(bill.Rs)

	WT (GDP)	UNSOCT (GDP = Sum of components)
1980	1222.3	1222.3
1981	1297.8	1297.8
1982	1338.3	1338.3
1983	1443.9	1443.9
1984	1489.5	1489.6
1985	1560.8	1560.8
1986	1623.3	1623.3
1987	1663.8	...

Colombia: Expenditure on GDP - 1980
(bill. Pesos)

	WT	UNSOCT[1]
1. Government consumption	159.4	159.4
2. Private consumption	1 108.8	1 058.1
3. Gross capital formation	301.1	–
(a) Increase in stocks	36.2	–
(b) Gross fixed capital formation	264.9	264.9
4. Exports	256.1	274.6
5. Less: imports	246.3	260.8
GDP	1 579.1	1 579.1

1/ Converted at the rate of US$1 = Pesos 47.28.
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In the case of this country also a wide difference in private consumption figures seems to be due to adjustment of statistical discrepancy against the item; and export and import data have perhaps been adjusted to balance of payments concept.

Colombia: GDP by Kind of Activity - 1980

		WT	UNSOCT
1.	Agriculture	305.3	305.7
2.	Industry	395.6	498.8
	Manufacturing	267.9	367.5
3.	Services	719.8	771.1
	(Sum of components)	(1 420.7)	(1 575.6)
4.	Less: imputed bank service charges	...	40.2[1]
5.	Plus: import duty	...	43.7[1]
	GDP	1 420.7	1 579.1

A comparison with the figures in the previous table immediately suggests that the UNSOCT, following the country practice contains kind of activity data (industrial origin components) at market prices, adjusted at the aggregate level for imputed bank service charges and import duties. On the other hand, the World Bank figures are at factor cost. It is not known whether that agency has prepared the figures independently or has adjusted the country data for indirect taxes and imputed bank service charges. In the absence of the knowledge it is not possible to bring the two sets of data to a comparable basis. At best, total GDP at market prices of UNSOCT can be converted to factor cost with the help of the figures of indirect taxes and subsidies available from the NAS 85. The figures for 1980 are respectively bill. pesos 172.0 and 13.7. Adjustment of GDP at market prices for net indirect taxes

[1] NAS 85.

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gives the figure of GDP at factor cost equal to bill. pesos 1 420.7, which is the same as the WT figure.

Sources of difference between UNSOCT and WT

The brief analysis carried out above shows that:

(i) The primary sources of variation in the figures of GDP by kind of activity (industry of origin) are:

    (a) Difference in the types of prices used for valuation, i.e. factor cost or market prices.

    (b) Adjustments made by the World Bank on account of imputed bank service charges, import duty, value added tax and other indirect taxes. In the UNSOCT these items have been ignored allowing the sum of components to differ from GDP.

    (c) Difference in the re-basing practices followed by the two agencies to shift the original base to the uniform base, i.e. 1980. This will affect the total GDP figures only. UNSOCT does direct re-basing of GDP, while the World Bank takes the sum of re-based components as GDP at 1980 prices.

    (d) Incorporation of more recent data by the World Bank.

(ii) Expenditure data from the two agencies differ mainly due to:

    (a) Absorption of statistical discrepancy into private consumption by the World Bank. The statistical discrepancy may have existed in the original country data or may have arisen from the method of re-basing the constant price series from the original base to the uniform base, i.e. 1980. The World Bank in the majority of cases has adopted the re-based GDP computed from kind of activity and has adjusted its difference from the sum of individually rescaled expenditure components against private consumption.

    (b) Adjustment of export and import figures from national accounts concept to balance of payments concept. This is a presumption only, subject to confirmation by the World Bank.

    (c) Incorporation of more recent data in the World Tables.

Clearly, the differences between the two sets of figures are too many and their reconciliation would be an extremely difficult task, especially when the methods used by the agencies are not known. Under the circumstances, the best

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course to follow would be to take one of the two sets of data as the principle

source and its extension and up-dating to be carried out with the help of the

data available from the other sources. For making an objective decision it

would be necessary to examine the merits and demerits of both the sources.

This is done in the following section.

Merits and Demerits of UNSOCT and WT Data:

As UNIDO has been using UNSOCT for some time it would be more appropriate

to enumerate its merits and demerits first.

UNSOCT - Merits:

(i)   Provides long-term time series data starting from 1970.

(ii)   Gives detailed breakdown by kind of activity. The sectors and
        sub-sectors distinguished are: agriculture, manufacturing, total
        industrial activity, construction, trade, transport, and others.

(iii)   Almost all the gaps in the country data are filled.

(iv)   Values are brought to common currency, i.e. US dollar, making
        cross-country analysis easy.

UNSOCT - Demerits:

(i)   On the kind of activity side, UNSOCT does not attempt to allocate items
        like value added tax, import duties, and other indirect taxes not
        already included in the price used to value components. Neither does it
        provide data on these items, leaving a gap in GDP and the sum of
        components. The country practice is to make adjustments at the most
        aggregate level.

(ii)   There is double counting on account of imputed bank service charges.
        Again the country practice is to make adjustment at the aggregate level.

(iii)   GDP figures are always at market prices even though GDP by kind of
        activity in many countries is measured at factor cost. Thus, GDP is not
        comparable with components.

(iv)   On the expenditure side, UNSOCT does not include figures of change in
        stocks.

(v)   GDP at 1980 prices is obtained from the original price base by direct
        rescaling method which generally differs from the sum of rescaled
        components. No attempt is made to reconcile the two figures. How the
        difference between the two indicators will move with time is shown in
        Annex 1.

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(vi)   Long delay in supply of data. The tape incorporating the data for 1986 was supplied in March 1989. This was only provisional; some data seem to have been revised subsequently and the tape was received towards the end of June, 1989. The delay is likely to increase in the future.

(vii)   Exchange rates are not furnished.

(viii) The time-series starts from 1970.

(ix)   Figures in current prices are not giv...

World Tables - Merits:

(i)   Provides long-term time-series starting from 1967.

(ii)   On the kind of activity side all items unaccounted for in the price are distributed to components, thus bridging the gap between GDP and the sum of components.

(iii)   Double counting on account of imputed bank service charges is done away with by allocating the item to components.

(iv)   Provides two sets of GDP figures - one at market prices and the other at factor cost, at least for all those countries which prepare GDP by kind of activity at factor cost.

(v)   On the expenditure side WT presents information on gross investment, making the sum of components equal to GDP.

(vi)   GDP at 1980 prices is obtained as the sum of rescaled components by kind of activity.

(vii)   Delay in supply of data is less - the tape incorporating data for 1987 was received in April 1989.

(viii) Exchange rates are furnished.

(ix)   Comparable figures at current prices are given.

World Tables - Demerits

(i)   Number of components by kind of activity is four: (a) agriculture; (b) industry; (c) manufacturing - a sub-component of industry, and (d) services, etc.

(ii)   The time-series is incomplete for a large number of countries. For instance, for Canada it starts from 1970, instead of 1967 and the current price series by kind of activity go up to 1984. The position is worse for developing countries. In the case of Comoros, for instance, figures are available only from 1983/1982 and for Haiti data on components by kind of activity is not given at all. Complete list of data gaps is given at Annex 2. As may be seen from the list lots of resources will be needed to fill the gaps.

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(iii)   Centrally planned economies of eastern Europe, except Hungary and
        Poland, are left out. Data on manufacturing sector are not given for
        the first country, while for the second country no data are given on
        components by kind of activity.

(iv)   Many other countries are also excluded. They are listed at Annex 3.

(v)   In the process of partial rebasing deviations may have occurred between
        the sum of rescaled components by kind of activity and the sum of
        expenditure components. All these deviations together with the
        statistical discrepency, if any, appearing in the current price data
        have been absorbed by the World Bank in the private consumption. This
        would distort, at least in some countries, the estimates of domestic
        savings. However, as UNIDO does not make much use of expenditure
        components except exports, imports and capital formation, there is
        perhaps no need to recompute or refine these data.

        The above analysis of merits and demerits of the two sources leads to

the conclusions that:

(i)   The time-series in WT have wide and varied gaps which cannot be filled
        easily. The only comprehensive supplementary source to be used to fill
        the gaps would be the UNSOCT. Methods to fill some of the data gaps in
        the WT using the UNSOCT data are explained at Annex 4. However,
        differences in the procedures for compilation of NAS employed by the
        two sources may not always permit to arrive at consistent set of
        estimates. Moreover, UNSOCT does not provide data at current prices.
        Therefore, for filling the gaps in the current price series of WT other
        sources as comprehensive as UNSOCT would have to be found out. This
        does not seem to be possible.

(ii)   The only alternative left is to make UNSOCT as the basic source and
        extend and up-date it with the help of WT. Again, because of the
        differences in procedures employed by the two sources WT data should be
        used judiciously.

UP-dating of UNSOCT:

        As the supplementary source i.e. WT itself has numerous gaps up-dating of

UNSOCT is to be carried out in stages.

Stage 1:

        Up-dating in respect of countries for which WT provide complete set of

data for 1986 and 1987 at 1980 prices:

(i)   Increase of GDP at market prices and its industrial origin components and
        expenditure components in 1987 over 1986 as computed from WT is to be
        used to move 1986 data. However, before doing this the industrial origin
        components in the two sources have to be matched i.e. construction sector

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of UNSOCT has to be combined with the total industrial activity and the sub-sectors of services, namely trade, transport and others have to be added up to match with 'service, etc.' of WT.

(ii)   Figures of 'total industrial activity' and 'services' for 1987 as arrived at above may be disaggregated into the sub-sectors using their average share in the respective sectors over a period of three years, viz 1984 through 1986.

Countries which can be covered in stage 1 are: Argentina, Bolivia,

Burundi, Cameroon, Central African Republic, Sri Lanka, Chad, Chile, Colombia,

Cyprus, Ecuador, El Salvador, Fiji, Ghana, Greece, Honduras, India, Indonesia,

Jamaica, Jordan, Kenya, Korea Rep., Malaysia, Mauritius, Mexico, Morocoo,

Nigeria, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Senegal,

Sierra Leone, Singapore, Somalia, South Africa, Zimbabwe, Sudan, Thailand,

Tunisia, Turkey, Egypt, United Republic of Tanzania, Uruguay, Venezuela,

Yemen, Zambia.

For some of the countries in this category an almost complete set of data

is available from the WT, except figures for the manufacturing sector and/or

fixed investment. The outlined procedure with slight variation will be

applicable to build up data for 1987.

(i)   Information on the manufacturing sector missing in the WT: it will be estimated, using its average share in "total industrial activity" over the period 1984-1986, to be computed from UNSOCT data. This procedure will apply to Benin, Burkina Faso, Costa Rica, Côte d'Ivoire, Malawi, Mauritania, Syrian Arab Republic, Yugoslavia.

(ii)   Information on fixed investment missing in the WT: the component will be estimated, using its average share in GDP over the period 1984-1986, to be computed from UNSOCT data. The countries are: Cameroon, Chad, Comoros, Sri Lanka, Zaire.

(iii)   Information on the manufacturing sector as well as fixed investment missing in the WT: both the above variants are to be used. The countries to be covered here are: China, Guir a Bissau, Madagascar, Mali, Togo.

(iv)   All expenditure components given in the WT, but information on industrial origin only partial: the given components are to be moved to

1987 with the help of WT data, and the missing components according to their average share in GDP during 1984-1986. The countries which will need this procedure are: Guyana and Rwanda.

(v) In the case of Burundi, Sierra Leone and Singapore, WT provide complete information on industrial origin components but only partial information on expenditure components. The given components are to be moved to 1987 with the help of WT data and the missing components to be estimated using average share in GDP over 1984-1986.

Stage 2

Up-dating in respect of countries for which WT provide GDP by industrial origin for 1986 and 1987 (at 1980 prices) but no expenditure components:

(i) Estimates of GDP and industrial origin components are to be prepared following the procedure outlined for stage 1.

(ii) The expenditure components are to be estimated, using their average share in GDP over 1984-1986.

The countries to be included in this stage are: Bahrain, Bangladesh, Barbados, Botswana, Congo, Zaire, Ethiopia, Gambia, Lesotho, Panama, Suriname, Trinidad and Tobago, Uganda.

Stage 3

Up-dating in respect of countries for which WT provides GDP by expenditure components for 1986 and 1987 (at 1980 prices) but no industrial origin components:

The same procedure as outlined in stage 2 is to be followed. The countries belonging to this stage are: Algeria, Australia, Austria, Bahamas, Belgium, Brazil, Canada, Denmark, Finland, France, Federal Republic of Germany, Guatemala, Hong Kong, Iceland, Italy, Japan, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

Stage 4:

Countries in respect of which WT provides GDP/GNP for 1986 and 1987 at 1980 prices but no industrial origin and expenditure components:

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(i) GDP for 1987 is to be estimated by moving the 1986 figure in UNSOCT, using the increase to be computed from WT figures.

(ii) Industrial origin and expenditure components are to be prepared on the lines of stages 2 and 3.

The countries to be included in this stage are: Antigua, Belize, Solomon Islands, Cape Verde, Benin, Dominica, Dominican Republic, Gabon, Grenada, Ireland, Israel, Kuwait, Liberia, Libyan Arab Jamahiriya, Madagascar, Mali, Mozambique, Oman, Nicaragua, Guinea Bissau, St. Kitts Nevis, St. Lucia, St. Vincent, Saudi Arabia, Seychelles, Democratic Yemen, Swaziland, togo, United Arab Emirates, Samoa.

Stage 5:

Up-dating in respect of countries for which IFS provides figures of GDP/GNP for 1986 and 1987 at 1980 prices:

The same procedure as given in stage 4. The countries belonging to this stage are: Maldives, Nepal.

Stage 6:

Up-dating in respect of African countries not included in WT or IFS:

For the African countries the Economic Commission for Africa has prepared detailed data on NAS but the figures are widely different either with UNSOCT or WT. As such, only GDP figures of the ECA are to be used to move 1986 figures of GDP in UNSOCT to 1987. The industrial origin and expenditure structure is to be prepared by the procedure in stages 2 and 3.

The countries are: Angola, Comoros, Equatorial Guinea, Djibouti, Guinea, Namibia, Reunion, Sao Tome Principe.

Stage 7:

Up-dating in respect of centrally pianned economies of eastern Europe and the Soviet Union: Economic Survey of Europe in 1987-1988 prepared by the Secretariat of the Economic Commission for Europe (Sales No.E.88.II.E.1, United Nations, New York, 1988) provides useful information on centrally

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planned economies of eastern Europe and the USSR. The countries covered are: Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania and the Soviet Union. The increase of the following indicators in 1987 over 1986 may be used to move the 1986 figures in UNSOCT.

1. NMP produced
2. Agricultural output
3. Industrial output
4. Construction

Other components may be estimated using the average relationship over a period of three years - 1984-1986. The steps involved would be as under:

(i) From the estimated GDP compute the sum of components using their ratios during 1984 through 1986.

(ii) From the estimated sum subtract agriculture, industry and construction; the residual will be the sum of trade and transport.

(iii) Split the residual into the two components, again using their ratios over 1984-1986.

Stage 8

Up-dating in respect of all other countries.

(i) Average annual growth rate of GDP over the period of 1980-1986 is to be used to move the 1986 figures of GDP in the UNSOCT to 1987.

(ii) The industrial origin and expenditure components are to be estimated, using average shares of the respective components in GDP over 1984-1986.

The countries which are to be covered in stage 8 are: Afghanistan, Albania, Bhutan, Br.Virgin Islands, Brunei, Burma, DM Kampuchea, Taiwan, Cuba, Fr. Guinea, Fr. Polynesia, Guadeloupe, Iran Islamic Republic, Iraq, Korea, DM, PR, Lao PDR, Lebanon, Martinique, Mongolia, Montserrat, Netherlands Antilles, New Caledonia, Vanuatu, Puerto Rico, Qatar, Anguilla, Viet Nam, Tonga, Turks and Caicos Islands, US Virgin Islands.

An exercise was conducted on the UNSOCT data to test the validity of the updating methods. The results of the exercise produced at Annex 5 suggest that the proposed methods would generally lead to useable estimates.

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Extension of national accounts statistics:

Extension of UNSOCT national accounts series may be attempted into two directions - (i) carrying back the series at 1980 prices to pre 1970 period, and (ii) building up corresponding data at current prices.

Carrying back the series at 1980 prices:

UNSOCT GDP and its components may be carried back with the help of changes to be worked out from DRPA data. The linking may be done at 1970 in most of the cases. In some countries it might be necessary to link the two sets of data at some other point depending on the deviation of the sum of components from GDP. For example, in Nepal the deviation prior to 1975 is too large when compared with the corresponding figures of post 1975 period. In such cases linking may be done at 1975.

Building up data at current prices:

The price indices implicit in the current price and constant price data of the WT may be used to compute current prices series from the UNSOCT constant price series, after converting them from US dollar to national currency. The results of the exercise performed on the data for Algeria are produced below:

Algeria: Estimates of GDP and its industrial origin components at current prices

	Implicit price indices based on WT			
	GDP	AGR	IND	SER
1980	100.000	100.000	100.000	100.000
1981	113.693	124.802	114.880	110.020
1982	118.531	135.114	113.067	123.282
1983	126.693	141.694	118.732	135.391
1984	135.266	151.914	123.040	150.058
1985	143.069	165.779	127.786	160.341
1986	140.483	193.256	108.453	176.075
1987	151.638	212.185	116.878	198.509

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UNSOCT: GDP and its industrial origin component; at 1980 prices

(in national currency)

	GDP	AGR	IND	SER	SUM
1980	162,466	12,520	97,015	52,928	162,466
1981	166,522	12,612	96,666	55,153	164,427
1982	177,181	11,572	105,847	57,471	174,890
1983	186,378	11,331	110,782	60,333	182,442
1984	196,830	12,397	115,758	63,149	191,309
1985	207,041	14.435	119,250	65,851	199,536
1986	213,253	15,778	119,468	68,467	203,714
1987	215,973	14,881	124,131	69,108	208,123

Estimates: GDP and its industrial origin components at current prices

(in national currency)

	GDP	AGR	IND	SER	SUM
1980	162,466	12,520	97,015	52,928	162,463
1981	189,324	15,740	111,050	60,679	186,469
1982	210,014	15,635	119,678	70,851	206,164
1983	236,128	16,055	131,534	81,685	229,274
1984	266,244	18,833	142,429	94,760	256,022
1985	296,211	23,930	152,385	105,586	281,901
1986	299,584	30,492	129,567	120,338	280,397
1987	327,497	31,575	145,081	130,966	307,622

(in US$)

	Exchange rate	GDP	AGR	IND	SER	SUM	SUM % GDP
1980	3.837	42,342	3,263	25,284	13,794	42,341	100.0
1981	4.316	43,866	3,647	25,730	14,059	43,436	99.0
1982	4.592	45,735	3,405	26,062	15,429	44,896	98.2
1983	4.789	49,306	3,352	27,466	17,051	47,869	97.1
1984	4.983	53,430	3,779	28,583	19,017	51,379	96.2
1985	5.028	58,912	4,759	30,307	21,000	56,066	95.2
1986	4.702	63,714	6,485	27,556	25,593	59,634	94.0
1987	4.850	67,525	6,510	29,914	27,003	63,427	93.9

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As expected, the sum of components differs from GDP. Two factors have been responsible for the difference: (i) the basic data in current prices which formed the basis of computing constant price series by the two agencies may not have been the same, and (ii) differences in procedures followed for rescaling GDP to 1980 price base. It has been suggested earlier in the case of constant price data that the structure should be worked out with relation to the sum of components. The same procedure should be followed here.

Summary:

There are only two international sources which provide comprehensive national accounts statistics: the World Bank and the United Nations Statistical Office. The former agency brings out NAS in its publication 'World Tables, 1988-89 edition being the latest which gives data up to 1987, for most of the countries. The UNSO, in addition to its annual compilation of NAS following the country practices, also prepares data on GDP and its industrial origin and expenditure components at 1980 prices.

The methods of rebasing data from the original price base to uniform price base of 1980 followed by the two agencies are however different. The World Bank takes the sum of individually rescaled industrial origin components equal to GDP. On the other hand UNSO directly rescales GDP. The time lag in UNSO data is also larger. For instance, the tape supplied to UNIDO in June 1989 contained data up to 1986.

From both the considerations therefore WT data are to be preferred. However the World Tables carry many data gaps as well as the coverage of countries is less than that in the UNSO tape. The data gaps in the World Tables cannot be filled easily. Thus the only alternative is to up-date and extend the data supplied by the UNSO, with the help of the WT. The other

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sources from which data can be used for up-dating are: International Financial

Statistics of the IMF, Economic Survey of Europe in 1987-1988 prepared by the

Economic Commission for Europe and the NAS prepared by the Economic Commission

for Africa. The up-dating procedure would be:

(i)   The 1986 figures of GDP in the UNSO data are to be carried forward to
      1987 with the help of increases based on data in the WT, IFS and ECA.

(ii) The industrial origin and expenditure components are to be prepared by
      moving the 1986 figures of UNSO data to 1987 using the increases
      revealed by the corresponding data in the WT.

(iii) Wherever the required data are not available in the WT, the estimates
      are to be prepared using the average share of individual components in
      GDP over 1984-1986.

(iv) In the case of the centrally planned economies of eastern Europe and the
      Soviet Union, figures of NMP produced, agriculture output, industrial
      output and construction as given in the Economic Survey of Europe are to
      be used to move the corresponding indicators from UNSO data. Other
      components are to be estimated using average relationship over 1984-1986.

(v)   For countries which do not appear in any of the above sources, GDP is to
      be carried forward by using its average annual growth rate over
      1980-1986. The components are to be estimated as in (iii).

Extension of UNSO data may be attempted into two directions: (i) carrying

back the time series to pre 1970 period and (ii) building up corresponding

data at current prices. the GDP and its components from UNSO data may be

carried back to pre 1970 period by linking them to the DRPA data. For most of

the countries linking is to be done at 1970. In few countries where the

original price base is far remote from 1980, the linking would have to be done

at 1975 or at any other suitable point.

The series at current prices is to be built-up with the help of price

indices implicit in the WT data. First the current price series is to be

developed in national currency and then converted to US dollars by using the

appropriate exchange rates.

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ANNEX I

Re-scaling of GDP and ~~the~~ *Its* industrial origin components

At the country-level different years are used as price base for the national accounts ststistics at constant prices. Both, the World Bank and the UNSO bring the data to a uniform price base, namely 1980 by the re-scaling method. While the first agency takes the sum of the individually re-scaled components equal to GDP, the UNSO rescales GDP directly as well as the industrial origin components. How the sum of the rescaled components will differ overtime from the directly rescaled GDP is shown below:

Symbols:

G = GDP

A = Agriculture

I = Industrial activity

S = Services, etc.

SU = Sum of industrial origin components

b = Original price base adopted by the country

Prefix indicates the year to which the data pertaines and the suffix refers base year of prices.

Assumptions:

GDP and the industrial origin components do not carry statistical error. In other words

$$tGb = tAb + tIb + tSb = tSUb$$

Rescaling to 1980:

Direct rescaling of GDP-

$$tG80 = tgb \times 80G80/80Gb \text{ where } 80G80/80Gb \text{ is the GDP price}$$

indicator with `b' as base. Likewise,

  $tA80 = tAb \times 80A80/80Ab$ and so on

  Now:

  $tSU80 = tA80 + tI80 + tS80$

  $= tAb \times 80A80/80Ab + \ldots$

  $= \sum tAb \times 80A80/80Ab$

and

  $tG80 = tGb \times 80G80/80Gb = (80G80/80Gb) \sum tAb$

Thus, the difference between the sum of rescaled components and
the directly rescaled GDP will be

$t\ SU80\ -tG80 = \sum tAb(80A80/80Ab-80G80/80Gb)= tD80$, where D is the
difference

The above equation shows that

   (i) for the year 1980 the sum of the components will be
identical with the directly rescaled GDP

   (ii) for any other year the identity will hold good only if
the price indicators of the components in 1980 (with `b' as base)
are the same as that of the GDP.

   (iii)Normally, $(t+1)$ Ab is expected to be larger than tAb,
and so on. Thus the difference will have a tendency to increase
with time. However as the rescasling factor of GDP will lie in
between the rescaling factors of the componetns, at least one of
the terms within brackets will be negative and will pull down the
difference.   In   the case of India as the figures in the
following example show the rescaling factors will be: (i)
Agriculture = 2.0923   (ii) Industry = 2.4732, (iii) Services =
2.2662 and (iv) GDP = 2.2430.   Thus the agriculture sector will
tend to pull down the difference and disturb the time trend.

   (v) The sum of components will be a better indicator of
GDP compared with the directly re-scaled GDP for

$$tSU80/80SU80 = \sum (tAb/80Ab) \times 80A80 / \sum 80A80$$

In other words 'the growth rate based on the sum of the rescaled components takes into consideration, though partially the structure of the economy as in 1980.

Example: India - Shifting the price base from 1970 to 1980 by the re-scaling method

Given Data:

GDP and Industrial Origin Components

(Rs ten millions)

	Agriculture	Industry	Services	GDP
		at 1970 prices		
1970	17424	7972	11340	36736
1978	20918	11581	17120	49619
1979	18241	11331	17619	47191
1980	20450	11502	18671	50623
1981	21319	12103	20048	53470
1982	20651	12782	21635	55068
1983	22976	13436	23129	59541
1984	22831	14179	24828	61838
		at Current prices		
1980	42788	28447	42313	113548

Source: National Accounts Statistics - 1987, Govt. of India, Central Statistical Organisation.

Re-scaling to 1980

(Rs ten millions)

	Agr.	Ind.	Serv.	Sum	GDP directly rescaled	(Sum-GDP)
1970	36457	19717	25699	81873	82399	(-)526
1978	43767	28642	38798	111207	111296	(-)89
1979	38166	28024	39929	106119	105850	269
1980	42788	28447	42313	113548	113548	0
1981	44606	29933	45434	119973	119934	39
1982	43209	31613	49030	123852	123518	334
1983	48073	33230	52416	133719	133551	168
1984	47770	35068	56266	139104	138703	401

The figures show how the time trend underlying the differences
between the sum of rescaled components and directly rescaled GDP
is distrubed by one of the components, that is agriculture in
this case.

ANNEX 2

Gaps in WT Time-series Data
1967 - 1987

(Industrial Origin and Expenditure Components)

Symbols

MV: Manufacturing value added

IA: Industrial origin components, namely, agriculture, industry,
            manufacturing and services, etc.

EX: Exports

IM: Imports

GC: Government Consumption

PC: Private Consumption

EC: Expenditure components, namely, exports, imports, government
            consumption, private consumption, gross domestic investment

Suffix '1': Stands for data at current prices

Suffix '2': Stands for data at 1980 prices

No suffix: Means data at current prices as well as at 1980 prices are
             missing.

Gaps

1.	Antigua & Barbuda	IO (1967-1987)	EC (1967-1976, 1984-1987)
2.	Australia	MV (1987)	
3.	Austria	IO (1967-1969, 1987)	EC (1967-1969)
4.	Bahamas	IO (1967-1987)	EC (1967-1976)
5.	Bahrain	IO (1967-1979)	EC (1967-1979, 1987)
5.a	Bangladesh		GC2+PC2 (1967-1987)
6.	Barbados	IO (1987)	EC2 (1967-1987)
7.	Belgium	IO (1987)	
8.	Belize	IO (1967-1977, 1987)	EC (1967-1987)
9.	Bhutan	IO1 (1967-1980, 1987) IO2 (1967-1987)	EC (1967-1987)
10.	Botswana		EC (1987)
11.	Brazil	IO1 (1987)	
12.	Burundi		EC2 (1987)

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13. Canada	IO1 (1967-1969, 1985-1987)	EC (1967-1969)
	IA2 (1967-1969, 1987)	
14. Cape Verde	MV1 (1967-1980, 1986-1987)	EC (1967-1972, 1986-1987)
	MV2 (1967-1987)	
15. Chad		EC (1986)
16. Chile	IO1 (1984-1987)	
17. Comoros	IO (1967-1981)	EC (1967-1982)
18. Congo		EC2 (1987)
19. Costa Rica	MV (1967-1987)	
20. Cyprus	IO (1967-1974)	EC (1967-1974)
21. Denmark	IO (1967-1969, 1987)	EC (1967-1969)
22. Dominica	IO 1967-1976, 1986-1987)	EC1 (1967-1976, 1986-1987)
		EC2 (1967-1987)
23. Dominican RP	IO (1987)	EC (1986-1987)
24. Egypt	MV (1967-1973)	EC2 (1967-1973)
25. Ethiopia		EC2 (1987)
26. Finland	IO (1987)	
27. France	IO (1987)	
28. Gabon	MV (1967-1987)	EC2 (1967-1987)
	IO2 (1967-1987)	
29. Gambia		EC2 (1984-1987)
30. Germany, FR	IO (1987)	
31. Grenada	IO1 (1967-1981, 1987)	EC (1967-1987)
	IO2 (1967-1987)	
32. Guatemala	IO (1967-1987)	
33. Guinea-Bissau	MV (1967-1987)	EC (1967-1969)
	IO (1967-1969)	
34. Guyana	IO (1987)	
35. Haiti	IO (1967-1987)	
36. Hong Kong	IO1 (1987, IO2 (1967-1987)	
37. Hungary	MV (1967-1987)	
38. Iceland	IO (1967-1971, 1985-1987)	
39. Ireland	MV1 (1980-1987), MV2 (1967-1987)	
	IO1 (1987), IO2 (1967-1974, 1987)	
40. Israel	IO (1967-1987)	EC (1987)
41. Italy	IO (1967-1979)	
42. Japan	IO (1967-1969, 1987)	EC (1967-1969)
43. Jordan	Io (1967-1969)	EC (1967-1969)
44. Kuwait	IO (1987)	EC (1987)
45. Lesotho	IO2 (1967-1969)	EC2 (1984-1987)
46. Liberia	IO (1987)	EC (1987)
47. Libya	IO (1985-1987)	EC (1984-1987)
48. Luxembourg	IO (1985-1987)	
49. Madagascar	MV1 (1971-1987) IO2 (1967-1969)	
50. Malawi	MV (1967-1987)	
51. Malaysia	IO1 (1984-1987) IO2 (1967-1969)	
52. Mali	MV1 (1987) MV2 (1967-1987)	
53. Malta	IO2 (1967-1987)	
54. Mauritania	MV1 (1973-1987) MV2 (1967-1987)	
55. Mauritius	IO2 (1966-1969)	

56. Mexico	IO1 (1987)	
57. Mozambique	MV (1967-1979, 1984-1987)	EC1 (1967-1979)
	IO1 (1967-1979, 1986)	EC2 (1967-1979, 1987)
	IO2 (1967-1979, 1986-1987)	
58. Nepal	IO1 (1987) IO2 (1967-1987)	EC2 (1967-1987)
59. Netherlands	IO (1967-1969, 1987)	EC (1967-1969)
60. New Zealand	IO1 (1967-1970, 1986-1987)	EC (1967-1969)
	IO2 (1967-1976, 1986-1987)	
61. Nicaragua	IO (1987)	EC (1987)
62. Niger	MV2 (1967-1987) IO2 (1987)	
63. Norway	IO (1968-1969, 1987)	EC (1967-1969)
64. Oman	IO1 (1987)	EC1 (1987)
	IO2 (1967-1977, 1987)	EC2 (1967, 1977, 1987)
65. Panama	IO1 (1987)	EC (1987)
66. Papua New		
Guinea	MV1 (1967-1969, 1987)	
	IO2 (1967-1979)	
67. Portugal	MV (1967-1987) Ia (1967-1976)	
68. Rwanda	MV1 (1987) IO2 (1967-1975, 1987)	
69. Saudi Arabia	IO (1987)	EC2 (1967-1987)
70. Seychelles	IO (1967-1975, 1987)	EC1 (1967-1975)
		EC2 (1967-1976, 1983-1987)
71. Sierra Leone	GC2+PC2 (1967-1987)	
72. Singapore	EX1+IM1 (1975-1987)	
	EX2+IM2 (1967-1987)	
73. Solomon Islands	IO (1967-1987)	EC (1967-1979, 1987)
74. Somalia	IO2 (1967-1969)	
75. South Africa	IO2 (1967-1969)	
76. Spain	IO (1967-1969, 1987)	
77. St. Kitts and		
Nevis	IO (1967-1976, 1985-1987)	EC1 (1967-1976, 1986-1987
		EC2 (1967-1979, 1986-1987)
78. St. Lucia	IO (1967-1976, 1986-1987)	EC (1967-1976, 1985-1987)
79. St. Vincent		
and Grenadines	IO (1967-1976, 1987)	EC (1967-1976, 1987)
80. Suriname	MV1 (1967-1974) MV2 (1973-1974)	EC2 (1967-1987)
	IO2 (1967-1972)	
	GC1+PC1 (1967-1974)	
81. Swaziland	MV1 (1967-1979) IO1 (1987)	EC1 (1987) EC2 (1985-1987)
	MV2 (1967-1970)	
82. Sweden	IO (1967-1969, 1987)	EC (1967-1969)
83. Switzerland	IO (1967-1987)	EC (1967-1969)
84. Syrian Arab Rp	MV (1967-1987)	
85. Tanzania	GC2+PC2 (1967-1975, 1977-1979)	
86. Togo	MV1 (1986-1987)	
	MV2 (1967-1975, 1986-1987)	
87. Tonga	IO1 (1967-1974, 1986-1987)	EC1 (1967-1974, 1986-1987)
	IO2 (1967-1974, 1987)	EC2 (1967-1987)
88. Trinidad & TB		EC (1987)
89. Uganda	GC1+PC1 (1967-1982)	EC2 (1981-1987)
	GC2+Pc2 (1967-1980)	

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90. UAE              IO1 (1967-1974, 1987)         EC1 (1967-1972)
                                                   EC2 (1967-1974, 1985-1987)
91. UK               IO (1967-1969, 1987)          EC (1967-1969)
92. USA              IO (1967-1969, 1987)          EC (1967-1969)
93. Uruguay          MV (1967-1977)
94. Vanuatu          IO (1967-1978, 1987)          EC1 (1967-1982, 1986-1987)
                     MV2 (1979-1986)               EC2 (1967-1987)
95. Venezuela                                      EC2 (1967-1972)
96. Western Samoa    IO (1967-1978, 1983-1987)     EC (1967-1978)
97. Yemen Arab Rp    IO (1967-1969)                EC (1967-1969)
98. Yemen PDR        MV1 (1973-1987) MV2 (1975-1981) EC (1967-1987)
                     IO1 (1967-1972)
                     IO2 (1967-1974, 1982,1987)
99. Yugoslavia       MV (1967-1987)
100.Zimbabwe         EX1+IM1 (1967-1974)
                     EX2+EM2+Govt2+..... (1967-1975)
```

Note: In locating the data gaps in GDP by expenditure consideration was given
       to the availability of figures of gross domestic investment. In many
       countries information on its component, namely fixed investment is
       missing and would have to be estimated. These countries are Antigua
       and Barbuda, Bangladesh, Cape Verde, Chad, Congo, Gambia,
       Guinea-Bissau, Haiti, Lesotho, Liberia, Libya, Madagascar, Mali, Niger,
       Oman, Saudi Arabia, Solomon Islands, St. Kitts and Nevis, St. Lucia,
       Swaziland, Togo, Trinidad and TB, Uganda, Vanuatu, Western Samoa.

ANNEX 3

Countries Excluded from WT

(All these countries are included in the UNSOCT)

1. Afghanistan	16. Djibouti	29. Montserrat
2. Albania	17. Germany DR	30. Namibia
3. Angola	18. Kiribati	31. Neth. Antilles
4. Bermuda	19. Guadaloupe	32. New Caledonia
5. Br. Virgin Islands	20. Guinea	33. Puerto Rico
6. Brunei	21. Iran	34. Qatar
7. Bulgaria	22. Iraq	35. Reunion
8. Burma	23. Korea, DPR	36. Romania
9. Kampuchea	24. Lao PDR	37. Anguillia
10. Cooks Islands	25. Lebanon	38. Sao Tome PR
11. Cuba	26. Maldives	39. Viet Nam
12. Czechoslovakia	27. Martinique	40. USSR
13. Eq. Guinea	28. Mongolia	41. US Virgin Islands
14. French Guinea		

ANNEX 4

~~ANNEX 2~~

Filling the Data Gaps in the World Tables

It has been brought out in the report that WT carry numerous data gaps. These gaps are of different nature and therefore no single method is capable to take care of all of them. The gaps can be put into certain categories, each of which will have a specific method. Some of the categories and the specific methods are dealt with in this Annex.

(1) To estimate industrial origin and expenditure components for 1987 - Figures of GDP for 1987, both at currrent prices and at 1980 prices given in the WT: Average structure over the last two yeras, namely 1985 and 1986 may be used. Example: France:-

(i) Given Data:

GDP and its Industrial Origin Components

	at current market prices			at 1980 prices		
	1985	1986	1987	1985	1986	1987
GDP	4695.0	5013.0	5249.5	3021.6	3086.8	3146.3
Agri.	180.5	186.9		137.4	137.3	
Indus.	1444.1	1529.4		944.2	944.7	
Manufac.	1039.2	1112.0		664.6	659.3	
Services	3070.3	3296.8		1940.0	2004.9	

(bill Francs)

(ii) Computations

	Structure at current prices			Estimates	Structure at 1980 prices			Estimates
	1985	1986	Avg.	1987	1985	1986	Avg.	1987
GDP	100.0	100.0	100.0		100.0	100.0	100.0	
Agri.	3.8	3.7	3.8	199.5	4.5	4.4	4.4	138.4
Indus.	30.8	30.5	30.7	1611.6	31.2	30.6	30.9	972.2
Manu.	22.1	22.2	22.2	1165.4	22.0	21.4	21.7	682.7
Servi.	65.4	65.8	65.6	3443.7	64.2	64.9	64.6	2032.5

(2)   To estimate GDP and its industrial origin and expenditure components for 1987 at current and at 1980 prices - GNP for 1987 given in the WT:

GDP can be estimated by using percentage change in GNP in 1987 over 1986.

Example: Dominican Republic.

   (i) Given Data

GNP and GDP at Market Prices

(mill Pesos)

	1986	1987
At current market prices		
GNP	14430	17807
GDP	15348	-
At 1980 market prices		
GNP	6213	6685.2
GDP	6672.7	-

(ii)   Computations

	GNP:1987/1986 (per cent)	Estimates of GDP - 1987
At current market prices	123.4	18939
At 1980 market prices ·	107.6	7180

Industrial activity and expenditure components can be estimated by following the steps in (1) above.

(3)   To estimate GDP and its industrial origin and expenditure components at current prices and at 1980 prices - even GNP for 1987 not given in the WT.

(i)   GDP/GNP for 1987 given in the IFS - same procedure as in (2) above

(ii) GDP/GNP for 1987 available from other supplementary sources - same procedure as in (2) above.

(iii)GDP/GNP for 1987 not available from any source -

(a) GDP for 1987 at 1980 prices to be estimated using average growth rate over 1980-1986. Industrial origin and expenditure components can be estimated following the steps in (1).

(b) GDP for 1987 at current prices to be estimated from GDP at 1980 prices by super-imposing price change. These prices changes are to be worked out as averages from the price indices implicit in the given current and constant price data. Industrial activity and expenditure components to be computed as in (1).

(4) To estimate industrial activity and expenditure components for 1980-1986 at 1980 prices - figures of GDP for all the years given *in* the WT:

(i) The figures for any one year from the WT to be moved to other years with the help of changes which are to be worked out on the basis of the UNSOCT. The sum of the estimated components is then to be compared with the GDP given in the WT and the difference is to be allocated to all components proportionately.

Example: New Zealand - To estimate industrial origin components for 1986 at 1980 prices:

Given Data: UNSOCT

GDP at 1980 prices (mill. $)

	1985	1986	1986/1985 (per cent)
GDP	26842	27325	101.799
Agriculture	2993	3109	103.876
Industry	8724	8886	101.857
Manufacturing	5856	5994	102.357
Services	15125	15330	101.355

Note: Following the practice in the WT sum of components in the UNSOCT has been adopted here to represent GDP at 1980 prices.

Data from WT for 1985 and Estimates for 1986

(mill. of 1980 NZ $)

	1985	Estimates 1986	Rescaled estimates-1986
GDP	26067	26539	26411
Agriculture	2999	3115	3100
Industry	8740	8902	8859
Manufacturing	5897	6036	6007
Services	14308	14523	14452

The sum of the estimated components, which is equal to GDP comes to mill NZ$ 27526 as against mill NZ$ 26411 in the WT. To bring the sum equal to the given GDP (it is 99.518 percent of the sum of estimated components) all the components have been scaled down proportionately; i.e. each figure has been multiplied by 0.99518. The results of scaling down are given in the last column of the above table. It will be seen from the figures that scaling down procedure has not affected the consistency of the estimates vis-a-vis the UNSOCT. In the UNSOCT all the components including manufacturing registered increase in 1986 over 1985. The estimated figures also reveal similar trend.

The above methods deal with only some of the numerous data gaps in the WT which are of varying nature. It would be extremely difficult to evolve methods leading to consistent set of estimates to fill all these gaps. The problem will assume unsurmountable proportions in the case of expenditure components as the UNSOCT does not provide information on `change in stocks.' Moreover there is no supplementary source available which gives price indices required to prepare estimates at current prices.

ANNEX 5

Testing the up-dating method

For purpose of testing the up-dating method, 1985 figures of GDP from the UNSOCT were moved to 1986, using the annual increases computed from the WT. The exercise was carried out in respect of 89 countries. In most of these countries the differences between the actuals and the estimates were within ± 1.5 per cent. The following countries however showed larger differences:

1. Botswana (7.3 per cent)
2. Cameroon (3.5 per cent)
3. Chad (11.1 per cent)
4. Congo (2.2 per cent)
5. Dominican Republic (1.8 per cent)
6. Jordan (2.7 per cent)
7. Morocco (2.3 per cent)
8. Oman (2.9 per cent)
9. Nigeria (9.1 per cent)
10. Sierra Leone (4.4 per cent)
11. Somalia (4.1 per cent)
12. Sudan (2.5 per cent)
13. Surinam (2.4 per cent)
14. Swaziland (6.0 per cent)
15. Tunisia (3.6 per cent)
16. Uganda (8.1 per cent)
17. Egypt (2.4 per cent)

Of the above countries the difference is considered large in Botswana, Chad, Nigeria, Swaziland and Uganda. Interestingly, all of them are African countries for which the Economic Commission for Africa has also prepared national accounts statistics. A comparison of GDP from the three sources is provided in the following table:

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Comparison of GDP at 1980 prices

	UNSOCT		WT*		ECA	
	GDP	Increase	GDP	Increase	GDP	Increase
Botswana						
1985	1 684	–	1 569	–	1 501	–
1986	1 777	5.5	1 787	13.9	1 684	12.2
1987	–	–	2 049	14.6	1 933	14.8
Nigeria						
1985	76 520	–	88 165	–	67 151	–
1986	71 169	(-)7.0	89 989	2.1	65 740	(-)2.1
1987	–		86 387	(-)4.0	66 529	1.2
Swaziland						
1985	623	–	623	–	693	–
1986	638	2.4	679	9.0	710	2.5
1987	–	–	696	2.5	699	(-)1.6
Uganda						
1985	13 116	–	20 128	–	2 783	–
1986	13 326	1.6	18 913	(-)6.0	2 778	(-)0.2
1987	–	–	19670	4.0	2 836	2.1

* The figures in national currency have been converted into US dollars, using the exchange rates in 1980 as given in the WT.

Wide differences in the figures suggest that for compilation of national accounts statistics the three agencies have used different concepts, exchange rates and procedures. In the absence of their full knowledge it does not seem possible to choose the appropriate source or to devise reconciliation methods. Under the circumstances the use of WT appears to be plausible, especially because they provide the most comprehensive supplementary source of information.

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