

Sectoral Database for Latin America

Sources and Methods

By

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Introduction

This document describes the sources and methodology used in compiling the sectoral database for Latin America. This database has been constructed along the lines of the sectoral database for Europe described in van Ark (1996) and for Asia described in Timmer et al. (2003). The database has been build upon the work presented in Hofman (1998). Despite the continuous interest in the subject, the published statistical information on long-term sectoral output and employment trends in Latin American economies as a whole is incomplete. As yet, no international organisation publishes figures for Latin America in a comparative framework as for example the OECD does for OECD countries. Various international organisations provide series with sectoral detail. Sectoral GDP series can be found in the annual United Nations, *National Accounts Statistics* and the International Labour Organisation provides sectoral detail on employment statistics in its *Yearbook of Labour Statistics*. However, the series presented are short and display clear breaks due to shifts in a benchmark year or when changes in industrial classification are left unresolved. Also the series often lack sectoral detail and sometimes are inconsistent, especially when used together with other sources. The main advantage of the present database is the provision of long time series on GDP and employment which are more consistent over time, and consistent with each other, based on an analysis of available national and international statistical sources. In general, national sources are preferred and when international data sources are used, they are checked against national data whenever possible.

Content of database

The database provides series on GDP at current and constant national prices and total employment in ten economic sectors of nine Latin American economies for the 1950 – 2005 period (initial years depending on data availability). The following countries are covered: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and Venezuela. These nine countries account for approximately 85% of the total population of Latin America and the Caribbean. In total, Latin America and the Caribbean consist of forty-four countries. Presently, most smaller countries are excluded and also the Caribbean Islands are excluded (generally having a higher GDP per capita on average).

¹ Many thanks to Gerard Ypma and Marcel Timmer for their help in constructing this database.

The classifications of the 10 sectors, which together cover the total economy, are described in Table 1.

Table 1 Description of 10 sectors in GGDC sectoral database

		ISIC rev. 2 SNA 1968	ISIC rev. 3 SNA 1993	ISIC rev. 3 SNA 1993
1	Agriculture, hunting, forestry and fishing	Major division 1	Division 01-05	A+B
2	Mining and quarrying	Major division 2	Division 10-14	C
3	Manufacturing	Major division 3	Division 15-37	D
4	Electricity, gas and water	Major division 4	Division 40-41	E
5	Construction	Major division 5	Division 45	F
6	Wholesale and retail trade, restaurants and hotels	Major division 6	Division 50-55	G+H
7	Transport, storage and communication	Major division 7	Division 60-64	I
8	Finance, insurance, real estate and business services	Major division 8	Division 65-74	J+K
9	Community, social and personal services (a)	Division 9	Division 75-99	O+P+Q
10	Producers of government services (a)	Division 9	Division 75-99	L+M+N

(a) As ISIC is a classification according to kind of economic activity, and does not draw distinctions according to kind of ownership, type of legal organisation or mode of operation, no clear distinction in terms of divisions can be made for these sectors.

The aim of the database

The aim of the database is to provide basic data for international productivity comparisons. The current database allows for international comparisons of growth rates of labour productivity. Future plans are to refine the labour input measure (hours worked), to include capital data for total factor productivity comparisons, and industry-of-origin purchasing power parities to allow for international level comparisons. Also the inclusion of other Latin American countries is envisaged.

Currently, the database does not aim at maximum coverage of countries, but instead focuses on countries for which long-term reliable and consistent data could be found. The aim of international long-term productivity comparisons puts the following requirements on the data:

a. Intertemporal consistency of each individual series of output (GDP) and employment. This is the most important aspect of the database, which is presented here. Possible problems which are encountered include breaks introduced by a change in the coverage of activities (revisions), changes in the methods of calculation, change in base year for prices, changes in industrial classifications etc.

b. Internal consistency between national output (GDP) and input (labour) series. This includes the use of the same industrial classification for both series and the same coverage of activities.

c. International consistency in terms of industrial classifications and concepts of output and employment.

Below we discuss the various problems encountered in compiling the data set according to these requirements, first with respect to GDP, then with respect to employment. For a similar discussion in the context of the European and Asian sectoral database, see van Ark (1996) and Timmer et al. (2003).

Consistency in national series of GDP

There are a number of problems, which frequently occur when trying to compile long time series of GDP. Series at current prices are frequently 'plagued' by a change in the coverage of activities (revisions) and changes in the industrial classification. Particular problems for the series at constant prices include changes in the methods of calculation (for example from Laspeyres to chained indices) and changes in the base year for prices.

Most of the countries covered in this database are, or were, at low levels of per capita income, which implies that the incidence of small-scale and informal activities is large. Problems of measurement inherent to these activities force national statistical agencies to make rough assumptions, which are often refined at a later stage. Mulder (1996) studied how Brazil and Mexico account for informality. He found remarkable differences in productivity assumptions for the informal sector in Mexico and Brazil. Mexico seems to overestimate the productivity in the informal sector, as the informal sector is on average more productive than the formal sector in national account calculations. This finding seems strange in the light of the generally accepted assumption of higher productivity in the formal sector. In contrast, national accounts of Brazil hardly make adjustments for informality and seem to be underestimating the contribution of the informal sector to GDP. We have not corrected for differences in estimating the informal sector.

Our general approach is to start with GDP levels for the most recent available benchmark year expressed in that year's prices. Series were subsequently linked to this benchmark year. This ensures that the growth rates of the individual series are retained, but absolute levels are adjusted according to the most actual information

and methods. If GDP is revised, by using this method we implicitly adjust the previous periods as well. Similarly, when industrial reclassifications have occurred, we use the most recent classification and try to adjust the data, which is only available according to the old classification.

International comparability of GDP measures

For GDP we used figures gathered within the framework of the System of National Accounts (SNA 1993), except for Venezuela (SNA 1968). Although all countries more or less adhere to these standards, differences in national accounting still exist. Methodological differences exist for example in the use of different base years, use of chain or fixed base indices and different procedures to link series for sub-periods (Maddison 1996).

With respect to sectoral accounts, important differences exist in the way in which real GDP by industry-of-origin estimates are obtained: estimates can be based on single or double deflation procedures or on the use of quantity indicators, the treatment of secondary activities often differs and GDP measures are valued at different valuation systems (market prices, factor costs or basic prices) (van Ark 1996). A quick overview of differences in national accounting practices is provided in United Nations, *National Accounts Statistics*.

As the industrial classification of all countries is based on ISIC, major differences are not to be expected at this level of aggregation. Countries mostly deviate from ISIC in the sub-sector classifications.² The only problem is in the distinction between communities, social and personal services and government services in this database. In some cases this was somewhat artificial as ISIC is a classification according to kind of economic activity, and does not draw distinctions according to kind of ownership, type of legal organisation or mode of operation. Activities such as education and health may be provided by both private and government bodies.

Consistency and comparability of employment measures

Labour input in this database is defined as “all persons employed”, i.e. the number of all paid employees and self-employed persons. Unfortunately, the treatment of the armed forces is not fully consistent across countries. This is also the case for persons who own an enterprise but are temporarily not at work and unpaid family workers. In order to provide standardised accounts of sectoral employment one can basically make use of two different primary sources, namely household surveys (for

² In more detailed studies in which output and productivity levels are compared across countries such as in Pilat (1994) and Timmer (2000) for Asia, this issue becomes more important and is treated more in-depth.

example population censuses and labour force surveys) or establishment surveys (such as production censuses or employment surveys).³

Unfortunately, only a few countries in the world have reconciled the figures from the different sources and generally, differences exist, which can be large both in terms of levels and growth rates (see for example the case of South Korea presented in Timmer 2000). Even household surveys differ from each other and lack consistency due to differences in coverage, concepts, procedures, seasonal timing etc. Van Ark (1996) argues that for sectoral accounts it is preferable to estimate the number of employees per sector on the basis of returns from establishments, as in household surveys the respondents' statement concerning the industry in which he or she is employed is often not in accordance with the official classification. Moreover multiple jobholders are only counted once in the labour force survey according to their most important activity, while they may be active in more than one sector.

However, the latter does not seem to be a disadvantage in the case when labour input is measured in persons employed rather than hours worked. Ideally, hours worked should be used but sectoral statistics on hours worked are scarce, shaky and contradicting. If data on hours worked were available, multiple jobholders could be counted in two or more sectors with the appropriate number of hours worked in each sector. However without correcting for hours worked, counting of multiple jobholders in more than one sector results in a large overestimation of the labour input in countries with a large number of multiple jobholders. In addition, countries at low levels of per capita income have large parts of the population employed in agriculture and small-scale, unregistered, industrial activities and services. Establishment surveys do not cover the agricultural sector and the informal unregistered sector. Usually they also only cover establishments of a given importance, that is, those fulfilling certain conditions, such as having more than a certain number of employees, having more than a certain value of output or capital etc. Therefore establishment data are subject to some bias and are likely to misrepresent the sectoral composition of the labour force, especially in developing countries.

Both household surveys and establishment surveys seem to be more useful in indicating growth rates than indicating absolute levels. In order to arrive at levels, we have made use of research undertaken at the population division (CELADE) and the statistics and projections division of ECLAC. CELADE presents time series for the Economically Active Population (EAP) in the Boletín Demográfico. At CELADE, EAP is defined as: "generally speaking, the economically active population consists of those persons, male or female, who are ready to participate in production of economics goods and services" (Boletín Demográfico, Julio 1999). This EAP is estimated by using the population censuses as an indicator of the demographic compilation of the population and the household surveys as an indicator of the

³ In the accompanying volumes to the *Yearbook of Labour Statistics*, titled *Sources and Methods: Labour Statistics*, the International Labour Organisation, provides descriptions of national methods and practices with respect to employment statistics.

magnitude of the demographic groups. In order to estimate total employment, we have excluded unemployment from EAP. Data on unemployment are presented in the “Economic Surveys for Latin America and the Caribbean” (Estudio Económico de América Latina y el Caribe), issued by ECLAC. It should be noted, that using this method for estimating total employment still includes unpaid family workers.

The sectoral distribution of total employment has been estimated by using the shares in the population censuses.⁴ Sectoral growth rates from the household surveys have been used to interpolate the years in between. The above-described framework is our default option. As most labour force surveys were initiated in the 1970s, it wasn't possible to apply the framework for earlier years. For earlier years we also used data from population censuses and interpolated the years in between by using the average annual labour productivity growth rates for each sector.

Comparability of national GDP and Employment series

Employment statistics and GDP statistics in general cover the same activities. This is the case, because in the employment statistics, economically active persons are defined as those engaged in productive activities as defined in the SNA. This ensures the same coverage of activities for both GDP and employment. However, a notable exception is for the own-account production of housing services by owner-occupiers. For this an imputation of rent is made and added to GDP in many countries, according to the SNA. However, this imputed production does not have an employment equivalent and should preferably not be included in output for the purposes of labour productivity comparisons. This appeared to be feasible for all countries.

Conclusions and Future Research

This document describes the main sources and methodological issues. The database is constructed along the lines of earlier productivity databases constructed for Europe and Asia by the Groningen Growth and Development Centre (GGDC). With this database, labour productivity in several (mostly large) Latin American countries can be studied. However for more and better productivity comparison, future plans for this database are to refine the labour input measure (hours worked), to include capital data for total factor productivity comparisons, and construct industry-of-origin purchasing power parities to allow for international level comparisons.

⁴ Official population censuses data for 1950, 1960 and 1970 appear to be highly unreliable. In order to remedy this problem we have used a study from PREALC (1982). This study makes adjustments in order for the population censuses to be reliable and comparable within and between countries (for example on age limitations, reference periods, ISIC revisions (ISIC revision 1 and 2), workers entering the labour market, unspecified workers and on the underestimation of agricultural workers).

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GENERAL SOURCE DESCRIPTION

of the Sectoral Database for Latin America

Value added by Industry in Constant and Current Prices

The general approach in constructing value added by industry in constant and current prices has been to use long time-series sectoral data, presented by the central bank or the national statistical office.

For earlier years, sectoral growth rates from historical time-series presented in the *Statistical Yearbook for Latin America* (ECLAC), the United Nations, *National Accounts Statistics* or the *Serie Historicas del Crecimiento de America Latina* (ECLAC, 1978) are used.

Number of Persons Employed by Industry

A first step has been to construct total employment time-series. We use the Economically Active Population estimates from CELADE (demographic bulletins). In order to arrive at total employment, yearly unemployment estimates are excluded from EAP.

The second step has been to estimate sectoral employment by using the sectoral employment weights in the population censuses. For earlier years, we make use of population census data from an extensive project by PREALC (1982). For later years, data are taken from ILO (1991) and the national statistical offices.

These data so far only give decadal sectoral employment estimates. A third step has been to use household surveys to estimate annual sectoral growth rates. Most countries initiated household surveys in the 1970s. Therefore, for earlier years we estimate annual sectoral growth rates between the decadal sectoral employment data (from the population censuses) by interpolation, using the average annual labour productivity growth rates for each sector. This interpolation method has pros and cons. A major advantage is the sectoral employment linkage with changes in sectoral value added. This linkage assures coexisting changes in employment with changes in value added. However, an obvious disadvantage is the rather tricky assumption on labour productivity. Labour productivity is now dependent upon changes in sectoral value added. Summing up, this interpolation method probably gives reasonable employment estimates, but labour productivity has become dependent upon changes in sectoral value added.

An exception for sectoral estimates forms the agricultural sector. Yearly growth rates between the decadal census data for agriculture are taken from the GGDC agricultural database. Main reason behind this decision is the underestimation of the agricultural sector in household surveys (household surveys are usually concentrated on urban areas).

DETAILED SOURCE DESCRIPTION

of Sectoral Database for Latin America

Argentina

Value Added by Industry in Constant 1993 Prices

Sources:

- 1950-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
- 1980-1992: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
- 1993-2005: Instituto Nacional de Estadística.

Notes:

Series for 1950-1992 have been linked using growth rates. Since 1993, SNA 1993 has been adapted. Series for 1993-2005 use the SNA 1993 classification. As a base serves the period 1993-2003, SNA 1993, 1993 prices. For 1950-1951, growth rate in "other sectors" has been used for utilities, trade, transport, finance, and other services. For 1952-1955, forestry is included in manufacturing. Also, utilities are included in services, and trade is included in transport. For 1956-1959, forestry is included in manufacturing. For 1960-1967, storage is excluded from transport. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Value Added by Industry in Current Prices

Sources:

- 1950-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations
- 1980-1992: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
- 1993-2005: Instituto Nacional de Estadística.

Notes:

Series for 1950-1979 have been linked using growth rates. Since 1993, SNA 1993 has been adapted. Series for 1993-2005 use SNA 1993 classification. As a base serves the period 1993-2005, SNA 1993. For 1950-1951, services include communication. For 1952-1959, forestry is included in manufacturing. For 1960-1967, storage is excluded from transport. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Number of Persons Employed by Industry

Sources:

1950, 1960, 1970: PREALC (1982).

1980: ILO (1991) Yearbook of Labour Statistics, retrospective edition on population censuses, 1945-1989.

1991, 2001: INDEC, www.indec.gov.ar, november 2004

1971-1979, 1981-1990, 1992-2000: Encuesta Permanente de Hogares.

1961-1969, 1971-1979, 1981-1990, 1992-2000: For agriculture, the GGDC agricultural database.

1950-2005: Total employment from ECLAC.

Notes:

Shares from the population censuses (1950, 1960, 1970, 1980, 1991, 2001) are used to estimate sectoral employment. For the population censuses of 1950, 1960 and 1970 employment in financial services is included in services. We have used the growth rate in services to estimate the share of financial services in these years.

For 1951-1959, 1961-1969, and 2001-2005 (except agriculture during 1961-1969) we estimated annual sectoral employment by interpolation, using the average annual labour productivity growth rates for each sector.

For 1971-1979, 1981-1990, 1992-2000, we estimated annual sectoral employment by interpolation, using the household survey.

In order to estimate annual agricultural employment, we interpolated the years 1961-1969, 1971-1979, 1981-1990, 1992-2000 using the GGDC agricultural database.

Final years (2002-2005) were obtained using the total employment growth rate, because sectoral employment growth rates from the household survey gave conflicting results (especially for agriculture).

Bolivia

Value Added by Industry in Constant 1990 Prices

Sources:

- 1950-1957: growth rate from CEPAL (1978).
1958-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1989: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1990-2005: Instituto Nacional de Estadística (www.ine.gov.bo).

Notes:

Series for 1950-1989 are linked using growth rates. SNA 1993 has been adapted. Series for 1992-2003 use the SNA 1993 classification. As a base serves the period 1989-2003, SNA 1993, 1990 prices. For 1958-1963, Services include communication. For 1958-1963, Transport includes financial services. For 1958-1963, value added for electricity only in the sector electricity, gas and water. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Value Added by Industry in Current Prices

Sources:

- 1958-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1989: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1990-2005: Instituto Nacional de Estadística (www.ine.gov.bo).

Notes:

Series for 1950-1989 have been linked using growth rates. SNA 1993 has been adapted. Series for 1992-2003 use the SNA 1993 classification. As a base serves the period 1989-2003, SNA 1993, 1990 prices. For 1958-1963, Services include communication. For 1958-1963, Transport includes financial services. For 1958-1963, value added for electricity only in the sector electricity, gas and water. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Number of Persons Employed by Industry

Sources:

- 1950, 1970: PREALC (1982)
1982: ECLAC (1989)
1992, 2001: INE, www.ine.gov.bo, january 2005
1983-1991, 1993-2000: Unidad de Analises de Politicas Economicas, estimation

based upon household surveys.
1971-1981, 1983-1991, 1993-2000: agriculture from GGDC agricultural database.
2002-2003: Instituto Nacional de Estadística (www.ine.gov.bo).
1950-2003: Total employment from ECLAC.

Notes:

Shares from the population censuses (1950, 1970, 1982, 1992, 2001) are used to estimate sectoral employment. For population censuses of 1950 and 1970 employment in financial services is included in services. We have used the growth rate in services to estimate the share of financial services in these years. For 1950-1969 and 1971-1981 (except agriculture in the last decade) we estimated annual sectoral employment by interpolation, using the average annual labour productivity growth rates for each sector. For 1983-1991, 1993-2000, 2002 we estimated sectoral employment by interpolation, using the household survey. In order to estimate annual agricultural employment, we interpolated the years 1971-1981, 1983-1990, 1992-2000 using the GGDC agricultural database.

Brazil

Value Added by Industry in Constant 2000 Prices

Sources:

1950-1990:	Sectoral growth rate from Mulder (1998).
1991-1999:	Growth rate from National Accounts (IBGE)
2000:	Sectoral values in current prices from Statistical Yearbook 2006 (UN ECLAC)
2001-2005:	Growth rate from National Accounts (IBGE)

Notes:

Base year is 2000. Series are extrapolated with growth rates from national accounts and Mulder (1998). For some sector, we used the growth rate from a representative sub sector (i.e. the growth rate from transport was applied to the transport and communication sector).

Value Added by Industry in Current Prices

Sources:

1990-2005	Statistical Yearbook of Latin America and the Caribbean, UN ECLAC (2006)
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Notes:

Due to hyperinflation, it is not feasible to extrapolate current value added before 1990.

Number of Persons Employed by Industry

Sources:

1950-1989:	Growth rates from Mulder (1996).
1990-2003:	National Accounts (IBGE)
2004-2005:	Household Survey (IBGE, coverage is national economy)

Notes:

For 1990-2005, the national accounts do not provide enough detail in the services sector. In order to obtain employment in services sector, we relied on several additional sources. For wholesale and retail trade (50-52), we used shares from the Pesquisa Anual de Comércio. For transport and communication (60-64), we used shares from the Pesquisa Anual de Serviços. For other services sector we used shares from the household surveys.

Chile

Value Added by Industry in Constant 1996 Prices

Sources:

- 1950-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
- 1980-1995: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
- 1996-2005: National Accounts, Instituto Nacional de Estadística (INE).

Notes:

Series for 1950-1995 have been linked by using growth rates. Since 1996, SNA 1993 has been adapted. Series for 1985-2005 have been revised using the SNA 1993 classification. As a base serves the period 1996-2005, SNA 1993, 1996 prices. For the period 1960-1984, Restaurants and hotels are included in Community, social and personal services. Using growth rates, we haven't made adjustments. We assumed this to be a minor issue. Even more, in the employment series, restaurants and hotels are also included in trade. Internal consistency is thereby guaranteed. Also, for the period 1960-1984, Business services are included in Community, social and personal services. Using growth rates, we haven't made adjustments. We assumed this to be a minor issue. Again, internal consistency is effective, for in the employment series business services are included in financial services. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Value Added by Industry in Current Prices

Sources:

- 1950-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
- 1980-1995: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
- 1996-2005: National Accounts, Instituto Nacional de Estadística (INE).

Notes:

Series for 1950-1995 have been linked by using growth rates. Since 1996, SNA 1993 has been adapted. Series for 1985-2005 have been revised using the SNA 1993 classification. As a base serves 1996, SNA 1993. Recently the value added for financial services and other services has been revised by INE. These two sectors have undergone a major revision, but the other sectors are unchanged. The revision by INE has only been in the constant price series. At its website, INE doesn't publish current price series, but current prices series are published by ECLAC. The new 1996 series from INE have been adopted here and it is linked to the growth rates in the series published by ECLAC. The expectation is, that ECLAC will also revise the series in their 2004 Statistical Yearbook. . For the period 1960-1984, Restaurants and hotels are included in Community, social and personal services. Using growth rates, we haven't made adjustments. We assumed this to be a minor issue. Even more, in the employment series, restaurants and hotels are also included in trade. Internal consistency is thereby guaranteed. Also, for the period 1960-1984, Business services are included in Community, social and personal services. Using growth rates, we

haven't made adjustments. We assumed this to be a minor issue. Again, internal consistency is effective, for in the employment series business services are included in financial services. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Number of Persons Employed by Industry

Sources:

1950, 1960, 1970: PREALC (1982).

1982: ILO (1991).

1992, 2002: INE, www.ine.cl, december 2004.

1961-1969, 1971-1981, 1983-1991, 1993-2001: For agriculture, GGDC agricultural database.

1961-1969, 1971-1979: For Manufacturing, Construction, Trade, Transport and Other services, Encuesta de Empleo.

1980-1981, 1983-1985: For Mining, Manufacturing, Construction, Trade, Transport and Other services, CASEN nacional.

1986-1991, 1993-2001: For all sectors except agriculture, Encuesta Nacional de Empleo.

2003-2005: Encuesta Nacional de Empleo.

1950-2003: Total employment from ECLAC.

Notes:

Shares from the population censuses (1950, 1960, 1970, 1982, 1992, 2002) are used to estimate sectoral employment. For population censuses of 1950, 1960, and 1970 employment in financial services is included in services. We have used the growth rate in services to estimate the share of financial services in these years.

For 1951-1959 (and for 1961-1969, 1971-1981 in Mining, Public Utilities and Financial services), we estimated annual sectoral employment by interpolation, using the average annual labour productivity growth rates for each sector.

For 1961-1969, 1971-1981, 1983-1991, 1993-2000, 2002 we estimated sectoral employment by interpolation, using the different available household surveys.

An exception is agriculture and for 1961-1969 and 1971-1981 also Mining, Public Utilities and Financial services. For agriculture we interpolated the years 1961-1969, 1971-1981, 1983-1991, 1993-2001 using the GGDC agricultural database.

Colombia

Value Added by Industry in Constant 1994 Prices

Sources:

- 1950-1954: growth rate from CEPAL (1978).
1955-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1993: Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1994-2005: DANE (www.dane.gov.co)

Notes:

Series for 1955-1993 have been linked by using growth rates. Series for 1994-2005 use the SNA 1993 classification. As a base serves the period 1994-2005, SNA 1993, 1994 prices. For 1968-1971: Hotels and restaurants are included in community, social and personal services. For 1968-1971: Business services are included in community, social and personal services. For 1968-1971: Community, social and personal services also include other producers. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Value Added by Industry in Current Prices

Sources:

- 1950-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1993: Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1994-2005: DANE (www.dane.gov.co)

Notes:

Series for 1950-1993 have been linked using growth rates. Series for 1994-2005 use the SNA 1993 classification. As a base serves the period 1994-2005, SNA 1993, 1994 prices. For 1968-1971: Hotels and restaurants are included in community, social and personal services. For 1968-1971: Business services are included in community, social and personal services. For 1968-1971: Community, social and personal services also include other producers. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Number of Persons Employed by Industry

Sources:

- 1950, 1960, 1970: Sectoral population census share from PREALC (1982).
1993: Sectoral population census share from DANE,

http://www.dane.gov.co/inf_est/poblacion/censo/censo5.xls ,
february 2005.

1970-2005: Household Surveys; Encuesta Nacional de Hogares.
1960-1992: GGDC Agricultural Database.
1950-2005: Total Employment from ECLAC.

Notes:

Shares from the population censuses (1950, 1960, 1970, 1993) are used to estimate sectoral employment. For 1950, 1960 and 1970 employment in financial services is included in services. We have used the growth rate in services to estimate the share of financial services in these years.

For 1951-1959, and 1961-1969 (except agriculture in the last decade), we estimated annual sectoral employment by interpolation, using the average annual labour productivity growth rates for each sector.

For 1971-1992 we estimated annual sectoral employment by interpolation, using the household survey.

For 1993-2005, we estimated annual sectoral employment by using the sectoral growth rates in the household survey.

For annual agricultural employment estimates, we interpolated the years 1961-1969, and 1971-1992, using the GGDC agricultural database.

Costa Rica

Value Added by Industry in Constant 1990 Prices

Sources:

- 1950-1959: growth rate from CEPAL (1978).
1960-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1990: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1991-2005: Banco Central Costa Rica. Website,

Notes:

Series for 1960-1990 have been linked using growth rates. Series for 1991-2005 use the SNA 1993 classification. As a base serves the period 1991-2005, SNA 1993, 1991 prices. No data could be found for 1961, 1962, 1964, 1967 and 1968. We have estimated these years by interpolating, using the growth rates in current prices. For 1960-1990 Mining and quarrying are included in Manufacturing. In order to estimate the sector mining and quarrying, we have used the growth rate in manufacturing. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Value Added by Industry in Current Prices

Sources:

- 1950-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1990: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1991-2005: Banco Central Costa Rica. Website,

Notes:

Series for 1960-1990 have been linked using growth rates. Series for 1991-2005 use the SNA 1993 classification. As a base serves the period 1991-2003, SNA 1993. For 1950-1990 Mining and quarrying are included in Manufacturing. In order to estimate the sector mining and quarrying, we have used the growth rate in manufacturing. For 1950-1960, the sector "Other" includes certain amounts which could not be allocated by industry. Product originating in the industries classified under items 1-9 and item 11 refer to the private sector only. The sector "Other" comprises the total product of state enterprises, e.g., public utilities, state banks, railways, postal and telegraph services. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Number of Persons Employed by Industry

Sources:

1950, 1960, 1970: Sectoral population census share from PREALC (1982).
1984: Sectoral population census share from ILO (1989).
2000: Sectoral population census share from INEC,
www.inec.go.cr , january 2005.
1984-2001: Sectoral growth rate from household surveys. Except for agriculture.
1960-2000: Sectoral growth rate for agriculture from GGDC agricultural
database.
2002-2005: Sectoral growth rate from Banco Central de Costa Rica
1950-2003: Total employment from ECLAC.

Notes:

Shares from the population censuses (1950, 1960, 1970, 1984, 2000) are used to estimate sectoral employment. For 1950, 1960 and 1970 employment in financial services is included in services. We have used the growth rate in services to estimate the share of financial services in these years.

For 1951-1959, 1961-1969 and 1971-1983 (except agriculture in the last decade), we estimated annual sectoral employment by interpolation, using the average annual labour productivity growth rates for each sector.

For 1985-1999 we estimated annual sectoral employment by interpolation, using the household survey.

For annual agricultural employment estimates, we interpolated the years 1961-1969, 1971-1983, 1985-1999 using the GGDC agricultural database.

Mexico

Value Added by Industry in Constant 1993 Prices

Sources:

- 1950-1956: growth rate from Mulder (1996)
1956-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-2005: Banco Central Mexico.

Notes:

Series for 1950-1979 have been linked using growth rates. As a base serves the period 1980-2005, SNA 1993, 1993 prices. For 1950-1967 financial services are included in services. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Value Added by Industry in Current Prices

Sources:

- 1950-1965: growth rate from Mulder (1996).
1965-1969: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1970-1987: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1988-2005: INEGI

Notes:

Series for 1950-1990 have been linked by using growth rates. Series for 1988-2005 use the SNA 1993 classification. As a base serves the period 1991-2003, SNA 1993. For 1950-1990 Mining and quarrying are included in Manufacturing. In order to estimate the sector mining and quarrying, we have used the growth rate in manufacturing. For 1950-1960, the sector "Other" includes certain amounts which could not be allocated by industry. Product originating in the industries classified under items 1-9 and item 11 refer to the private sector only. The sector "Other" comprises the total product of state enterprises, e.g., public utilities, state banks, railways, postal and telegraph services. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Number of Persons Employed by Industry

Sources:

- 1950-1987 (except for manufacturing: 1950-1969): growth rate from Mulder (1996).
1988-1994 (except for manufacturing: 1970-1994 and public utilities 1988-1995):
growth rate from OECD STAN Number of Employees (vol. 2002).

1995-2001 (except for public utilities 1996-2001): ILO, LABORSTA Database,
November 2004.
2002-2005: growth rate from National accounts Mexico.
1950-2003: Total employment from ECLAC.

Notes:

As a base for sectoral employment shares serves total employment data from the ILO, laborstatistics database. These figures are only presented for 1995-2001. Sectoral employment for the other years has been estimated by using growth rates from other sources.

Peru

Value Added by Industry in Constant 1994 Prices

Sources:

1950-1952:	growth rate from CEPAL (1978).
1953-1979:	growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1990:	growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1991-2005:	Banco Central Peru.

Notes:

Series for 1953-1990 have been linked using growth rates. As a base serves the period 1991-2005, SNA 1993, 1994 prices. No data could be found for 1954 and 1956. We have estimated these years by interpolating, using the growth rates in current prices. For 1960-1967, Services include Transport, Trade, and Financial services. For 1968-1971, Services include Financial services and Transport and Communication. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Value Added by Industry in Current Prices

Sources:

1950-1979:	growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1990:	growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1991-2005:	Banco Central Peru

Notes:

Series for 1950-1990 have been linked using growth rates. As a base serves the period 1991-2005, SNA 1993.

For 1950-1954, Electricity and Construction are included in transport, Real estate from financial services is included in services, Dwellings is included in services, Public administration represents total expenditure of government on goods and services rather than the product originating in public administration and defence. As a result, the estimate of gross national product is overstated, Services includes rental income, real estate and miscellaneous services, n.e.s.

For 1955-1956, Electricity is included in transport, Construction is included in manufacturing, Dwellings is included in services, Public administration and defence represents total expenditure of general government, including consumption expenditure and fixed capital formation., Services includes rental income, real estate and miscellaneous services, n.e.

We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for

the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Number of Persons Employed by Industry

Sources:

- 1960, 1970: Sectoral population census share from PREALC (1982).
1981: Sectoral population census share from ILO (1989).
1993: Sectoral population census share from INEI, www.inei.gov.pe, January 2005.
1970-2005: Growth rates from (various) Household survey(s) for Lima, metropolitan area. Except for agriculture.
1960-2000: Growth rates for agriculture from GGDC Agricultural Database, www.ggdc.nl.
1950-2005: Total employment from ECLAC.

Notes:

Shares from the population censuses (1960, 1970, 1981, 1993) are used to estimate sectoral employment. For 1960 and 1970 employment in financial services is included in services. We have used the growth rate in services to estimate the share of financial services in these years.

For 1961-1969 (except agriculture), we estimated sectoral employment by interpolation using the average annual labour productivity growth rates for each sector.

For 1971-1980 and 1982-1992 we estimated sectoral employment by interpolation, using the household surveys.

For annual agricultural employment estimates, we interpolated the years 1960-1969, 1971-1980, 1982-1992 using the GGDC agricultural database.

We extrapolated all annual sectoral employment estimates for 1994-2005, using the household survey data.

Venezuela

Value Added by Industry in Constant 1984 Prices

Sources:

- 1950-1951: growth rate from CEPAL (1978).
1952-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1994: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1995-2003: Banco Central de Venezuela. Website, http://www.bcv.org.ve/excel/7_1_2.xls?id=108, december 2004.
2004-2005: growth rate from Central Bank of Venezuela

Notes:

Series for 1952-1994 have been linked using growth rates. Series for 1968-2003 use the SNA 1968 classification. As a base serves the period 1995-2003, SNA 1968, 1984 prices. For 1952-1955, financial services are included in Trade. For 1955-1959, financial services are included in services. For 1960-1967, financial services are included in Trade. For 1952-1959, Mining and quarrying includes the extraction and refining of crude petroleum. For 1960-2003, Mining and quarrying includes the extraction crude petroleum, whereas refining is included in manufacturing. For 1972-1980, Electricity, gas and water exclude gas. For 1980-1984, Dwellings refer to Real estate and Business services. For 1984-2003, Dwellings refer to Real estate. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Value Added by Industry in Current Prices

Sources:

- 1960-1979: growth rate from National Accounts Statistics: Main Aggregates and Detailed Tables, various issues. United Nations.
1980-1994: growth rate from Statistical Yearbook for Latin American and the Caribbean 2003. ECLAC.
1995-2003: Banco Central de Venezuela. Website, http://www.bcv.org.ve/excel/7_1_2.xls?id=108, december 2004.

Notes:

Series for 1960-1994 have been linked using growth rates. Series for 1968-2003 use the SNA 1968 classification. As a base serves the period 1995-2003, SNA 1968. For 1960-1963, financial services are included in Trade. For 1964-1968, Services includes all sectors except agriculture and mining. For 1972-1980, Electricity, gas and water exclude gas. For 1980-1984, Dwellings refer to Real estate and Business services. For 1984-2003, Dwellings refer to Real estate. We haven't split Community, social and personal services from Government services. As our ISIC-3 approach to employment does not make a distinction on ownership, we cannot distinguish between these sector in the employment series. Therefore in order for the database to remain consistent, we have aggregated both sectors in the sectoral GDP-series. The value added by dwellings in financial services does not have an employment equivalent and should preferably not be included in output for the purpose of labour productivity

comparisons. We therefore have constructed series on the value added of dwellings (which can easily be deducted from financial services).

Number of Persons Employed by Industry

Sources:

- 1950, 1960, 1970: Sectoral population census share from PREALC (1982).
- 1981: Sectoral population census share from ILO (1989).
- 1990: Sectoral population census share from OCEI, www.ine.gov.ve , february 2005.
- 2001: Sectoral population census share from OCEI, www.ine.gov.ve
- 1991-2005: Growth rates from Household survey(s). Encuesta de Hogares por muestro.
- 1960-1989: Growth rates for agriculture from GGDC Agricultural Database, www.ggdc.nl.
- 1950-2005: Total employment from ECLAC.

Notes:

Shares from the population censuses (1950, 1960, 1970, 1981, 1990, 2001) are used to estimate sectoral employment. For 1950, 1960 and 1970 employment in financial services is included in services. We have used the growth rate in services to estimate the share of financial services in these years.

For 1951-1959, 1961-1969, 1971-1980, and 1981-1989 (except agriculture), we estimated sectoral employment by interpolation using the average annual labour productivity growth rates for each sector.

For annual agricultural employment estimates, we interpolated the years 1960-1969, 1971-1980, 1982-1989 using the GGDC agricultural database.

We extrapolated all annual sectoral employment estimates for 1991-2000 and 2002-2005, using the household survey data.