

# JOB FLOWS DATASET<sup>1</sup>

This dataset contains information on job flows for six Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Uruguay). This data was created as part of the IADB Research Network Study “Market Institutions, Labor Market Dynamics, Growth and Productivity: An Analysis of Latin America and the Caribbean” coordinated by John Haltiwanger (U. of Maryland), Adriana Kugler (U. of Texas, Houston), Maurice Kugler (University of Southampton), Alejandro Micco (IADB) and Carmen Pagés (IADB).

The job flow variables were created from firm or plant level data information. The data set covers the manufacturing sector (2-digit ISIC Rev.2 classification). For Brazil and Mexico, the data covers the whole economy (private sector). The original plant or firm level data are a census of firms or plants with the exception of Argentina and Uruguay. In these two countries the adequate weights had been applied in order to expand the results. The job flows dataset covers different time periods for the different countries and it has been computed at the annual frequency.

## 1. Definition of variables

The rate of net employment growth for each industrial location  $i$ , in a given country, in period  $t$  is defined as (sub-index  $c$  omitted) :

$$Net_{it} = 2 \frac{E_{it} - E_{it-1}}{E_{it} + E_{it-1}}$$

where  $E$  represents employment level. The statistics for aggregate net and gross job flows are constructed as:

$$Job\ Creation_t \equiv Pos_t = \sum \phi_{it} \max(Net_{it}; 0)$$

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<sup>1</sup> Please reference these dataset as “Job Flows Dataset. Inter-American Development Bank (2004)”. For questions, address Carlos Andres Gomez at [CarlosAG@iadb.org](mailto:CarlosAG@iadb.org)

$$Job\ Destruction_t \equiv Neg_t = \sum \phi_{it} \min(Net_{it}; 0)$$

where the weight used for aggregation purposes is

$$\phi_{it} = \frac{E_{it} + E_{it-1}}{\sum_i (E_{it} + E_{it-1})}$$

## 2. Individual Country Information (See also Tables 1-4)

### 2.1. Argentina:

- Original Data Source: Monthly Industrial Survey (MIS) carried out by INDEC
  - Coverage: The reference universe consists of firms employing more than 10 staff and covers all the activities of the manufacturing sector. Due to the disincentive that firms have to inform on the use of informal labor, the MIS statistics refer mostly to formal job flows.
  - Period: 1991-2001
  - Sample: Information relative to a sample of 2,619 firms. After 1997 the database includes information relative to 2,635 firms: 416 of which have complete data for the 1991-2001 period, and 1,849 with complete data between 1997-2001. These observations had been adequately weighted in order to represent the whole manufacturing sector.
  - Methodology change: in 1997, the mapping between the two methodologies was done by INDEC and improved by I. Butler and G. Sanchez, two researchers at the IERAL – Fundación Mediterránea, Buenos Aires, Argentina. Firms for which the mapping between the two methodologies in 1997 was deemed to remain unsatisfactory even after the improved mapping were dropped out of the sample. Seasonality was removed by applying an ARIMA X-11 method.
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## 2.2 Brazil:

- Original Source: Microdata from the Relação Anual de Informações Sociais (RAIS – Annual Social Information Report) organized annually by the Ministério do Trabalho e Emprego (MTE – Labor Ministry).
- Coverage: all tax registered Brazilian establishments. **(Plants)**. RAIS may be considered a census of the formal Brazilian labor market (including State owned enterprises, public administration and non-profit organizations). Formal sector is defined as tax and social security registered establishments only.
- Period: 1992- 2000
- Frequency: Annual. The information is collected in the first quarter, referring to the previous year.
- Sample: RAIS covers an average of approximately two million establishments and twenty four million workers, every year for the whole country.
- Methodology change: None. Necessary adjustments were done eliminating observations that could generate spurious entries or exits.

Comments: Every time a business formally starts up (obtains a tax registry number), it must file RAIS. Business may be entering the dataset when they decide to become formal, maybe due to its growing size. A business is considered closed every time it does not file a RAIS report or inform zero employees. Unfortunately, as with any data set that uses administrative records, coverage differences across sectors and sizes and across time may generate spurious results. In order to obtain more confidence in the calculated statistics a lower bound is set on average unit size at 5 employees. About 7 to 9% of all jobs in the economy are lost in this procedure. The cutoff level is arbitrary but provides statistics more comparable with other works in the area, such as Davis, Haltiwanger and Schuh (1996) and should reduce measurement error in job and worker flows.

## 2.3 Chile:

- Original source: Encuesta Nacional Industrial Anual (ENIA) from the Chilean statistic agency, the Instituto Nacional de Estadísticas (INE).

- Coverage: Manufacturing sector ENIA covers all the manufacturing plants that employ at least 10 individuals and it covers 50% of total manufacturing employment (which represents 16% of total Chilean employment).
- Period: 1980-1999
- Frequency: Annual
- Methodology change: none
- Comments: Sector 39 was excluded because of its natural heterogeneity.

#### **2.4 Colombia:**

- Source: Annual Manufacturing Survey of Colombia, in Spanish “Encuesta Anual Manufacturera” (EAM) collected by the Colombian Statistical Office DANE.
- Coverage: The survey represents a complete census of the manufacturing sector for firms with 15 or more employees, which accounts for 15% of Colombian GDP
- Period: 1978- 1991 and 1993-1999.
- Frequency: Annual
- Methodology change: In 1992 a new identification method was introduced and plants had to be traced down manually. As a result the data for 1992 was eliminated from the sample.
- Sample: The EAM is an unbalance panel of 12,084 plants amounting to 97,346 plant-year observations.

#### **2.5 Mexico:**

- Original Source: Instituto Mexicano del Seguro Social (IMSS) which is the agency that manages the social security accounts for all private-sector tax-register
- Coverage: A census of all private sector firms in the formal sector of the whole economy. Administrative data that covers employee and employer information.
- Period: 1994-2000
- Frequency: Annual
- Methodology change: none

## 2.6 Uruguay:

- Original Source: Manufacturing Survey conducted by the Instituto Nacional de Estadística (INE)
- Coverage: All establishments with more than 100 employees were included in the survey. The random sampling process of firms with less than 100 employees satisfies the criterion that the total employment of all the selected establishments must account at least for 60% of the total employment of the sector according to the economic Census (1978 or 1988). This makes the database biased towards large firms. The data allows to distinguish plants of the same firm in different industries -five digits ISIC-, but they cannot distinguish between plants of the same firm in the same sector, which are all computed as one establishment.
- Period: 1989-1995
- Frequency: Annual
- Methodology change: None

**Table 1: Dataset Characteristics by Country**

Country	Argentina	Brazil	Chile	Colombia	Mexico	Uruguay
Type data	Job	Job + Workers	Job	Job	Job + Workers	Job
Source	INDEC	RAI	ENIA	EAM DANE	IMSS	INE
Period	1991-2001	1992-2000	1980-1999	1977-1991 and 1993-1999	1994-2000	1989-1995
Frequency	Annual	Annual	Annual	Annual	Annual	Annual
Coverage	Manufacturing	Whole Private Sector (Formal Economy)	Manufacturing	Manufacturing	Whole Private Sector	Manufacturing
Sub-sector	ISIC 2 digits	ISIC 2 digits	ISIC 2 digits	ISIC 2 digits	ISIC 2 digits	ISIC 2 digits
Unit	Firms	Plants	Plants	Plants	Firms	Plants
Cutoff point (employees)	10 or more	5 or more	10 or more	15 or more	1 or more	Random sampling for less than 100 employees
Entry / Exit	No entry	Yes	Yes	Yes	Yes	Not clear follow up
Labor Productivity	Real and Nominal	No	Real and Nominal	Real and Nominal	No	Real and Nominal
Methodology	Change in 1997 Some exits can be observed only after 1997			Change in 1992	Firms in the Social Security System. High employment growth rate	Change in 1988 New Census

**Table 2: Names of Variables**

	Definition
country	Country's name in a three-letter code
year	Time Period . Four digit code
sector:	ISIC 2 digits. For the whole economy sector=100 and sector=30 for all manufacturing.
pos_all	Job Creation from all plants between t-1 and t
pos_cont	Job Creation from continuing plants in t, alive in t-1 and t
neg_all	Job Destruction from all plants between t-1 and t
neg_cont	Job Destruction from continuing plants in t
Avg_emp_all	Average Employment from alls Plants between t-1 and t
Avg_emp_cont	Average Employment from Continuing Plants between t-1 and t
Size_all	Average number of employees by plant at time t (all Plants)
Size_b	Average number of employees in entering plants at time t
Size_d	Average number of employees

Note: None of the variables are in logs. Sector 30 (all manufacturing) was constructed from the weighted average of all the manufacturing sub-sectors.

**Table 3: Coverage of variables per country**

Country	pos_all	pos_cont	neg_all	neg_cont	avg_emp_all	avg_emp_cont	size_all	size_b	size_d
ARG	No	Yes	No	Yes	No	Yes	Yes	No	No
BRA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CHL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
COL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MEX	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
URY	No	Yes	No	Yes	No	Yes	Yes	No	No

**Table 4: Coverage by Year**

Year	Argentina	Brazil	Chile	Colombia	Mexico	Uruguay
1978				Yes		
1979				Yes		
1980			Yes	Yes		
1981			Yes	Yes		
1982			Yes	Yes		
1983			Yes	Yes		
1984			Yes	Yes		
1985			Yes	Yes		
1986			Yes	Yes		
1987			Yes	Yes		
1988			Yes	Yes		
1989			Yes	Yes		Yes
1990			Yes	Yes		Yes
1991	Yes		Yes	Yes		Yes
1992	Yes	Yes	Yes	No		Yes
1993	Yes	Yes	Yes	Yes		Yes
1994	Yes	Yes	Yes	Yes	Yes	Yes
1995	Yes	Yes	Yes	Yes	Yes	Yes
1996	Yes	Yes	Yes	Yes	Yes	
1997	Yes	Yes	Yes	Yes	Yes	
1998	Yes	Yes	Yes	Yes	Yes	
1999	Yes	Yes	Yes	Yes	Yes	
2000	Yes	Yes			Yes	
2001	Yes					