Brazil Enterprise Surveys Data Set

1. Introduction

1.1. This document provides additional information on the data collected in Brazil from 14 May 2008 to 19 June 2009 as part of the Enterprise Survey, an initiative of the World Bank.

1.2. The Enterprise Surveys, through interviews with firms in the manufacturing and services sectors, capture business perceptions on the biggest obstacles to enterprise growth, the relative importance of various constraints to increasing employment and productivity, and the effects of a country's business environment on its international competitiveness. They are used to create statistically significant business environment indicators that are comparable across countries. The Enterprise Surveys are also used to build a panel of enterprise data that will make it possible to track changes in the business environment over time and allow, for example, impact assessments of reforms.

1.3. The report describes the sampling design of the survey, the structure of the dataset and additional information that may be useful when using the data, including information on non-response rates, the calculation of sample weights and country-specific factors that may have affected survey implementation.

2. Survey Target Population

2.1. The whole population, or the universe, covered in the Enterprise Surveys is the non-agricultural economy. It comprises: all manufacturing sectors according to the ISIC Revision 3.1 group classification (group D), construction sector (group F), services sector (groups G and H), and transport, storage, and communications sector (group I). Note that this population definition excludes the following sectors: financial intermediation (group J), real estate and renting activities (group K, except sub-sector 72, IT, which was added to the population under study), and all public or utilities-sectors.

2.2. For Brazil, the sectors included in the sample by two-digit ISIC code are as follows:

Manufacturing	15, 17, 18, 19, 24, 29, 34, 36
Other Manufacturing	16, 20, 21, 22, 23, 25, 26, 27, 28, 30, 31, 32, 33, 35, 37
Services	52, 72 (excl. 725)
Residual/Remainder/Other Services	45, 50, 51, 55, 60, 61, 62, 63, 64,

2.3. The Enterprise Survey for Brazil targeted 1800 registered establishments, including 817 establishments with 5 to 19 employees 657 with 20 to 99 employees, and 326 with 100 or more employees.

3. Sampling for Registered Establishments

3.1. The sample in Brazil was selected using stratified random sampling, following the methodology explained in the *Sampling Manual*.[1] Three levels of stratification were used in the Brazil sample: firm sector, firm size, and geographic region. The original sample design, with specific targets for these strata, is included in Appendix A.

3.2. Industry stratification was designed as follows: the universe was stratified into eight manufacturing industries (food, textiles, garments, shoes & leather, chemicals, machinery & equipment, auto parts, furniture), two services industries (retail and IT) and two residual sectors as defined in the sampling manual. The sample design had a target of 1320 interviews in manufacturing and 240 interviews each in the services and residual categories

3.3. Size stratification was defined following the standardized definition used for the Enterprise Surveys: small (5 to 19 employees), medium (20 to 99 employees), and large (more than 99 employees). For stratification purposes, the number of employees was defined on the basis of reported permanent full-time workers.

3.4. Regional stratification was defined in terms of the geographic regions with the largest commercial presence in the country: Amazonas, Bahia, Ceara, Distrito Federal, Goias, Maranhao, Mato Grosso, Minas Gerais, Paraiba, Parana, Pernambuco, Rio de Janeiro, Rio Grande do Sul, Santa Catarina, and Sao Paulo.

4. Sampling implementation

4.1. Given the stratified design, sample frames containing a complete and updated list of establishments as well as information on all stratification variables (number of employees, industry, and region) are required to draw the sample for the Enterprise Surveys.

4.2. Two frames were used for Brazil. The first was an extract from the database of all formal establishments obtained from the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística - IBGE]. This database is yearly updated and the 2007 extract was used. The second frame (the panel sample) consisted of enterprises interviewed for the Enterprise Survey in 2003, which were to be re-interviewed where they were in the selected geographical regions and met eligibility criteria.[2] Both database contained the following information:
  -Name of the firm
  -Contact details
  -ISIC code
  -Number of employees.

4.3. Counts from both sample frames shown below. Note that the 2003 panel sample targeted manufacturing firms only.

---

[1] The complete text of the *Sampling Manual* can be found at
http://www.enterprisesurveys.org/documents/Sampling_Note.pdf
[2] An exception from the general Enterprise Survey methodology is made for panel firms: firms that met sample eligibility criteria in the previous survey but are now found to have fewer than five employees are maintained in the current round sample and are interviewed.

Universe Figures for Brazil

		MANUFACTURING								SERVICES		CORE		
Source: Instituto Brasileiro de Geografia e Estatística [IBGE]														
	ISIC	15	17	18	19	24	29	34	36	52	72 (excl. 725)	16, 20, 21, 22, 23, 25, 26, 27, 28, 30, 31, 32, 33, 35, 37	F, 50, 51, 55, 725, I	
Region	Size	Food	Textiles	Garments	Shoes and leather	Chemicals	Machinery and equipment	Auto parts	Furniture	Retail	IT	Residual manufact.	Residual other	Total
Amazonas	Small 5 to 19	132	3	24	0	23	26	8	20	1,834	23	309	1,595	3,997
Amazonas	Medium 20 to 99	61	1	8	0	14	8	8	17	315	6	205	553	1,196
Amazonas	Large 100 or more	11	1	2	0	4	6	6	7	23	2	142	121	325
Amazonas	Subtotal Total	204	5	34	0	41	40	22	44	2,172	31	656	2,269	5,518
Bahia	Small 5 to 19	852	105	388	93	159	87	38	228	13,577	187	1,313	8,866	25,893
Bahia	Medium 20 to 99	188	37	108	22	89	62	19	71	1,087	32	478	2,142	4,335
Bahia	Large 100 or more	51	17	8	42	35	12	9	12	99	8	102	403	798
Bahia	Subtotal Total	1,091	159	504	157	283	161	66	311	14,763	227	1,893	11,411	31,026
Ceara	Small 5 to 19	627	102	890	125	84	70	25	190	5,700	102	889	4,552	13,356
Ceara	Medium 20 to 99	174	50	361	58	38	17	15	64	608	21	302	1,090	2,798
Ceara	Large 100 or more	60	19	45	34	11	7	2	12	42	4	42	188	466
Ceara	Subtotal Total	861	171	1,296	217	133	94	42	266	6,350	127	1,233	5,830	16,620
Distrito Federal	Small 5 to 19	190	11	99	6	12	16	13	67	5,456	160	372	3,796	10,198
Distrito Federal	Medium 20 to 99	62	0	7	2	11	8	6	16	559	32	105	1,225	2,033
Distrito Federal	Large 100 or more	15	1	0	0	1	1	0	1	61	26	14	179	299
Distrito Federal	Subtotal Total	267	12	106	8	24	25	19	84	6,076	218	491	5,200	12,530
Goias	Small 5 to 19	858	86	1,052	137	119	83	62	257	8,270	204	1,185	6,734	19,047
Goias	Medium 20 to 99	224	18	255	36	69	32	25	53	686	27	357	1,478	3,260
Goias	Large 100 or more	87	4	15	7	24	2	2	4	62	4	56	190	457
Goias	Subtotal Total	1,169	108	1,322	180	212	117	89	314	9,018	235	1,598	8,402	22,764
Maranhao	Small 5 to 19	158	17	46	7	44	13	10	44	3,125	23	320	1,895	5,702
Maranhao	Medium 20 to 99	34	3	6	2	32	2	7	22	315	5	121	511	1,060
Maranhao	Large 100 or more	10	1	0	1	5	1	0	1	35	0	25	89	168
Maranhao	Subtotal Total	202	21	52	10	81	16	17	67	3,475	28	466	2,495	6,930
Mato Grosso	Small 5 to 19	358	50	70	14	51	50	37	119	4,218	115	1,147	4,249	10,478
Mato Grosso	Medium 20 to 99	123	7	17	4	20	13	9	17	464	21	355	861	1,911
Mato Grosso	Large 100 or more	55	3	0	8	1	0	0	1	42	4	31	80	225
Mato Grosso	Subtotal Total	536	60	87	26	72	63	46	137	4,724	140	1,533	5,190	12,614
Minas Gerais	Small 5 to 19	3,217	623	2,497	862	511	488	185	1,358	33,365	883	5,478	25,750	75,217
Minas Gerais	Medium 20 to 99	826	193	941	369	310	212	108	350	2,777	130	1,688	5,183	13,087
Minas Gerais	Large 100 or more	188	81	70	52	82	63	54	46	200	23	377	824	2,060
Minas Gerais	Subtotal Total	4,231	897	3,508	1,283	903	763	347	1,754	36,342	1,036	7,543	31,757	90,364
Paraiba	Small 5 to 19	417	35	104	55	34	17	9	56	2,421	29	331	1,933	5,441
Paraiba	Medium 20 to 99	64	17	19	37	15	7	1	14	217	4	116	444	955
Paraiba	Large 100 or more	19	13	6	18	1	0	0	1	19	3	31	53	164
Paraiba	Subtotal Total	500	65	129	110	50	24	10	71	2,657	36	478	2,430	6,560
Parana	Small 5 to 19	1,609	257	1,391	194	350	497	228	1,110	20,849	747	5,193	17,726	50,151
Parana	Medium 20 to 99	505	79	720	69	161	245	94	329	1,879	72	1,595	3,372	9,120
Parana	Large 100 or more	184	33	86	13	37	49	43	62	169	9	298	429	1,412
Parana	Subtotal Total	2,298	369	2,197	276	548	791	365	1,501	22,897	828	7,086	21,527	60,683
Pernambuco	Small 5 to 19	1,039	106	584	44	122	83	32	192	7,990	149	969	5,724	17,034
Pernambuco	Medium 20 to 99	195	57	171	19	59	34	13	45	839	38	401	1,450	3,321
Pernambuco	Large 100 or more	80	12	8	5	17	6	1	3	74	8	73	242	529
Pernambuco	Subtotal Total	1,314	175	763	68	198	123	46	240	8,903	195	1,443	7,416	20,884
Rio de Janeiro	Small 5 to 19	1,016	156	1,456	97	296	255	96	469	28,657	802	3,168	19,808	56,276
Rio de Janeiro	Medium 20 to 99	366	65	486	55	189	147	47	145	3,435	166	1,150	5,200	11,451
Rio de Janeiro	Large 100 or more	95	19	46	4	76	42	22	15	399	44	223	905	1,890
Rio de Janeiro	Subtotal Total	1,477	240	1,988	156	561	444	165	629	32,491	1,012	4,541	25,913	69,617
Rio Grande do Sul	Small 5 to 19	1,785	314	859	1,422	345	869	220	1,340	18,395	719	5,441	18,358	50,067
Rio Grande do Sul	Medium 20 to 99	517	62	194	885	126	312	87	399	1,735	95	1,345	3,171	8,928
Rio Grande do Sul	Large 100 or more	185	19	26	345	38	111	49	75	167	9	278	364	1,666
Rio Grande do Sul	Subtotal Total	2,487	395	1,079	2,652	509	1,292	356	1,814	20,297	823	7,064	21,893	60,661
Santa Catarina	Small 5 to 19	1,389	583	2,186	209	217	591	127	970	12,236	536	4,683	13,536	37,263
Santa Catarina	Medium 20 to 99	363	274	818	76	57	252	57	281	1,046	81	1,380	2,403	7,088
Santa Catarina	Large 100 or more	87	94	108	21	15	51	14	58	112	12	297	223	1,092
Santa Catarina	Subtotal Total	1,839	951	3,112	306	289	894	198	1,309	13,394	629	6,360	16,162	45,443
Sao Paulo	Small 5 to 19	3,600	1,477	5,589	1,410	1,618	2,922	731	3,009	75,934	2,836	17,355	67,844	184,325
Sao Paulo	Medium 20 to 99	1,327	755	1,620	714	935	1,722	518	978	8,273	609	7,414	15,067	39,932
Sao Paulo	Large 100 or more	590	218	178	145	376	383	310	135	839	127	1,678	2,156	7,135
Sao Paulo	Subtotal Total	5,517	2,450	7,387	2,269	2,929	5,027	1,559	4,122	85,046	3,572	26,447	85,067	231,392
Total		23,993	6,078	23,564	7,718	6,833	9,874	3,347	12,663	268,605	9,137	68,832	252,962	693,606

Panel sample counts for Brazil

		MANUFACTURING								SERVICES				
	ISIC	15	17	18	19	24	29	34	36	52	72 (excl. 725)			Total
State	Size	Food	Textiles	Garments	Shoes and leather	Chemicals	Machinery	Auto parts	Furniture	Retail	IT	Other Manuf.	Residual other	
Amazonas	Small 5 to 19	0		0			1	0	0			1		2
Amazonas	Medium 20 to 99	2		5			0	1	3			7		18
Amazonas	Large 100 or more	0		0			0	1	1			4		6
Amazonas	Subtotal Total	2	0	5	0	0	1	2	4	0	0	12	0	26
Bahia	Small 5 to 19	0		8	3	1	1		5					18
Bahia	Medium 20 to 99	0		18	4	8	3		8					41
Bahia	Large 100 or more	1		2	0	3	0		2					8
Bahia	Subtotal Total	1	0	28	7	12	4	0	15	0	0	0	0	67
Ceara	Small 5 to 19	3	1	2	2	0	0	0	7					15
Ceara	Medium 20 to 99	1	1	20	5	2	2	2	5					38
Ceara	Large 100 or more	4	4	11	0	0	1	0	0					20
Ceara	Subtotal Total	8	6	33	7	2	3	2	12	0	0	0	0	73
Distrito Federal	Small 5 to 19													0
Distrito Federal	Medium 20 to 99													0
Distrito Federal	Large 100 or more													0
Distrito Federal	Subtotal Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Goias	Small 5 to 19	0		4	5		3	1	6					19
Goias	Medium 20 to 99	0		17	3		2	0	5					27
Goias	Large 100 or more	1		5	1		0	0	0					7
Goias	Subtotal Total	1	0	26	9	0	5	1	11	0	0	0	0	53
Mato Grosso	Small 5 to 19	0	1	3		1	1		0					6
Mato Grosso	Medium 20 to 99	2	0	6		0	0		3					11
Mato Grosso	Large 100 or more	3	0	0		0	0		0					3
Mato Grosso	Subtotal Total	5	1	9	0	1	1	0	3	0	0	0	0	20
Maranaho	Small 5 to 19	1	0	3	1	1	3		1					10
Maranaho	Medium 20 to 99	2	0	7	5	0	2		7					23
Maranaho	Large 100 or more	3	1	0	2	0	0		0					6
Maranaho	Subtotal Total	6	1	10	8	1	5	0	8	0	0	0	0	39
Minas Gerais	Small 5 to 19	0	4	9	2	2	4	2	9			1		33
Minas Gerais	Medium 20 to 99	3	1	13	7	2	5	6	13			3		53
Minas Gerais	Large 100 or more	5	4	3	4	1	2	7	6			0		32
Minas Gerais	Subtotal Total	8	9	25	13	5	11	15	28	0	0	4	0	118
Paraiba	Small 5 to 19			1					1					2
Paraiba	Medium 20 to 99			2					4					6
Paraiba	Large 100 or more													0
Paraiba	Subtotal Total	0	0	3	0	0	0	0	5	0	0	0	0	8
Parana	Small 5 to 19	2	0	4	1	0	5	3	2			2		19
Parana	Medium 20 to 99	2	0	14	11	5	13	5	16			5		71
Parana	Large 100 or more	4	4	4	3	0	7	6	8			0		36
Parana	Subtotal Total	8	4	22	15	5	25	14	26	0	0	7	0	126
Pernambuco	Small 5 to 19													0
Pernambuco	Medium 20 to 99													0
Pernambuco	Large 100 or more													0
Pernambuco	Subtotal Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Rio de Janeiro	Small 5 to 19	1	3	7	2	0	7	0	7			2		29
Rio de Janeiro	Medium 20 to 99	2	2	29	10	3	3	2	13			5		69
Rio de Janeiro	Large 100 or more	0	0	7	1	0	8	1	2			0		19
Rio de Janeiro	Subtotal Total	3	5	43	13	3	18	3	22	0	0	7	0	117
Rio Grande do Sul	Small 5 to 19	0	1	2	1	1	1	2	2			0		10
Rio Grande do Sul	Medium 20 to 99	1	1	7	13	5	14	9	6			5		61
Rio Grande do Sul	Large 100 or more	1	2	1	13	1	9	11	8			2		48
Rio Grande do Sul	Subtotal Total	2	4	10	27	7	24	22	16	0	0	7	0	119
Santa Catarina	Small 5 to 19	2	7	11	1	0	1	1	2			1		26
Santa Catarina	Medium 20 to 99	0	2	13	3	0	8	2	12			1		41
Santa Catarina	Large 100 or more	2	6	9	0	1	5	4	12			0		39
Santa Catarina	Subtotal Total	4	15	33	4	1	14	7	26	0	0	2	0	106
Sao Paulo	Small 5 to 19	2	4	11	4	2	6	5	7			2		43
Sao Paulo	Medium 20 to 99	6	11	28	12	6	13	16	23			15		130
Sao Paulo	Large 100 or more	6	5	7	9	4	4	14	5			4		58
Sao Paulo	Subtotal Total	14	20	46	25	12	23	35	35	0	0	21	0	231
Paraiba	Small 5 to 19			1					1					2
Paraiba	Medium 20 to 99			2					4					6
Paraiba	Large 100 or more													0
Paraiba	Subtotal Total	0	0	3	0	0	0	0	5	0	0	0	0	8
Grand Total		62	65	296	128	49	134	101	216	0	0	60	0	1103

4.4. The enumerated establishments were then used as the frame for the selection of a sample with the aim of obtaining interviews at 1800 establishments with five or more employees

4.5. The quality of the frame was assessed at the onset of the project through calls to a random subset of firms and local contractor knowledge. The sample frame was not immune from the typical problems found in establishment surveys: positive rates of non-eligibility, repetition, non-existent units, etc. Due to response rate and ineligibility issues, additional sample had to be extracted from the universe in order to obtain enough eligible contacts and meet the sample targets.

4.6. Given the impact that non-eligible units included in the sample universe may have on the results, adjustments may be needed when computing the appropriate weights for individual observations. The percentage of confirmed non-eligible units as a proportion of the total number of sampled establishments contacted for the survey was 30.1% (3,255 out of 10,824 establishments).[3] Breaking down by industry, the following numbers of establishments were surveyed:

15 Food	161
17 Textile	148
18 Garments	189
19 Shoes and Leather	139
24 Chemicals	141
29 Machinery and equipment	211
34 Auto parts	149
36 Furniture	177
Other manufactures	167
52 Retail	90
72 IT	114
Other services	116

5. Database Structure

5.1. The database compiles three different versions of the Enterprise Survey questionnaire for all registered establishments. The basic questionnaire, the Core Module, includes all common questions asked to all establishments from all sectors (manufacturing, retail, IT and residual) and this module is administered to establishments in the residual sector. The Manufacturing Questionnaire is built upon the Core Module and adds some specific questions relevant to the sector. The Services Questionnaire is also built upon the Core Module and adds specific questions relevant to retail. Each version of the questionnaire is identified by the index variable, a0.

5.2. All variables in the database are named using, first, the letter of each section and, second, the number of the variable within the section, i.e. *a1* denotes section *A*, question *1*. Variable names preceded by a prefix *"BR"* indicate questions specific to the Brazil surveys; these questions may not have been asked in Enterprise Surveys conducted in other countries. All other variables are global and are present in all country surveys conducted throughout the world. All variables are numeric with the exception of those variables with an "x" at the end of their names. The suffix "x" indicates that the variable is alpha-numeric.

5.3. The variable *idstd* uniquely identifies each establishment at the global level.

5.4. The variables *a2* (sampling region), *a6a* (sampling establishment's size), and *a4a* (sampling sector) contain the establishment's classification into the strata chosen for each country using information from the sample frame. These variables generate the strata cells for each

---

[3] Appendix B shows the tabulations for the Brazil sample of registered firms of response codes that are classified as eligible and non-eligible.

industry/region/size combination. The variables containing the sample frame information are included in the data set for researchers who may want to further investigate statistical features of the survey and the effect of the survey design on their results.

-*a2* is the variable describing the sampling regions

-*a6a*: coded using the definition for micro, small, medium, and large establishments as discussed above. The code -*9* was used to indicate units for which size was undetermined in the sample frame.

-*a4a*: coded using ISIC codes for the industries that comprise the manufacturing, services, and residual categories used in the stratification. These codes include most manufacturing industries (15 to 37), and retail, and IT for services (52, and 72 respectively). All establishments within the 'other manufacturing' stratum were coded with a4a=2.

-panel: identifies panel firms

-id2003: for panel firms the variable contains the same id used in 2003

-strata: identifies sampling strata in the database

5.5. Note that these variables may not coincide with reality for some establishments as sample frames may contain information that is later found to be inaccurate.

5.6. The surveys were implemented following a two stage procedure. In the first stage a screener questionnaire was administered over the phone to determine sampled establishment's eligibility for the survey and to make appointments; in the second stage, a face-to-face interview took place with the Manager/Owner/Director of each establishment. The variables *a4b* and *a6b* contain the industry and size of the establishment from the screener questionnaire. Variables *a8* to *a11* contain additional information that was collected in the screening phase.

5.7. The main questionnaire contains variables for location (*a3x*), industry (*d1a2*), and number of employees (*l1*, *l6* and *l8*) that more accurately reflect describe the characteristics of establishments than the information provided on these variables in the sample frame or the screener.

5.8. A distinction should be made between the variable *a4a* and *d1a2 (industry expressed as ISIC rev. 3.1 code)*. The former gives the establishment's classification into industry-strata based on information available from the sample frame, whereas variable *d1a2* indicates the actual ISIC code of the main output of the establishment as answered by the interviewee. This variable is probably the most accurate variable with which to classify establishments by activity.

5.9. Variable *a3x* indicates the actual location of the establishment. There may be divergences between the location in the sampling frame and the actual location, as establishments may be listed in one place on the sample frame but the actual physical location is in another place.

5.10. Variables *l1*, *l6* and *l8* provide a more accurate measure of employment that accounts for both permanent (*l1*) and temporary employment (*l6*, adjusted by duration of employment *l8*). Special efforts were made to make sure that this information was not missing for most

establishments. The indicators on the website use the constructed variable *size*, which is computed as follows:

$size = l1$ if no temporary employment
$= l1 + l6*(l8/12)$ if temporary employment with known duration
$= l1 + l6*(1/3)$ if temporary employment with unknown duration

6. Sample Eligibility and Universe Estimates

6.1. Special care is given to the correct computation of universe estimates and weights in the Enterprise Surveys. Considering the varying quality of sample frames across countries, it is important to accurately adjust the universe totals within each region/industry/size stratum to account for the presence of ineligible units in the sampling frame. Information on ineligible firms in the sample frame is used to scale down the universe estimate for each cell by the observed proportion of ineligible units within the cell.

6.2. Information on the eligibility of firms in the sample frame is collected during the screening process. Each firm contacted during the screening process, whether interviewed or not, is assigned one of the status codes detailed in the table below.

Status Code	Eligibility Criteria		
	Strict	Weak	Median
1. Eligible establishment (Correct name and address)	1	1	1
2. Eligible establishment (Different name but same address - the new firm/establishment bought the original firm/establishment)	1	1	1
3. Eligible establishment (Different name but same address - the firm/establishment changed its name)	1	1	1
4. Eligible establishment (Wrong address - the firm/establishment has changed address and the address could be found)	1	1	1
16. Panel firm - now less than five employees	1	1	1
5. The establishment has less than 5 permanent full time employees	0	0	0
6. The firm discontinued businesses	0	0	0
7. Not a business: Private household	0	0	0
8. Ineligible activity: education, agriculture, finance, governments…	0	0	0
91. No reply (after having called in different days of the week and in different business hours)	0	1	0
92. Line out of order	0	1	0
93. No tone	0	1	0
10. Answering machine	0	1	1
11. Fax line – data line	0	1	1
12. Wrong address/ moved away and could not get the new references	0	1	0
13. Refuses to answer the screener	0	1	1
14. In process *(the establishment is being called/ is being contacted – previous to ask the screener)*	0	0	0
151. Out of target – outside the covered regions, firm moved abroad	0	0	0
152. Out of target – firm moved abroad	0	0	0

6.3. The local implementing agency commented that many firms in the sample frame were missing phone numbers, so enumerators often physically traced the firms and administered

the screener questionnaire face to face. However, the addresses listed in the sample frame were also sometimes inaccurate, so it was difficult to locate some firms. The tables in Appendix B show the numbers of firms in each status code at the conclusion of the survey.

6.4. For some establishments where contact was not successfully completed during the screening process (because the firm has moved and it is not possible to locate the new location, for example), it is not possible to directly determine eligibility. Thus, different assumptions about the eligibility of establishments result in different adjustments to the universe cells and thus different sampling weights.

6.5. Three sets of assumptions on establishment eligibility are used to construct sample adjustments using the status code information.

    6.5.1. Strict assumption: eligible establishments are only those for which it was possible to directly determine eligibility. The resulting weights are included in the variable *w_strict*.

    Strict eligibility = (Sum of the firms with codes 1,2,3,4,&16) / Total

    6.5.2. Median assumption: eligible establishments are those for which it was possible to directly determine eligibility and those that rejected the screener questionnaire or an answering machine or fax was the only response. The resulting weights are included in the variable *w_median*.

    Median eligibility = (Sum of the firms with codes 1,2,3,4,16,10,11, & 13) / Total

    6.5.3. Weak assumption: in addition to the establishments included in points a and b, all establishments for which it was not possible to contact or that refused the screening questionnaire are assumed eligible. This definition includes as eligible establishments with dead or out of service phone lines, establishments that never answered the phone, and establishments with incorrect addresses for which it was impossible to find a new address. The resulting weights are included in the variable *w_weak*. Under the weak assumption only observed non-eligible units are excluded from universe projections.

    Weak eligibility
    = (Sum of the firms with codes 1,2,3,4,16,91,92,93,10,11,12,&13) / Total

6.6. The indicators computed for the Enterprise Survey website use the median weights. The following graph shows the different eligibility rates calculated for firms in the sample frame under each set of assumptions.

Eligibility Rates: Brazil 2009

(Strict Assumptions: 22.18; Weak Assumptions: 89.25; Median Assumptions: 65.15)
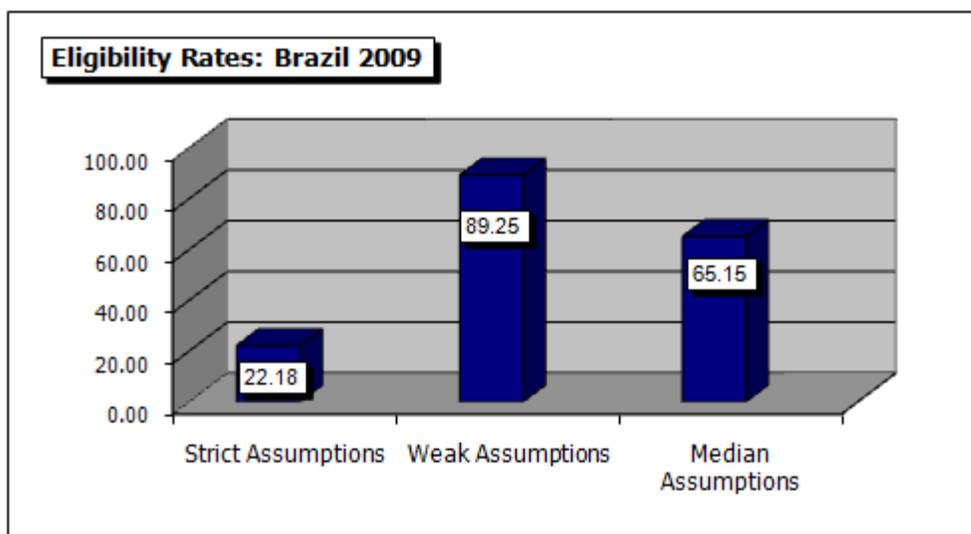
6.7. Universe estimates for the number of establishments in each industry-region-size cell in Brazil were produced for the strict, weak and median eligibility definitions. Appendix C shows the universe estimates of the numbers of registered establishments based on the strict, weak and median relative estimates.

6.8. Once an accurate estimate of the universe cell projection was made, weights for the probability of selection were computed using the number of completed interviews for each cell.

7. Weights

7.1. Since the sampling design was stratified and employed differential sampling of the strata, individual observations should be properly weighted when making inferences about the population. Under stratified random sampling unweighted estimates are biased unless sample sizes are proportional to the size of each stratum. With stratification the probability of selection of each unit is, in general, not the same. Consequently, individual observations must be weighted by the inverse of their probability of selection (probability weights or *pw* in Stata.)[4]

7.2. Several sets of weights for each cell were computed using the strict, weak, and median assumptions on establishment eligibility. The first set of estimates calculated proportions using the raw sample count for each cell. However, for many cells the sample numbers of interviewed establishments are small, and eligibility rates and adjusted universe cells projections for those cells are subject to relatively large sampling variations. A set of more robust estimates that use the multiples of the relative eligibility rates for each industry, size, and region was also produced. In addition, in cases where the cell sizes are small, collapsed weights are produced based on combined cells with larger samples than the individual cells,

---

[4] This is equivalent to the weighted average of the estimates for each stratum, with weights equal to the population shares of each stratum.

which produce values with smaller sampling variations. The data sets include only the robust weights.[5]

7.3. Appendix D shows the cell weights for registered establishments in Brazil.

8. Non-response

8.1. The Enterprise Surveys, along with all other surveys, suffer from both survey non-response and item non-response. The former refers to refusals to participate in the survey altogether whereas the latter refers to the refusals to answer some specific questions. Different strategies were used to address these issues.

8.2. Survey non-response was addressed by maximizing efforts to contact establishments that were initially sampled. When the survey frame was extracted from the sampling frame, several establishments with the same strata characteristics were randomly selected for each interview and each establishment was assigned a preference number.[6] Substitutions of replacement establishments were made in order to help achieve targets on the number of interviews for each stratum. Extensive efforts were made to complete interviews with each first preference establishment before contact with a replacement establishment was allowed. At least four attempts were made to contact each sampled establishment for an interview at different times/days of the week before a replacement establishment was allowed to be contacted for an interview.

8.3. As the following graph shows, the number of contacted establishments per realized interview was 5.09. This number is the result of two factors: explicit refusals to participate in the survey, as reflected by the rate of rejection (which includes rejections of the screener and the main survey) and the quality of the sample frame, as represented by the presence of ineligible units (e.g., establishments that closed or were in ineligible sectors). The refusal rate is also shown in the graph below. For each establishment eligible for an interview, 0.69 refused to participate

---

[5] See *A Note on Weights* for more details on the weight calculations and using weights with the Enterprise Surveys.
[6] In cases where the number of contacts initially drawn from the sample frame are insufficient to obtain an interview with the targeted number of establishments in a given strata, additional contacts for that strata may be drawn from the sampling frame. If all establishments in that strata have already been contacted and the sample target has not been reached, the sample design may be adjusted to allow additional interviews in other strata.

Interview Rejection Rate and Contacts per Interview: Brazil 2009

Total Contacts/Interview	5.09
Refusals/Eligible Contact	0.69
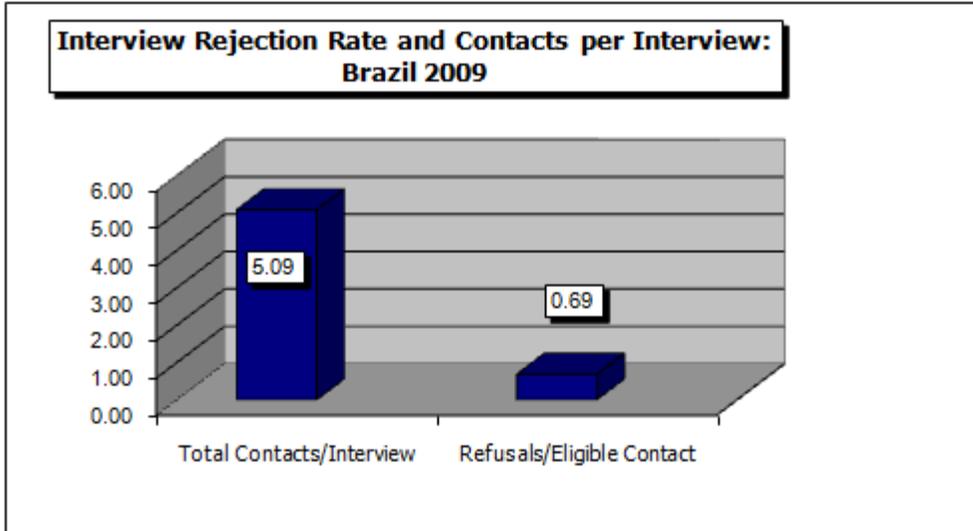
8.4. In completed surveys, item non-response was addressed by two strategies:

    8.4.1. For sensitive questions that may generate negative reactions from the respondent, such as corruption or tax evasion, enumerators were instructed to collect the refusal to respond (-7) as a different option from don't know (-9).

    8.4.2. Establishments with incomplete information on critical productivity variables including total sales, cost figures and employment levels were re-contacted in order to complete this information and minimize item non-response. However, re-contacts did not fully eliminate low response rates for some items.

8.5. The following graph shows the breakdown of answers about the total amount of informal payments made annually (variable *j7b*) by questionnaire type.

Informal Payments Non-Response Rates: Brazil 2009

Legend: ■ don't know ■ refusal □ no payment □ positive payment

Categories: manufacturing, services, core
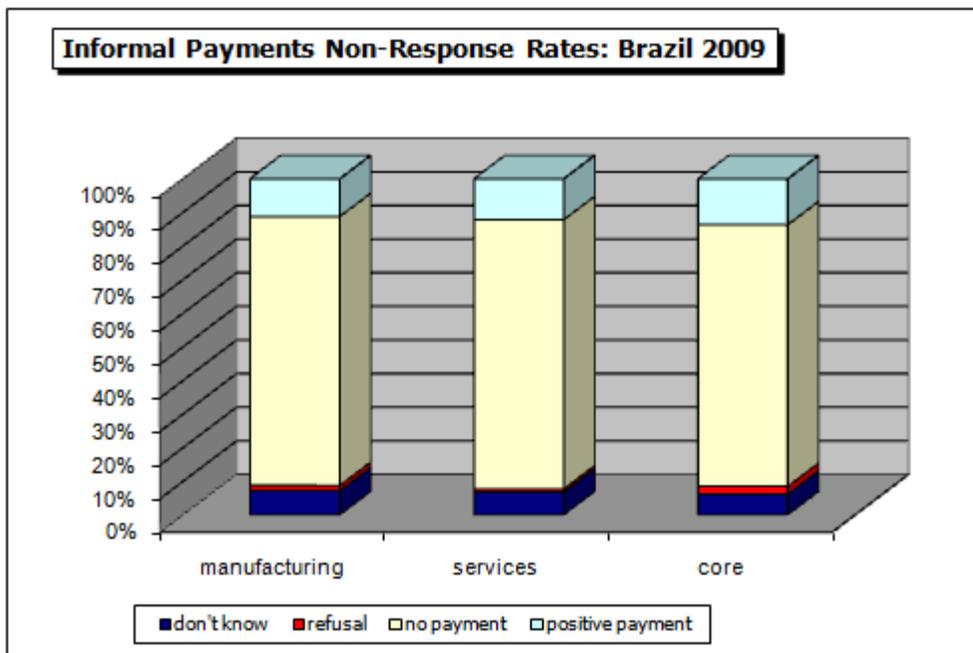
8.6. The following graph shows non-response rates for the sales variable, *d2,* by type of questionnaire.[7]

Sales Non-Response Rates: Brazil 2009

Type	Rate
Manufacturing	8.14%
Services	11.17%
Core	0.39%
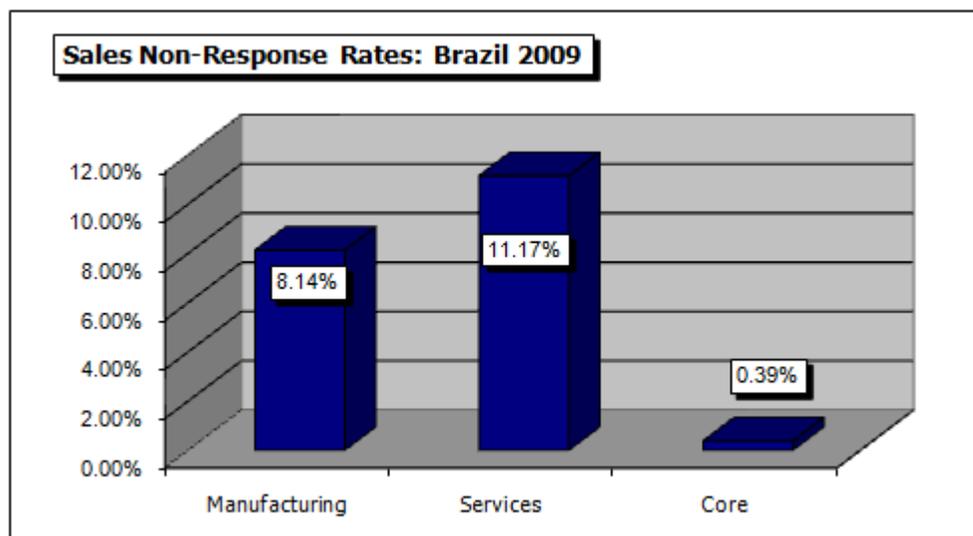
8.7. This report summarizes statistics on rejection rates, eligibility rates, and item non-response to alert researchers of these issues when using the data and when making inferences. Item non-response, selection bias, and imperfect sampling frames are not unique to Brazil or the Enterprise Surveys. All surveys suffer from these issues although they may not be made explicit.

9. Country specific comments

9.1. In Brazil, fieldwork ran from May 14th 2008 to June 19th 2009. The local agency that implemented the Enterprise Survey in Brazil had some difficulties in getting the IBGE data on time. The provision of the IBGE sample frame was indeed delayed until August 2008. Consequently, fieldwork started in May using only the panel sample frame, while interviewing using the fresh sample from IBGE started in August.

9.2. Since the beginning the study was subject to a number of major problems resulting in firstly delays and subsequently significant concerns about fieldwork quality. In November 2008, it was decided to stop fieldwork with the chosen local agency and select a new local implementing agency. In December 2008 a new agency started to carry out the fieldwork for Brazil. Unfortunately fieldwork coincided first with the Christmas holidays and then with the Carnival, during this period, the majority of firms were closed, and in firms that were still open, the top–managers were not available. The first agency used 53 interviewers and the second agency 171.

---

[7] Please note that the question on total sales does not have a "refuse to answer" option, thus the non-response rates in the graph above reflect DKs and NAs as well as any missing values.

9.3. The two local agencies had several difficulties due to the high rate of refusals when trying to get appointments for interviews. The local agencies also noted several specific questions that were difficult for firms in Brazil to answer:

- D16 (days of inventory, measured in days of production): this notion was difficult to be understood especially by small firms
- F1 (capacity utilization): this notion was very difficult for small firms to understand
- J2 (time spent on dealing with requirements imposed by government regulations): majority of respondents had difficulty to assess this time
- J6a (establishment secured or attempted to secure a contract with the government): only few firms were willing to answer this question

Original Sample Design

State	Size	MANUFACTURING								SERVICES				Total
	ISIC	15	17	18	19	24	29	34	36	52	72 (excl. 725)			
		Food	Textiles	Garments	Shoes and leather	Chemicals	Machinery and equipment	Auto parts	Furniture	Retail	IT	Other Manuf.	Residual other	
Amazonas	Small 5 to 19	7	0	0	0	0	0	0	0	7	0	5	5	24
Amazonas	Medium 20 to 99	5	0	0	0	0	0	0	0	7	0	5	6	23
Amazonas	Large 100 or more	0	0	0	0	0	0	0	0	0	0	5	5	10
Amazonas	Subtotal Total	12	0	0	0	0	0	0	0	14	0	15	16	57
Bahia	Small 5 to 19	6	5	5	5	5	0	5	5	5	5	5	0	51
Bahia	Medium 20 to 99	5	0	5	0	5	0	0	0	0	0	5	5	25
Bahia	Large 100 or more	0	0	0	0	0	0	0	0	0	0	0	0	0
Bahia	Subtotal Total	11	5	10	5	10	0	5	5	5	5	10	5	76
Ceara	Small 5 to 19	5	5	7	5	0	0	0	6	5	0	5	5	43
Ceara	Medium 20 to 99	6	0	6	0	0	0	0	0	5	0	5	5	27
Ceara	Large 100 or more	0	0	0	0	0	0	0	0	0	0	0	5	5
Ceara	Subtotal Total	11	5	13	5	0	0	0	6	10	0	10	15	75
Distrito Federal	Small 5 to 19	6	0	0	0	0	0	0	0	0	8	5	8	27
Distrito Federal	Medium 20 to 99	0	0	0	0	0	0	0	0	5	0	5	8	18
Distrito Federal	Large 100 or more	0	0	0	0	0	0	0	0	0	0	0	0	0
Distrito Federal	Subtotal Total	6	0	0	0	0	0	0	0	5	8	10	16	45
Goias	Small 5 to 19	6	5	8	5	5	0	5	5	5	5	0	5	54
Goias	Medium 20 to 99	5	0	5	0	5	0	0	0	0	0	0	0	15
Goias	Large 100 or more	5	0	0	0	0	0	0	0	0	0	0	0	5
Goias	Subtotal Total	16	5	13	5	10	0	5	5	5	5	0	5	74
Mato Grosso	Small 5 to 19	5	0	0	0	0	0	5	6	5	0	0	0	21
Mato Grosso	Medium 20 to 99	5	0	0	0	0	0	0	0	5	0	5	0	15
Mato Grosso	Large 100 or more	0	0	0	0	0	0	0	0	0	0	5	0	5
Mato Grosso	Subtotal Total	10	0	0	0	0	0	5	6	10	0	10	0	41
Minas Gerais	Small 5 to 19	6	7	8	16	8	8	7	10	0	5	5	5	85
Minas Gerais	Medium 20 to 99	6	5	7	10	7	5	6	9	5	0	5	0	65
Minas Gerais	Large 100 or more	5	8	5	0	8	5	5	0	5	0	0	5	46
Minas Gerais	Subtotal Total	17	20	20	26	23	18	18	19	10	5	10	10	196
Parana	Small 5 to 19	6	7	8	5	6	6	11	10	5	6	5	5	80
Parana	Medium 20 to 99	5	5	8	0	5	6	10	8	0	5	5	5	62
Parana	Large 100 or more	5	0	5	0	0	0	0	5	0	0	6	0	21
Parana	Subtotal Total	16	12	21	5	11	12	21	23	5	11	16	10	163
Pernambuco	Small 5 to 19	6	5	6	0	5	0	0	6	5	5	0	0	38
Pernambuco	Medium 20 to 99	5	0	6	0	0	0	0	5	0	5	0	5	26
Pernambuco	Large 100 or more	5	0	0	0	0	0	0	0	0	0	0	0	5
Pernambuco	Subtotal Total	16	5	12	0	5	0	0	11	5	10	0	5	69
Rio de Janeiro	Small 5 to 19	6	5	8	5	7	6	5	6	5	5	5	5	68
Rio de Janeiro	Medium 20 to 99	6	0	8	0	5	5	0	5	5	6	5	0	45
Rio de Janeiro	Large 100 or more	5	0	0	0	5	0	0	0	7	5	0	0	22
Rio de Janeiro	Subtotal Total	17	5	16	5	17	11	5	11	17	16	10	5	135
Rio Grande do Sul	Small 5 to 19	6	8	7	22	6	8	10	9	0	5	5	5	91
Rio Grande do Sul	Medium 20 to 99	4	5	5	20	6	7	6	9	5	5	0	0	72
Rio Grande do Sul	Large 100 or more	6	0	0	12	5	6	5	5	0	0	0	0	39
Rio Grande do Sul	Subtotal Total	16	13	12	54	17	21	21	23	5	10	5	5	202
Santa Catarina	Small 5 to 19	5	10	6	5	5	7	6	8	5	7	5	5	74
Santa Catarina	Medium 20 to 99	4	12	7	5	5	8	5	8	0	5	0	0	59
Santa Catarina	Large 100 or more	5	7	6	0	0	0	0	0	0	0	0	0	18
Santa Catarina	Subtotal Total	14	29	19	10	10	15	11	16	5	12	5	5	151
Sao Paulo	Small 5 to 19	5	21	12	15	20	25	21	8	11	8	5	10	161
Sao Paulo	Medium 20 to 99	6	25	17	20	22	43	25	17	5	10	8	7	205
Sao Paulo	Large 100 or more	7	15	15	10	15	15	23	10	8	20	6	6	150
Sao Paulo	Subtotal Total	18	61	44	45	57	83	69	35	24	38	19	23	516
	Total	180	160	180	160	160	160	160	160	120	120	120	120	1,800

Appendix B

Enterprise Survey Sample

Status Codes

Eligible	1.Elegible establishment (Correct name and address)	1474
	2. Elegible establishment (Different name but same address - the new firm/establishment bought the original firm/establishment)	4
	3. Elegible establishment (Different name but same address - the firm/establishment changed its name)	44
	4. Elegible establishment (Wrong address - the firm/establishmen has changed address and the address could be found)	57
	16. Panel firm - now less than five employees	na
Ineligible	5. The establishment has less than 5 permanent full time employees	224
	616 The firm discontinued businesses - (Establishment went bankrupt)	382
	618 The firm discontinued businesses - (Original establishment disappeared and is now a different firm)	0
	619 The firm discontinued businesses - (Establishment was bought out by another firm)	0
	620 The firm discontinued businesses - (It was impossible to determine for what reason)	0
	621 The firm discontinued businesses - (Other. SPECIFY in COMMENTS)	
	7. Not a business: Private household	86
	8. Ineligible activity: Education, Agriculture, Finances, Government, etc.	52
Unobtainable	91. No reply (after having called in different days of the week and in different business hours)	798
	92. Line out of order	191
	93. No tone	894
	10. Answering machine	29
	11. Fax line - data line	30
	12. Wrong address/ moved away and could not get the new references	30
	13. Refuses to answer the screener	3666
	14. In process (the establishment is being called/ is being contacted - previous to ask the screener)	1583
	151. Out of target - outside the covered regions, firm moved abroad	169
	152. Out of target - firm moved abroad	8

Response Outcomes

Complete interviews	1350
Incomplete interviews	18
Elegible in process	35
Refusals	176
Out of target	921
Impossible to contact	1986
Refusal to the Screener	3668
Total	8154

Panel Sample

Status Codes

Eligible	1. Elegible establishment (Correct name and address)	416
	2. Eligible establishment (Different name but same address - the new firm/establishment bought the original firm/establishment)	4
	3. Eligible establishment (Different name but same address - the firm/establishment changed its name)	11
	4. Elegible establishment (Wrong address - the firm/establishmen has changed address and the address could be found)	19
	16. Panel firm - now less than five employees	4
Ineligible	5. The establishment has less than 5 permanent full time employees	0
	616 The firm discontinued businesses - (Establishment went bankrupt)	29
	618 The firm discontinued businesses - (Original establishment disappeared and is now a different firm)	1
	619 The firm discontinued businesses - (Establishment was bought out by another firm)	5
	620 The firm discontinued businesses - (It was impossible to determine for what reason)	1
	621 The firm discontinued businesses - (Other. SPECIFY in COMMENTS)	17
	7. Not a business: Private household	3
	8. Ineligible activity: Education, Agriculture, Finances, Government, etc.	1
Unobtainable	91. No reply (after having called in different days of the week and in different business hours)	249
	92. Line out of order	2
	93. No tone	45
	10. Answering machine	0
	11. Fax line - data line	2
	12. Wrong address/ moved away and could not get the new references	
	13. Refuses to answer the screener	210
	14. In process (the establishment is being called/ is being contacted - previous to ask the screener)	**77**
	151. Out of target - outside the covered regions, firm moved abroad	7
	152. Out of target - firm moved abroad	0

Response Outcomes

Complete interviews	452
Incomplete interviews	1
Elegible in process	0
Refusals	1
Out of target	64
Impossible to contact	298
Refusal to the Screener	210
Total	1026

Appendix C

Brazil Strict Universe Estimates (collapsed)

Region	Empl's	Manufacturing									52	72	Other	Grand Total
		15	17	18	19	24	29	34	36	Other manuf.				
São Paulo	5 to 19	542	185	792	157	204	443	100	489	1,405	8,674	373	8,286	21,651
	20 to 99	248	117	284	98	146	324	88	197	1,715	1,113	99	2,719	7,150
	100+	80	25	23	14	43	52	38	20	281	82	15	281	953
São Paulo Total		869	327	1,099	269	393	819	227	706	3,401	9,869	488	11,286	29,754
Rio de Janeiro	5 to 19	256	33	345	18	63	65	22	128	2,342	5,783	177	4,143	13,373
	20 to 99	114	17	143	13	49	46	13	49	445	773	45		1,709
	100+	21		10		14	10	5			65			125
Rio de Janeiro Total		392	50	498	31	126	121	40	177	2,787	6,621	222	4,143	15,206
Minas Gerais	5 to 19	1,159	187	846	229	154	177	61	528	2,342	4,337	278	8,286	18,584
	20 to 99	369	72	395	121	116	95	44	169	934	894			3,210
	100+	61	22	21	12	22	21	16	16				257	448
Minas Gerais Total		1,588	281	1,263	363	293	293	121	713	3,276	5,231	278	8,543	22,243
Santa Catarina	5 to 19	565	198	837	63	74	242	47	426	1,814	6,622	191	7,336	18,416
	20 to 99	183	115	388	28	24	128	26	153			36		1,082
	100+	32	29	37			19	5	23					144
Santa Catarina Total		780	341	1,263	91	98	389	78	602	1,814	6,622	226	7,336	19,642
Rio Grande do Sul	5 to 19	300	44	136	176	49	147	34	243	1,814		106	815	3,865
	20 to 99	108	11	38	136	22	66	17	90		261	17		765
	100+	28			38	5	17	7	12	52				159
Rio Grande do Sul Total		436	55	174	351	75	230	57	346	1,866	261	123	815	4,789
Paraná	5 to 19	485	65	394	43	88	151	63	361	1,210	2,838	197	4,076	9,970
	20 to 99	189	25	253	19	50	92	32	133	738		24	1,217	2,772
	100+	50	7	22	3		13	11	18	100				223
Paraná Total		723	97	669	65	139	256	105	512	2,048	2,838	220	5,293	12,965
Distrito Federal	5 to 19	71								173		52	1,374	1,670
	20 to 99									60	187		550	797
	100+													
Distrito Federal Total		71								233	187	52	1,924	2,468
Mato Grosso	5 to 19	213				25	30	20	76		1,806			2,170
	20 to 99	91		12					14	324	246			686
	100+	29								20				50
Mato Grosso Total		332		12		25	30	20	90	344	2,052			2,906
Ceará	5 to 19	224	30	299	33				73	394	1,469		1,573	4,097
	20 to 99	77		151	19		8	6	31	166	194		467	1,118
	100+		5	14									58	77
Ceará Total		301	35	463	52		8	6	104	560	1,664		2,099	5,292
Pernambuco	5 to 19		13	82		15			31		859	19		1,020
	20 to 99	36		30					9			8	259	342
	100+	11												11
Pernambuco Total		47	13	112		15			40		859	27	259	1,373
Maranhão	5 to 19													
	20 to 99			3					11					14
	100+													
Maranhão Total				3					11					14
Region	Empl's	Manufacturing									52	72	Other	Grand Total
		15	17	18	19	24	29	34	36	Other manuf.				
Bahia	5 to 19	260	27	111	21	41	27	11	75	496	2,985	50		4,102
	20 to 99	71		38	6	28	24		29	224			783	1,203
	100+	14				8			4					26
Bahia Total		345	27	150	27	77	50	11	108	720	2,985	50	783	5,331

Region	Empl's	15	17	18	19	24	29	34	36	Other manuf.	52	72	Other	Grand Total
Amazonas	5 to 19	60								175	605		705	1,545
	20 to 99	35		4				4	10	144	129		303	629
	100+								2	72			48	122
Amazonas Total		95		4				6	10	391	733		1,056	2,296
Goiás	5 to 19	206	17	237	24	24		14	67		1,430	43	1,561	3,623
	20 to 99	67		71	8	17			17					180
	100+	19		3										22
Goiás Total		291	17	312	32	41		14	84		1,430	43	1,561	3,825
Paraíba	5 to 19			42	17	12								72
	20 to 99	34		10	15		4		8					70
	100+													
Paraíba Total		34		52	32	12	4		8					142
Grand Total		6,305	1,243	6,072	1,312	1,295	2,201	685	3,510	17,440	41,353	1,730	45,099	128,244

Brazil Weak Universe Estimates (collapsed)

Region	Empl's	Manufacturing									52	72	Other	Grand Total
		15	17	18	19	24	29	34	36	Other manuf.				
São Paulo	5 to 19	3,196	1,333	4,981	1,203	1,495	2,720	694	2,717	5,516	57,116	2,548	40,270	123,791
	20 to 99	1,262	730	1,547	653	926	1,718	518	946	7,395	8,052	586	14,512	38,845
	100+	566	213	171	134	376	383	310	132	1,678	824	123	2,095	7,004
São Paulo Total		5,025	2,275	6,699	1,989	2,796	4,821	1,522	3,795	14,589	65,991	3,258	56,877	169,640
Rio de Janeiro	5 to 19	862	134	1,240	79	261	227	87	405	9,194	38,077	689	20,135	71,390
	20 to 99	333	60	443	48	179	140	46	134	1,096	3,194	153		5,825
	100+	87		42		73	40	22			374			638
Rio de Janeiro Total		1,282	195	1,725	127	513	407	154	539	10,290	41,646	841	20,135	77,853
Minas Gerais	5 to 19	2,707	533	2,109	697	448	431	167	1,162	9,194	28,558	752	40,270	87,026
	20 to 99	745	177	852	320	291	200	104	321	1,596	2,561			7,166
	100+	171	75	64	45	78	60	53	43				759	1,347
Minas Gerais Total		3,623	784	3,024	1,062	816	691	323	1,526	10,790	31,119	752	41,029	95,539
Santa Catarina	5 to 19	1,166	498	1,843	169	190	520	114	829	5,022	30,741	456	25,135	66,682
	20 to 99	327	251	739	66	53	238	55	257			74		2,059
	100+	79	87	98			49	14	54					380
Santa Catarina Total		1,572	835	2,680	234	243	807	183	1,139	5,022	30,741	529	25,135	69,120
Rio Grande do Sul	5 to 19	1,459	261	705	1,117	293	745	192	1,114	5,022		595	2,793	14,294
	20 to 99	453	55	170	745	115	286	82	355		1,554	84		3,900
	100+	163			293	35	103	46	67	257				965
Rio Grande do Sul Total		2,075	316	875	2,154	443	1,134	320	1,537	5,279	1,554	679	2,793	19,159
Paraná	5 to 19	1,391	226	1,207	161	315	450	211	976	3,348	13,175	653	13,964	36,076
	20 to 99	468	74	669	61	155	238	93	310	1,549		67	3,162	6,847
	100+	172	31	81	12		48	43	59	292				737
Paraná Total		2,030	331	1,957	234	470	736	347	1,345	5,188	13,175	721	17,126	43,660
Distrito Federal	5 to 19	158								325		135	3,206	3,825
	20 to 99									98	511		1,109	1,718
	100+													
Distrito Federal Total		158								424	511	135	4,315	5,543
Mato Grosso	5 to 19	331				49	48	37	112		3,988			4,564
	20 to 99	122		17					17	355	464			975
	100+	55								31				86
Mato Grosso Total		508		17		49	48	37	129	386	4,452			5,625
Ceará	5 to 19	536	89	764	103				165	797	4,984		3,940	11,377
	20 to 99	159		332	51		16	15	60	290	570		1,011	2,503
	100+		18	42									176	235
Ceará Total		695	106	1,137	154		16	15	225	1,087	5,554		5,126	14,115

Region	Empl's	15	17	18	19	24	29	34	36	Other manuf.	52	72	Other	Grand Total
Pernambuco	5 to 19		87	474		103			158		6,608	122		7,552
	20 to 99	169		149					40			33	1,272	1,662
	100+	70												70
Pernambuco Total		239	87	623		103			198		6,608	155	1,272	9,284
Maranhão	5 to 19													
	20 to 99			6					22					28
	100+													
Maranhão Total				6					22					28
Manufacturing											52	72	Other	Grand Total
Region	Empl's	15	17	18	19	24	29	34	36	Other manuf.				
Bahia	5 to 19	725	91	331	76	141	78	35	197	1,171	11,819	161		14,825
	20 to 99	171		99	19	84	59		66	457			1,977	2,933
	100+	47				33			11					92
Bahia Total		943	91	430	95	259	137	35	274	1,628	11,819	161	1,977	17,850
Amazonas	5 to 19	111								273	1,580		1,360	3,324
	20 to 99	55		7				8	16	194	291		505	1,075
	100+							6		136			112	253
Amazonas Total		166		7				14	16	602	1,871		1,977	4,652
Goiás	5 to 19	747	76	919	115	108		58	228		7,367	180	5,937	15,733
	20 to 99	209		239	32	67			50					597
	100+	82		14										96
Goiás Total		1,038	76	1,172	147	175		58	278		7,367	180	5,937	16,427
Paraíba	5 to 19			93	47	31								171
	20 to 99	61		18	34		7		14					133
	100+													
Paraíba Total		61		111	81	31	7		14					304
Grand Total		19,414	5,096	20,463	6,278	5,898	8,805	3,007	11,035	55,285	222,408	7,411	183,698	548,799

Brazil Median Universe Estimates (collapsed)

Region	Empl's	Manufacturing									52	72	Other	Grand Total
		15	17	18	19	24	29	34	36	Other manuf.				
São Paulo	5 to 19	2,333	973	3,635	878	1,091	1,986	507	1,983	4,026	41,690	1,860	29,394	90,357
	20 to 99	921	533	1,129	476	676	1,254	385	691	5,398	5,877	428	10,593	28,360
	100+	413	155	125	98	274	281	232	96	1,232	601	90	1,529	5,128
São Paulo Total		3,668	1,661	4,890	1,452	2,041	3,521	1,124	2,770	10,657	48,168	2,378	41,516	123,845
Rio de Janeiro	5 to 19	629	98	905	58	191	166	64	295	6,711	27,793	503	14,697	52,109
	20 to 99	243	44	324	35	130	102	33	98	800	2,331	111		4,252
	100+	64		31		53	29	16			273			466
Rio de Janeiro Total		935	142	1,259	93	374	297	113	393	7,511	30,398	614	14,697	56,827
Minas Gerais	5 to 19	1,976	389	1,539	509	327	314	122	848	6,711	20,845	549	29,394	63,522
	20 to 99	544	129	622	233	212	146	76	234	1,165	1,870			5,231
	100+	125	55	47	33	57	44	38	31				554	983
Minas Gerais Total		2,644	573	2,208	775	596	504	236	1,114	7,875	22,715	549	29,948	69,736
Santa Catarina	5 to 19	851	363	1,345	123	138	380	83	605	3,665	22,438	333	18,347	48,672
	20 to 99	238	183	539	48	39	174	40	188			54		1,503
	100+	58	63	72			35	10	39					277
Santa Catarina Total		1,147	609	1,956	171	177	589	133	832	3,665	22,438	386	18,347	50,452
Rio Grande do Sul	5 to 19	1,065	190	514	815	214	544	140	813	3,665		434	2,039	10,434
	20 to 99	330	40	124	544	84	209	59	259		1,134	61		2,846
	100+	119			214	25	75	34	49	188				704
Rio Grande do Sul Total		1,147	609	1,956	171	177	589	133	832	3,665	22,438	386	18,347	50,452
Paraná	5 to 19	1,015	165	881	118	230	329	154	712	2,444	9,616	477	10,193	26,333
	20 to 99	341	54	488	45	113	174	68	226	1,130		49	2,308	4,997
	100+	125	23	59	9		35	31	43	213				538
Paraná Total		1,482	242	1,428	171	343	537	253	981	3,787	9,616	526	12,500	31,868
Distrito Federal	5 to 19	116								237		99	2,340	2,792
	20 to 99									72	373		809	1,254
	100+													
Distrito Federal Total		116								309	373	99	3,149	4,046
Mato Grosso	5 to 19	241				36	35	27	82		2,911			3,332
	20 to 99	89		12					12	269	343			726
	100+	40								24				64
Mato Grosso Total		370		12		36	35	27	94	293	3,254			4,121
Ceará	5 to 19	391	65	557	75				121	582	3,638		2,876	8,304
	20 to 99	116		242	37		12	11	44	212	416		738	1,827
	100+		13	30									128	172
Ceará Total		507	78	830	112		12	11	164	793	4,054		3,742	10,303
Pernambuco	5 to 19		64	346		75			115		4,824	89		5,512
	20 to 99	123		109					29			24	928	1,213
	100+	51												51
Pernambuco Total		174	64	454		75			144		4,824	113	928	6,776
Maranhão	5 to 19													
	20 to 99			4					17					21
	100+													
Maranhão Total				4					17					21
Region	Empl's	Manufacturing									52	72	Other	Grand Total
		15	17	18	19	24	29	34	36	Other manuf.				
Bahia	5 to 19	529	66	242	56	103	57	25	144	855	8,627	118		10,821
	20 to 99	125		72	14	62	43		48	334			1,443	2,141
	100+	34				24			8					67

21

Bahia Total		688	66	314	70	189	100	25	200	1,189	8,627	118	1,443	13,029
Amazonas	5 to 19	81								199	1,153		993	2,426
	20 to 99	40		5				6	11	142	212		369	785
	100+							4		99			81	185
Amazonas Total		121		5				10	11	440	1,366		1,443	3,396
Goiás	5 to 19	545	56	671	84	79		42	166		5,377	131	4,333	11,484
	20 to 99	153		174	24	49			37					436
	100+	60		10										70
Goiás Total		758	56	856	107	128		42	203		5,377	131	4,333	11,990
Paraíba	5 to 19			68	34	23								125
	20 to 99	44		13	25		5		10					97
	100+													
Paraíba Total		44		81	59	23	5		10					222
Grand Total		14,171	3,720	14,936	4,583	4,305	6,429	2,208	8,055	40,372	162,344	5,410	134,084	400,617

Appendix D

Brazil Strict Cell Weights (collapsed)

Region	Empl's	15	17	18	19	24	29	34	36	Other manuf.	52	72	Other
						Manufacturing							
São Paulo	5 to 19	68	10	61	10	11	13	7	61	468	1,446	75	1,036
	20 to 99	41	3	22	10	8	6	4	12	132	371	9	2,719
	100+	16	4	6	2	7	7	1	4	281	41	3	94
Rio de Janeiro	5 to 19	64	7	38	3	10	9	4	14	468	1,446	16	1,036
	20 to 99	14	17	13	3	5	7	13	8	40	155	4	
	100+	7		3		5	3	5			33		
Minas Gerais	5 to 19	290	19	85	19	17	22	12	31	468	1,446	70	1,036
	20 to 99	92	12	44	20	39	24	9	28	156	224		
	100+	20	5	7	6	4	3	5	16				129
Santa Catarina	5 to 19	57	16	76	31	12	24	24	30	202	946	19	815
	20 to 99	46	16	65	28	24	7	13	14			5	
	100+	32	7	9			6	5	5				
Rio Grande do Sul	5 to 19	150	11	23	15	8	16	3	27	202		18	815
	20 to 99	36	2	6	6	2	9	1	13		261	3	
	100+	5			3	2	2	1	2	26			
Paraná	5 to 19	81	11	56	14	29	30	5	33	202	946	39	815
	20 to 99	27	25	32	6	6	15	4	22	148		4	1,217
	100+	8	2	22	3		4	4	6	11			
Distrito Federal	5 to 19	18								22		5	275
	20 to 99									15	187		110
	100+												
Mato Grosso	5 to 19	213				25	30	10	7		226		
	20 to 99	11		2					14	54	41		
	100+	29								7			
Ceará	5 to 19	45	8	75	8				9	66	490		315
	20 to 99	9		22	19		8	3	15	24	49		67
	100+		5	3									8
Pernambuco	5 to 19		13	20		8			5		430	5	
	20 to 99	12		6					2			1	86
	100+	4											
Maranhão	5 to 19												
	20 to 99			3					6				
	100+												
Bahia	5 to 19	43	4	16	3	20	27	5	11	124	746	25	
	20 to 99	7		4	6	4	12		7	56			98
	100+	14				8			4				
Amazonas	5 to 19	9								35	151		88
	20 to 99	17		1				4	5	36	32		76
	100+							2		36			24
Goiás	5 to 19	51	4	79	8	3		2	7		358	11	260
	20 to 99	11		12	8	2			6				
	100+	4		3									
Paraíba	5 to 19			42	17	12							
	20 to 99	34		2	15		2		4				
	100+												

Brazil Weak Cell Weights (collapsed)

Region	Empl's	15	17	18	19	24	29	34	36	Other manuf.	52	72	Other
						Manufacturing							

State	Age												
São Paulo	5 to 19	400	70	383	80	83	78	46	340	1,839	9,519	510	5,034
	20 to 99	210	19	119	65	51	31	23	56	569	2,684	53	14,512
	100+	113	30	43	22	63	48	11	26	1,678	412	25	698
Rio de Janeiro	5 to 19	215	27	138	13	44	32	15	45	1,839	9,519	63	5,034
	20 to 99	42	60	40	10	18	20	46	22	100	639	14	
	100+	29		14		24	13	22			187		
Minas Gerais	5 to 19	677	53	211	58	50	54	33	68	1,839	9,519	188	5,034
	20 to 99	186	29	95	53	97	50	21	53	266	640		
	100+	57	19	21	23	16	8	18	43				379
Santa Catarina	5 to 19	117	41	168	84	32	52	57	59	558	4,392	46	2,793
	20 to 99	82	36	123	66	53	13	27	23			11	
	100+	79	22	25			16	14	11				
Rio Grande do Sul	5 to 19	729	65	117	93	49	83	16	124	558		99	2,793
	20 to 99	151	11	28	35	13	41	6	51		1,554	17	
	100+	27			21	17	15	9	11	129			
Paraná	5 to 19	232	38	172	54	105	90	16	89	558	4,392	131	2,793
	20 to 99	67	74	84	20	17	40	10	52	310		11	3,162
	100+	29	8	81	12		16	14	20	32			
Distrito Federal	5 to 19	40								41		12	641
	20 to 99									25	511		222
	100+												
Mato Grosso	5 to 19	331				49	48	18	10		498		
	20 to 99	15		3					17	59	77		
	100+	55								10			
Ceará	5 to 19	107	22	191	26				21	133	1,661		788
	20 to 99	18		47	51		16	7	30	41	142		144
	100+		18	8									25
Pernambuco	5 to 19		87	118		51			26		3,304	30	
	20 to 99	56		30					10			4	424
	100+	23											
Maranhão	5 to 19												
	20 to 99			6					11				
	100+												
Bahia	5 to 19	121	15	47	10	70	78	17	28	293	2,955	81	
	20 to 99	17		10	19	11	30		16	114			247
	100+	47				33			11				
Amazonas	5 to 19	16								55	395		170
	20 to 99	28		2				8	8	48	73		126
	100+							6		68			56
Goiás	5 to 19	187	19	306	38	12		10	23		1,842	45	989
	20 to 99	35		40	32	10			17				
	100+	16		14									
Paraíba	5 to 19			93	47	31							
	20 to 99	61		4	34		3		7				
	100+												

Brazil Median Cell Weights (collapsed)

Region	Empl's	Manufacturing									52	72	Other
		15	17	18	19	24	29	34	36	Other manuf.			
São Paulo	5 to 19	292	51	280	59	61	57	34	248	1,342	6,948	372	3,674
	20 to 99	154	14	87	48	38	23	17	41	415	1,959	39	10,593
	100+	83	22	31	16	46	35	8	19	1,232	301	18	510
Rio de Janeiro	5 to 19	157	20	101	10	32	24	11	33	1,342	6,948	46	3,674
	20 to 99	30	44	29	7	13	15	33	16	73	466	10	
	100+	21		10		18	10	16			137		
Minas Gerais	5 to 19	494	39	154	42	36	39	24	50	1,342	6,948	137	3,674
	20 to 99	136	22	69	39	71	37	15	39	194	467		
	100+	42	14	16	17	11	5	13	31				277
Santa Catarina	5 to 19	85	30	122	62	23	38	42	43	407	3,205	33	2,039
	20 to 99	60	26	90	48	39	10	20	17			8	
	100+	58	16	18			12	10	8				
Rio Grande do Sul	5 to 19	532	48	86	68	36	60	12	90	407		72	2,039
	20 to 99	110	8	21	26	9	30	4	37		1,134	12	
	100+	20			15	13	11	7	8	94			
Paraná	5 to 19	169	27	126	39	77	66	12	65	407	3,205	95	2,039
	20 to 99	49	54	61	15	13	29	8	38	226		8	2,308
	100+	21	6	59	9		12	10	14	24			
Distrito Federal	5 to 19	29								30		9	468
	20 to 99									18	373		162
	100+												
Mato Grosso	5 to 19	241				36	35	13	7		364		
	20 to 99	11		2					12	45	57		
	100+	40								8			
Ceará	5 to 19	78	16	139	19				15	97	1,213		575
	20 to 99	13		35	37		12	5	22	30	104		105
	100+		13	6									18
Pernambuco	5 to 19		64	86		37			19		2,412	22	
	20 to 99	41		22					7			3	309
	100+	17											
Maranhão	5 to 19												
	20 to 99			4					8				
	100+												
Bahia	5 to 19	88	11	35	7	51	57	13	21	214	2,157	59	
	20 to 99	13		7	14	8	22		12	83			180
	100+	34				24			8				
Amazonas	5 to 19	12								40	288		124
	20 to 99	20		1				6	6	35	53		92
	100+							4		49			41
Goiás	5 to 19	136	14	224	28	9		7	17		1,344	33	722
	20 to 99	25		29	24	7			12				
	100+	12		10									
Paraíba	5 to 19			68	34	23							
	20 to 99	44		3	25		3		5				
	100+												