A DECOMPOSITION OF GROWTH OF THE REAL WAGE RATE FOR SOUTH AFRICAN MANUFACTURING BY SIZE CLASS: 1972-1996

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Introduction

The small and medium enterprise (SME) sector in South Africa has been the focus of attention since the first democratic elections in 1994. Not only does the sector offer the opportunity to enhance entrepreneurship amongst previously disadvantaged communities in South Africa, but it is also seen as one that has the ability to absorb relatively more labour per unit of output than large scale enterprises. One possible reason for the relatively higher labour absorption of the SME sector is that they pay relatively lower wages per worker.

In order to investigate whether this is indeed the case and whether this has resulted in relatively better performance by the SME sector in the manufacturing industry, we present data that offer a breakdown of key economic variables (value added, employment, wage bill, etc.) in the manufacturing industry by four size groups of enterprises: small (employing 1-19 workers); medium (employing 20-49 workers); large (employing 50-199 workers); and very large (employing more than 200 workers).

The data are presented for four points in time, spread over the period 1971-1996. Although the results are not as accurate as they might have been if we had time series of annual data, the analysis of the changes over the discrete time intervals gives us some idea of the economic performance of the different size groups of firms.

We start with a discussion of the data set in Section 1. Section 2 gives the broad descriptive picture of the role of SMEs in the industrial structure of South Africa and its changes over time. Finally, in Section 3 we turn to an analysis of the wage-employment trends in the different size groups of firms, based on the decomposition model developed by Mazumdar (2000), which has been used in an earlier paper for the South African manufacturing sector as a whole (Mazumdar and van Seventer 2002).

Section 1: Data

While a previous analysis of real wage decomposition for South Africa made use of an extensive industry database consisting of 30-year trends on an annual basis covering about 46 industries in the South African economy, this database is not endowed by a size class distinction. For our purposes here, we have to settle for less perfect data, recently made available in an unpublished format by Ntsika (1999). Although Ntsika has tried to cover all sectors in an attempt to bring size class differences in the South African economy to the surface, we limit our analysis to the manufacturing industry. The data shown in Table 1 are, according to Ntsika (1999), drawn from various issues of the Stats South Africa Statistical Yearbook.[1] This cannot be correct as the last Stats South Africa Yearbook was published in 1995, while the more recent South African Statistics 2000 publication – which resembles the Statistical Yearbooks very closely – does not offer size class information. More likely, the information shown in the next table is drawn directly from the manufacturing census publications for the relevant years, which suggests that several other manufacturing census, such as the one for 1985, were not employed.

[1] Notes on the abbreviations used in this paper are available in Appendix A.

It should also be noted that the data shown in Table 1 are reported in 1995 constant prices, while the original manufacturing census is only reported in current prices. This means that an implicit deflator must have been employed; which one, however, is not clear. The other issue to note is that, probably as a result of employing a sub-industry specific deflator, the data set is no longer consistent. This can be attested in the last five rows of the table, where we sum the individual entries of each sub-industry for each size class and subtract the manufacturing totals shown at the top of the table. In the last row, it can be seen that even for the sum of all size classes, the sub-industries do not sum to total manufacturing.

Since we do not know what deflator Ntsika has employed, we use the TIPS South African Standardised Industry Database (see www.tips.org.za) to construct a deflator for the relevant years and relevant sub-industries in order to arrive at current values. Since it is unlikely that our deflator is the same as the one used by Ntsika, value added and wages and salaries at current prices also turned out to be inconsistent. We enforce consistency with the South African Standardised Industry Database by employing the biproportionality method (see Miller and Blair, 1985: 276-294) to a matrix consisting of size class dimensions per sub-industry for each year in two rounds.

Starting with the variables in constant 1995 prices, we let the sub-industry totals add up to the relevant counterparts of the South African Standardised Industry Database, while maintaining as much as possible Ntsika's proportions across sub-industries and across size classes. We then apply the South African Standardised Industry Database deflators to reconstruct values at current prices, followed by another round of the biproportionality method. The end result is a set of value added and wages and salaries data points for the four selected years in current and constant prices (see Table 1).

Table 1: Manufacturing number of establishments, value added, wages and salaries and employment for selected years (Rm '95 pr) before application of consistency routine

		Industry	# estab				VA (Rm)				W&S (Rm)				Empl ('000)			
			1972	1988	1993	1996	1972	1988	1993	1996	1972	1988	1993	1996	1972	1988	1993	1996
1.		Totmanf_s	5,968	11,600	12,971	15,831	2,630	4,152	5,060	7,113	1,331	1,979	2,710	3,755	49	90	105	120
2.		Totmanf_m	2,710	4,157	4,494	4,887	4,427	5,734	7,597	9,190	2,312	2,933	4,073	4,669	87	130	141	151
3.		Totmanf_l	2,746	3,859	3,497	3,646	13,554	18,771	22,480	24,967	6,569	8,528	10,708	11,838	274	378	344	352
4.		Totmanf_xl	1,247	1,640	1,424	1,472	42,038	65,588	70,780	84,234	19,127	26,199	30,158	34,605	722	940	758	809
5.		Totmanf_tot	12,671	21,256	22,386	25,836	62,649	94,246	105,917	125,504	29,339	39,638	47,649	54,867	1,131	1,539	1,348	1,432
6.	1	Food_s	654	775	754	914	205	297	244	352	84	93	102	153	6	7	8	9
7.		Food_m	368	359	359	393	561	465	550	627	187	182	237	260	12	11	12	13
8.		Food_l	356	485	438	463	1,919	2,628	3,506	3,550	670	977	1,381	1,511	36	49	45	48
9.		Food_xl	166	233	241	229	3,979	8,178	10,057	10,021	1,488	2,851	3,669	3,757	83	126	119	123
10.		Food_tot	1,544	1,852	1,792	1,999	6,665	11,568	14,356	14,550	2,428	4,103	5,388	5,681	136	194	183	192
11.	2	Bevtob_s	115	76	63	62	92	59	48	71	22	20	24	25	1	1	1	1
12.		Bevtob_m	68	71	54	56	160	148	100	171	48	44	48	51	3	2	2	2
13.		Bevtob_l	79	79	84	65	420	673	1,140	909	162	237	412	305	7	8	10	7
14.		Bevtob_xl	29	53	47	45	1,874	3,116	4,787	4,963	489	983	1,289	1,345	17	31	28	26
15.		Bevtob_tot	291	279	248	228	2,545	3,996	6,075	6,114	721	1,285	1,773	1,726	28	42	40	36
16.	3	Textcloth_s	810	958	914	1,032	201	207	195	246	88	99	101	196	5	7	7	8
17.		Textcloth_m	271	388	488	513	291	243	371	390	161	147	234	305	9	13	16	17
18.		Textcloth_l	433	550	601	561	1,491	1,311	1,801	1,467	769	679	1,059	1,099	45	57	63	64
19.		Textcloth_xl	234	322	236	244	4,438	4,997	4,699	3,857	2,130	2,408	2,619	2,830	135	166	120	123
20.		Textcloth_tot	1,748	2,218	2,239	2,350	6,422	6,758	7,066	5,960	3,148	3,333	4,013	4,430	194	242	205	211
21.	4	Leathfootw_s	71	125	147	163	20	0	33	59	11	14	20	35	1	1	1	1
22.		Leathfootw_m	62	84	94	104	68	1	101	117	38	36	59	71	2	3	3	3
23.		Leathfootw_l	75	99	113	107	256	4	427	410	141	169	234	234	8	11	12	11
24.		Leathfootw_xl	46	70	56	50	738	10	986	1,027	447	476	566	564	23	33	26	25
25.		Leathfootw_tot	254	378	410	424	1,082	15	1,548	1,613	637	695	879	904	33	48	42	40
26.	5	Woodfurn_s	632	1,202	1,544	1,942	178	231	343	474	100	131	189	304	5	9	12	14
27.		Woodfurn_m	211	397	434	524	250	313	464	637	153	190	281	395	7	12	14	16
28.		Woodfurn_l	276	351	328	329	789	1,012	1,165	1,333	471	465	591	724	28	35	31	30
29.		Woodfurn_xl	87	141	90	134	957	1,802	1,439	2,070	450	671	651	1,091	32	51	31	52
30.		Woodfurn_tot	1,206	2,091	2,396	2,929	2,175	3,358	3,412	4,514	1,173	1,459	1,713	2,514	72	107	88	112
31.	6	Pappulp_s	591	1,270	1,271	1,726	342	527	512	782	186	238	287	403	5	9	9	12
32.		Pappulp_m	206	324	365	378	485	595	732	925	270	302	403	465	7	10	11	12
33.		Pappulp_l	142	278	257	259	941	1,809	2,237	2,640	510	894	1,118	1,108	13	27	26	24
34.		Pappulp_xl	81	95	105	115	3,438	5,326	5,983	7,393	1,510	1,739	2,278	2,715	41	48	49	52
35.		Pappulp_tot	1,020	1,967	1,998	2,478	5,205	8,257	9,465	11,740	2,476	3,173	4,087	4,691	66	94	95	100
36.	7	Chemsetc_s	348	764	985	1,227	237	469	602	838	91	163	268	385	3	7	9	10
37.		Chemsetc_m	229	364	495	571	472	912	1,355	1,755	185	331	572	664	7	11	16	18
38.		Chemsetc_l	236	440	382	432	1,362	3,917	4,361	5,210	737	1,406	1,645	1,952	24	43	38	40
39.		Chemsetc_xl	114	186	178	187	7,080	14,796	17,122	18,286	2,353	5,159	5,989	6,415	68	122	104	104
40.		Chemsetc_tot	927	1,754	2,040	2,417	9,151	20,094	23,441	26,089	3,365	7,059	8,475	9,415	103	182	167	172
41.	8	Nmmins_s	255	492	546	606	129	101	178	166	43	51	81	95	3	5	5	6
42.		Nmmins_m	227	317	375	394	199	279	351	411	99	119	176	227	7	10	11	12
43.		Nmmins_l	237	304	266	307	837	1,190	1,287	1,509	370	482	620	791	23	29	26	29
44.		Nmmins_xl	93	116	71	69	2,625	3,172	2,621	2,994	972	1,095	1,107	1,275	48	47	28	28
45.		Nmmins_tot	812	1,229	1,258	1,376	3,789	4,742	4,436	5,080	1,484	1,747	1,984	2,387	81	90	70	75
46.	9	Metals_s	41	88	52	51	27	65	37	188	12	39	19	28	0	1	1	1
47.		Metals_m	54	65	63	48	94	88	141	133	49	54	64	67	2	2	2	2
48.		Metals_l	79	93	57	57	524	547	527	515	236	238	277	248	8	9	6	5
49.		Metals_xl	58	79	68	63	5,636	8,350	7,485	11,098	2,766	3,556	3,852	5,099	76	91	80	73
50.		Metals_tot	232	325	240	219	6,280	9,050	8,190	11,934	3,063	3,886	4,212	5,441	87	103	88	80
51.	10	Machinery_s	2,078	5,098	5,923	7,173	1,059	2,030	2,664	3,546	612	1,053	1,512	2,013	18	40	48	53
52.		Machinery_m	899	1,645	1,630	1,752	1,672	2,541	3,183	3,637	990	1,426	1,857	2,053	29	51	50	52
53.		Machinery_l	764	1,083	871	973	3,973	4,919	5,118	6,178	2,282	2,791	2,897	3,405	74	100	73	85
54.		Machinery_xl	325	327	308	321	11,158	14,645	15,666	19,605	6,467	7,184	8,199	9,534	195	222	173	197
55.		Machinery_tot	4,066	8,153	8,732	10,219	17,863	24,134	26,631	32,965	10,350	12,454	14,466	17,005	315	413	344	388
56.	11	Othmanf_s	373	752	768	935	140	152	184	220	83	82	98	137	3	5	5	6
57.		Othmanf_m	115	143	134	154	186	165	190	207	131	99	101	121	3	4	4	5
58.		Othmanf_l	69	97	83	93	342	325	396	427	200	171	206	230	6	8	7	8
59.		Othmanf_xl	14	18	14	15	149	274	227	210	78	103	108	339	4	7	4	7
60.		Othmanf_tot	571	1,010	999	1,197	818	917	998	1,064	492	455	512	827	17	24	20	26
61.		Error	0	0	-4	0	0	-14	-19	-171	0	3	-9	18	0	0	0	0
62.			0	0	-3	0	10	16	-58	-180	1	-3	-40	10	0	0	-1	0
63.			0	0	-17	0	-701	-437	-514	-820	-21	-17	-268	-232	-1	-2	-7	0
64.			0	0	-10	0	35	-924	292	-2,709	21	28	168	359	0	2	3	0
65.			0	0	-34	0	-656	-1,359	-298	-3,880	0	11	-148	156	0	1	-5	0

Source: Ntsika (1999, Table 4.2)

The results of the consistency exercise are shown in Tables 2 and 3.

Table 2: Manufacturing value added, wages and salaries and employment for selected years (Rm '95 pr) after application of consistency routine

		Industry	VA (Rm) 1972	VA (Rm) 1988	VA (Rm) 1993	VA (Rm) 1996	W&S (Rm) 1972	W&S (Rm) 1988	W&S (Rm) 1993	W&S (Rm) 1996	Empl ('000) 1972	Empl ('000) 1988	Empl ('000) 1993	Empl ('000) 1996
1.		Totmanf_s	2,589	4,666	4,657	6,100	1,862	2,940	3,060	3,937	52	95	119	130
2.		Totmanf_m	4,358	6,443	6,992	7,881	3,236	4,356	4,599	4,895	92	138	160	164
3.		Totmanf_l	13,343	21,092	20,691	21,411	9,194	12,666	12,091	12,411	291	400	390	381
4.		Totmanf_xl	41,384	73,697	65,146	72,237	26,771	38,915	34,054	36,280	767	995	859	874
5.		Totmanf_tot	61,674	105,898	97,486	107,629	41,063	58,877	53,804	57,524	1,202	1,628	1,528	1,548
6.	1	Food_s	179	234	166	234	106	107	102	154	6	7	7	8
7.		Food_m	509	384	414	448	237	218	257	270	12	12	13	13
8.		Food_l	1,962	2,380	2,819	2,635	946	1,253	1,526	1,586	39	54	49	47
9.		Food_xl	4,104	7,595	8,559	7,895	2,111	3,632	4,126	3,597	87	130	130	119
10.		Food_tot	6,755	10,593	11,958	11,212	3,401	5,210	6,011	5,607	144	202	199	187
11.	2	Bevtob_s	68	83	34	65	18	27	19	23	1	1	1	1
12.		Bevtob_m	124	220	79	169	40	62	41	48	3	2	2	2
13.		Bevtob_l	367	1,094	958	936	147	354	357	290	8	8	10	7
14.		Bevtob_xl	1,653	5,193	4,259	5,421	447	1,457	1,138	1,166	17	31	27	25
15.		Bevtob_tot	2,212	6,590	5,331	6,591	652	1,899	1,555	1,526	29	43	38	34
16.	3	Textcloth_s	112	172	122	203	74	125	87	207	5	7	6	8
17.		Textcloth_m	169	211	256	347	137	192	215	334	9	13	14	18
18.		Textcloth_l	974	1,246	1,327	1,356	727	949	994	1,216	45	58	59	70
19.		Textcloth_xl	2,925	4,872	3,663	3,784	2,021	3,347	2,501	2,855	135	162	111	131
20.		Textcloth_tot	4,179	6,501	5,367	5,690	2,960	4,613	3,796	4,612	193	240	190	227
21.	4	Leathfootw_s	15	17	21	30	12	17	15	27	1	1	1	1
22.		Leathfootw_m	53	60	70	65	42	45	47	56	2	3	2	3
23.		Leathfootw_l	224	383	314	238	173	229	192	186	8	11	10	9
24.		Leathfootw_xl	653	968	766	632	551	640	472	410	23	32	22	20
25.		Leathfootw_tot	945	1,428	1,170	965	779	931	726	679	33	47	35	33
26.	5	Woodfurn_s	158	212	282	309	127	185	213	270	5	9	13	14
27.		Woodfurn_m	230	300	422	448	193	279	341	362	7	13	17	17
28.		Woodfurn_l	818	1,064	1,132	971	665	730	731	673	30	37	40	31
29.		Woodfurn_xl	1,001	1,943	1,480	1,601	637	1,046	821	924	33	51	39	52
30.		Woodfurn_tot	2,207	3,519	3,316	3,327	1,622	2,239	2,106	2,229	75	110	110	114
31.	6	Pappulp_s	140	286	228	306	111	159	151	198	2	4	4	6
32.		Pappulp_m	207	338	361	391	161	211	228	236	3	5	6	6
33.		Pappulp_l	454	1,128	1,177	1,157	339	668	645	569	7	13	14	12
34.		Pappulp_xl	1,672	3,404	3,333	3,439	1,008	1,291	1,337	1,271	20	23	26	25
35.		Pappulp_tot	2,473	5,156	5,099	5,293	1,619	2,330	2,361	2,274	32	46	49	48
36.	7	Chemsetc_s	141	368	353	541	83	186	245	386	3	6	9	11
37.		Chemsetc_m	293	748	878	1,222	169	393	563	687	7	12	18	19
38.		Chemsetc_l	954	3,523	3,015	3,765	750	1,784	1,651	2,044	25	44	43	42
39.		Chemsetc_xl	5,006	13,645	12,527	14,025	2,403	6,506	6,114	6,127	68	120	116	106
40.		Chemsetc_tot	6,395	18,284	16,773	19,553	3,405	8,868	8,573	9,245	103	182	186	177
41.	8	Nmmins_s	89	79	128	120	59	73	93	107	2	4	6	6
42.		Nmmins_m	144	230	279	320	135	179	217	264	7	10	13	13
43.		Nmmins_l	682	1,078	1,095	1,218	560	775	781	933	23	30	31	30
44.		Nmmins_xl	2,160	2,946	2,360	2,565	1,477	1,751	1,420	1,372	48	46	33	28
45.		Nmmins_tot	3,075	4,334	3,863	4,222	2,231	2,779	2,511	2,676	81	90	82	76
46.	9	Metals_s	50	109	59	255	35	97	37	54	1	2	1	1
47.		Metals_m	179	156	245	195	142	140	134	131	4	5	4	4
48.		Metals_l	1,130	1,063	975	785	757	668	594	495	20	23	15	13
49.		Metals_xl	12,269	16,629	14,664	17,944	8,925	9,905	8,390	9,293	179	212	184	182
50.		Metals_tot	13,629	17,957	15,942	19,179	9,860	10,811	9,155	9,973	204	242	204	200
51.	10	Machinery_s	702	1,557	1,466	1,904	547	1,068	1,069	1,556	12	28	34	38
52.		Machinery_m	1,154	2,040	1,936	2,107	885	1,510	1,411	1,635	19	37	39	39
53.		Machinery_l	3,089	4,333	3,323	3,713	2,274	3,160	2,246	2,747	52	72	58	63
54.		Machinery_xl	8,756	13,227	10,766	12,507	6,468	8,084	6,467	7,015	134	153	137	143
55.		Machinery_tot	13,701	21,156	17,491	20,231	10,174	13,823	11,193	12,953	217	290	269	283
56.	11	Othmanf_s	934	1,550	1,798	2,133	690	897	1,029	956	14	26	36	36
57.		Othmanf_m	1,297	1,756	2,052	2,168	1,094	1,127	1,144	873	19	25	32	32
58.		Othmanf_l	2,689	3,799	4,556	4,639	1,855	2,096	2,375	1,673	34	49	61	57
59.		Othmanf_xl	1,184	3,275	2,770	2,425	723	1,254	1,268	2,250	23	36	35	44
60.		Othmanf_tot	6,103	10,380	11,176	11,366	4,362	5,374	5,816	5,752	91	135	164	169
61.		Error	0	0	0	0	0	0	0	0	0	0	0	0
62.			0	0	0	0	0	0	0	0	0	0	0	0
63.			0	0	0	0	0	0	0	0	0	0	0	0
64.			0	0	0	0	0	0	0	0	0	0	0	0
65.			0	0	0	0	0	0	0	0	0	0	0	0

Source: Ntsika (1999, Table 4.2) and own calculations

Table 3: Manufacturing value added, wages and salaries and employment for selected years (current pr) after application of consistency routine

		Industry	VA (Rm) 1972	1988	1993	1996	W&S (Rm) 1972	1988	1993	1996
1.		Totmanf_s	134	1,932	3,963	6,467	97	1,260	2,623	4,104
2.		Totmanf_m	226	2,668	5,949	8,355	169	1,867	3,941	5,103
3.		Totmanf_l	691	8,734	17,605	22,700	480	5,428	10,362	12,938
4.		Totmanf_xl	2,145	30,518	55,432	76,584	1,399	16,676	29,185	37,820
5.		Totmanf_tot	3,196	43,853	82,950	114,106	2,146	25,230	46,111	59,965
6.	1	Food_s	10	106	135	254	6	51	84	164
7.		Food_m	27	173	336	486	13	102	210	287
8.		Food_l	103	1,054	2,292	2,844	51	579	1,249	1,680
9.		Food_xl	223	3,334	6,954	8,571	119	1,653	3,368	3,832
10.		Food_tot	363	4,667	9,717	12,155	189	2,384	4,911	5,962
11.	2	Bevtob_s	5	30	29	69	1	10	16	23
12.		Bevtob_m	9	79	65	179	3	24	34	49
13.		Bevtob_l	27	386	794	985	11	133	299	296
14.		Bevtob_xl	124	1,815	3,529	5,737	36	538	949	1,197
15.		Bevtob_tot	165	2,309	4,418	6,969	51	704	1,299	1,566
16.	3	Textcloth_s	8	79	111	220	6	59	80	223
17.		Textcloth_m	12	96	233	375	10	90	197	357
18.		Textcloth_l	71	560	1,210	1,457	54	438	912	1,297
19.		Textcloth_xl	221	2,170	3,338	4,089	158	1,519	2,289	3,063
20.		Textcloth_tot	313	2,905	4,892	6,141	228	2,106	3,478	4,940
21.	4	Leathfootw_s	1	7	18	33	1	8	13	29
22.		Leathfootw_m	3	26	59	71	2	20	40	61
23.		Leathfootw_l	12	167	267	259	9	102	165	201
24.		Leathfootw_xl	35	418	651	692	30	282	404	445
25.		Leathfootw_tot	50	619	994	1,055	42	412	622	736
26.	5	Woodfurn_s	9	87	250	332	7	78	190	287
27.		Woodfurn_m	13	122	372	480	11	117	302	383
28.		Woodfurn_l	46	426	1,001	1,036	38	300	649	709
29.		Woodfurn_xl	59	771	1,308	1,719	38	424	727	980
30.		Woodfurn_tot	127	1,406	2,932	3,567	94	919	1,869	2,358
31.	6	Pappulp_s	6	98	173	330	5	57	116	209
32.		Pappulp_m	8	115	273	419	7	75	173	247
33.		Pappulp_l	18	376	891	1,237	14	233	491	595
34.		Pappulp_xl	70	1,126	2,520	3,698	43	443	1,016	1,338
35.		Pappulp_tot	102	1,715	3,857	5,683	68	807	1,796	2,389
36.	7	Chemsetc_s	8	172	324	590	5	91	226	410
37.		Chemsetc_m	16	347	804	1,327	10	191	516	727
38.		Chemsetc_l	51	1,610	2,765	4,072	41	853	1,516	2,157
39.		Chemsetc_xl	278	6,179	11,482	15,259	139	3,063	5,598	6,502
40.		Chemsetc_tot	353	8,307	15,375	21,248	195	4,199	7,855	9,796
41.	8	Nmmins_s	4	33	111	126	3	32	81	111
42.		Nmmins_m	6	96	241	336	6	77	188	273
43.		Nmmins_l	29	445	946	1,275	24	329	678	963
44.		Nmmins_xl	95	1,205	2,038	2,700	67	732	1,228	1,425
45.		Nmmins_tot	135	1,780	3,336	4,437	100	1,170	2,175	2,772
46.	9	Metals_s	2	46	48	263	1	42	30	55
47.		Metals_m	7	65	200	201	6	60	110	134
48.		Metals_l	46	439	797	804	31	281	490	502
49.		Metals_xl	517	6,803	11,985	18,488	379	4,104	6,906	9,480
50.		Metals_tot	572	7,353	13,030	19,757	418	4,487	7,537	10,171
51.	10	Machinery_s	36	660	1,277	1,993	29	474	943	1,603
52.		Machinery_m	60	859	1,679	2,197	47	664	1,237	1,681
53.		Machinery_l	158	1,798	2,888	3,858	118	1,366	1,973	2,812
54.		Machinery_xl	463	5,439	9,348	13,070	354	3,440	5,666	7,224
55.		Machinery_tot	717	8,756	15,193	21,118	549	5,944	9,819	13,319
56.	11	Othmanf_s	46	614	1,485	2,257	34	358	844	992
57.		Othmanf_m	64	690	1,687	2,285	54	445	933	903
58.		Othmanf_l	131	1,472	3,754	4,873	89	814	1,940	1,726
59.		Othmanf_xl	60	1,258	2,281	2,562	37	479	1,033	2,335
60.		Othmanf_tot	300	4,035	9,208	11,977	214	2,097	4,751	5,956
61.		Error	0	0	0	0	0	0	0	0
62.			0	0	0	0	0	0	0	0
63.			0	0	0	0	0	0	0	0
64.			0	0	0	0	0	0	0	0
65.			0	0	0	0	0	0	0	0

Source: Ntsika (1999, Table 4.2) and own calculations

Section 2: The Growth of the SME Sector

Table 4 gives – for all manufacturing – the summary of the growth rates of value added, employment and real wages by the four size groups of enterprises.

Table 4: Growth rates of Employment, Real Value Added and Real wages (annual unweighted period averages)

		Employment growth			Real value added growth			Real wage growth		
		1	2	3	4	5	6	7	8	9
	Size class	'72-'88	88-'93	'93-'96	'72-'88	'88-'93	'93-'96	'72-'88	'88-'93	'93-'96
1.	Small	3.9	4.5	3.0	3.7	0.0	9.4	0.2	-2.3	4.8
2.	Medium	2.6	3.0	0.9	2.5	1.6	4.1	0.4	-0.4	-0.2
3.	Large	2.0	-0.5	-0.8	2.9	-0.4	1.1	1.1	0.7	0.2
4.	V. Large	1.6	-2.9	0.6	3.7	-2.4	3.5	1.9	1.2	0.1
5.	Total	1.9	-1.3	0.4	3.4	-1.6	3.4	1.5	0.5	0.4

Source: Table 2 and Table 3

It can be seen that (net) output growth in the small and medium enterprises exceeded the average for the whole industry and was much higher than the growth rate in the very large enterprise class in the 1972-1988 period. In the years 1988-1993, total output growth in manufacturing was negative and output growth in the small enterprises was stagnant, although the medium sized enterprises were the only ones to register a positive growth rate. In the last period, the SME groups have registered a remarkably higher growth rate.

Employment growth was significantly higher in the small and medium size groups, even in the period of output stagnation (1988-1993). This has been associated with stagnant real wage growth in the first period and a substantial negative trend in the second period. Output growth in the small enterprises has been high in the most recent period, with substantial employment growth in the small size group (but not so much in the medium group) associated with an actual positive growth of real wages.

The growth rates of value added, employment and real wages are tied together in a complicated relationship. We shall attempt in Section 3 to explore the quantitative relationship between these variables in terms of a decomposition model.

Before coming to this analysis, we should point out that in spite of the relatively high growth rate of output in the SME sector for much of the period covered above, the relative size of the SME sector in South African manufacturing is still very small, although it has been increasing. Table 5 gives the share of the different size classes in total value added and employment in manufacturing.

Table 5: Share of different size groups of enterprises in total of manufacturing

		Employment		Real value added	
		1	2	3	4
	Size class	1988	1993	1988	1993
6.	Small	5.0	6.8	5.9	8.4
7.	Medium	7.4	8.5	8.5	10.6
8.	Large	22.4	21.6	24.6	24.6

9.	Very Large	65.2	63.1	61.1	56.5
10.	Total	100.0	100.0	100.0	100.0

Source: Table 2 above

Section 3: The Wage-employment Trade-off in Different Size Groups

This section investigates – in terms of an algebraic decomposition model – how the growth rates of value added, employment and wages are related to each other in the different size groups of firms. In particular, we emphasise that, given the growth rate of value added, the fruits of output growth can be taken either as growth in employment or growth in real wages per worker. Labour market institutions determine that the division will occur in a particular class of firms. Here our major concern is to see if there is a significant difference between the different size groups of enterprises on this important point. We start by outlining the algebraic model, which highlights the important relationships determining employment and wage growth. The model has been used elsewhere (Mazumdar 2000, and Mazumdar and van Seventer 2002) but it is repeated here for convenience.

The relationship between the wage bill, S_w, and value added, V, both in current prices, can be expressed in the following way.

eqn 1 $$S_w = V^{\alpha}$$

in which α is a technological and behavioural parameter that is assumed to remain constant over the period of observation. If α is equal to unity, the share of wages remains constant, while a value higher than unity suggests that the wage bill increases relatively to value added and the share of gross operating surplus declines. In relative terms, we can then write:

eqn 2 $$\frac{dS_w}{S_w} = \alpha \frac{dV}{V}$$

or

$$\hat{S_w} = \alpha \hat{V}$$

So that if α is equal to unity, the nominal wage bill grows just as fast as nominal value added, while a value higher than unity suggests that the wage bill grows faster than value added and the share of the wage bill in value increases relative to the share of gross operating surplus or capital. We will refer to this parameter as the constant wage share parameter.

Growth in nominal value added can also be written as the sum of growth in real value added and the change in the producer price index. Using the same percentage change notation as in eqn 2, this can be expressed as follows:

eqn 3 $$\hat{V} = \hat{v} + \hat{P_p}$$

In which $\hat{v}$ is the growth in real value added and $\hat{P}_p$ is the change in the producer price index, or the producer price inflation rate. Similarly, growth in the nominal wage bill can also be written as the sum of the growth in the real wage per worker, the change in the consumer price index and now also the growth in employment:

eqn 4 $$\hat{S}_w = \hat{w} + \hat{P}_c + \hat{L}$$

In which $\hat{w}$ is the growth in the real wage rate, $\hat{P}_c$ is the change in the consumer price index or consumer price inflation, and $\hat{L}$ is the growth in employment. Combining eqn 2 and eqn 3 we can write:

eqn 5 $$\hat{S}_w = a\left(\hat{v} + \hat{P}_p\right)$$

Combining eqn 4 and eqn 5 yields:

eqn 6 $$\hat{w} + \hat{P}_c + \hat{L} = a\left(\hat{v} + \hat{P}_p\right)$$

$$\hat{w} = a\left(\hat{v} + \hat{P}_p\right) - \left(\hat{P}_c + \hat{L}\right)$$

$$\hat{w} = a\hat{v} - \hat{L} + \left(a\hat{P}_p - \hat{P}_c\right)$$

Growth in real wages per worker can thus be seen to be equal to an output effect, $a\hat{v}$, minus an employment effect, $\hat{L}$, and a price effect, $a\hat{P}_p - \hat{P}_c$. The latter can be further decomposed so that eqn 6 can be rewritten as:

eqn 7 $$\hat{w} = a\hat{v} - \hat{L} + (a-1)\hat{P}_p + \left(\hat{P}_p - \hat{P}_c\right)$$

in which $(a-1)\hat{P}_p$ is known as the wage share effect, while $\hat{P}_p - \hat{P}_c$ is seen as the domestic real exchange rate. The third term of eqn 7 is only negative if a is smaller than unity, i.e., if the wage share of value added is declining. This means that real wage growth is negatively effected since, with a declining wage share, the increase in the producer price, $\hat{P}_p$, is to a larger degree appropriated by capital, in the form of gross operating surplus. If in the fourth term consumer price inflation (which can be associated with non-tradeable goods) is higher than producer price inflation (which can be associated with tradeable goods, hence the term domestic real exchange rate), real wage growth is also eroded.

To recap, real wage growth can be decomposed into four additive components:

	Effect	Component	Symbol & sign			Comments
1.	Output: $a\hat{v}$	Output:	a	+	$\hat{v}$ +	with a higher wage share, and positive growth in value added, the impact on real wage growth is positive. If growth in value added is negative, real wage growth will be effected negatively

2.	Employment: $\hat{L}$	Employment:	$\hat{L}$	-			with higher employment growth, real wage growth will be effected negatively, since the wage bill will be shared by more workers
3.	Wage share: $(a-1)\hat{P}_p$	Constant wage share parameter:	a	+	$\hat{P}_p$	+	if the constant wage share parameter a is less than 1, the positive effect of producer price inflation is eroded by a rising share of capital
4.	DRER: $\left(\hat{P}_p - \hat{P}_c\right)$	domestic real exchange rate:	$\hat{P}_p$	+	$\hat{P}_c$	-	if consumer price inflation is higher than producer price inflation, real wage growth is eroded

Section 4: Results of the Decomposition of Real Wage Growth in South Africa

This section sets out the major points of the decomposition analysis as applied to South African manufacturing, classified by four size groups of enterprises. First, we present in Table 6 the value of the various variables identified in the model for the three periods of time distinguished. As already mentioned, we are forced to work with discrete time intervals defined by the years for which the data exist, rather than the preferred method of growth rates based on annual observations.

Table 6: Ingredients to the decomposition technique (unweighted average annual growth rates for selected periods)

			$\hat{V}$ Nominal VA growth			$\hat{v}$ Real VA growth			$\hat{S}_w$ Nominal wage bill growth			$\hat{P}_p$ Change in the producer price index			$\hat{P}_c$ Change in the consumer price index			α Constant wage share parameter		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
		Size class	72-'88	88-'93	93-'96	72-'88	88-'93	93-'96	72-'88	88-'93	93-'96	72-'88	88-'93	93-'96	72-'88	88-'93	93-'96	72-'88	88-'93	93-'96
1.		Totmanf_s	18.1	15.4	17.7	3.7	0.0	9.4	17.4	15.8	16.1	14.4	15.5	8.3	13.3	13.6	8.3	0.96	1.02	0.91
2.		Totmanf_m	16.7	17.4	12.0	2.5	1.6	4.1	16.2	16.1	9.0	14.2	15.7	7.9	13.3	13.6	8.3	0.97	0.93	0.75
3.		Totmanf_l	17.2	15.0	8.8	2.9	-0.4	1.1	16.4	13.8	7.7	14.3	15.4	7.7	13.3	13.6	8.3	0.95	0.92	0.87
4.		Totmanf_xl	18.1	12.7	11.4	3.7	-2.4	3.5	16.8	11.8	9.0	14.4	15.1	7.9	13.3	13.6	8.3	0.93	0.93	0.79
5.		Totmanf_tot	17.8	13.6	11.2	3.4	-1.6	3.4	16.7	12.8	9.2	14.3	15.2	7.9	13.3	13.6	8.3	0.94	0.94	0.82
6.	1	Food_s	16.3	5.0	23.3	1.7	-6.6	12.0	14.5	10.7	24.9	14.6	11.6	11.3	13.3	13.6	8.3	0.89	2.13	1.07
7.		Food_m	12.3	14.2	13.1	-1.7	1.5	2.7	13.8	15.4	11.0	14.0	12.7	10.4	13.3	13.6	8.3	1.12	1.08	0.84
8.		Food_l	15.7	16.8	7.5	1.2	3.4	-2.2	16.4	16.6	10.4	14.4	13.4	9.7	13.3	13.6	8.3	1.05	0.99	1.39
9.		Food_xl	18.4	15.8	7.2	3.9	2.4	-2.7	17.9	15.3	4.4	14.5	13.4	9.9	13.3	13.6	8.3	0.97	0.97	0.61
10.		Food_tot	17.3	15.8	7.7	2.9	2.5	-2.1	17.2	15.5	6.7	14.5	13.3	9.9	13.3	13.6	8.3	0.99	0.98	0.86
11.	2	Bevtob_s	11.8	-0.9	34.2	1.2	-16.2	23.7	13.2	8.7	14.0	10.6	15.2	10.4	13.3	13.6	8.3	1.11	-9.39	0.41
12.		Bevtob_m	14.5	-3.7	40.1	3.7	-18.6	29.1	13.6	7.9	12.7	10.8	14.9	10.9	13.3	13.6	8.3	0.94	-2.12	0.32
13.		Bevtob_l	18.2	15.5	7.4	7.1	-2.6	-0.8	16.7	17.7	-0.3	11.1	18.2	8.2	13.3	13.6	8.3	0.92	1.14	-0.04
14.		Bevtob_xl	18.3	14.2	17.6	7.4	-3.9	8.4	18.5	12.0	8.0	10.8	18.1	9.2	13.3	13.6	8.3	1.01	0.85	0.46
15.		Bevtob_tot	17.9	13.9	16.4	7.1	-4.2	7.3	17.8	13.0	6.4	10.9	18.0	9.1	13.3	13.6	8.3	0.99	0.94	0.39
16.	3	Textcloth_s	15.1	7.1	25.5	2.7	-6.6	18.6	15.8	6.3	40.7	12.4	13.8	6.9	13.3	13.6	8.3	1.04	0.88	1.60
17.		Textcloth_m	13.6	19.4	17.2	1.4	4.0	10.7	14.4	16.9	22.0	12.2	15.4	6.4	13.3	13.6	8.3	1.06	0.87	1.28
18.		Textcloth_l	13.8	16.6	6.4	1.6	1.3	0.7	13.9	15.8	12.5	12.2	15.4	5.7	13.3	13.6	8.3	1.01	0.95	1.95
19.		Textcloth_xl	15.3	9.0	7.0	3.2	-5.5	1.1	15.2	8.5	10.2	12.1	14.5	5.9	13.3	13.6	8.3	0.99	0.95	1.46
20.		Textcloth_tot	14.9	11.0	7.9	2.8	-3.8	2.0	14.9	10.6	12.4	12.1	14.7	5.9	13.3	13.6	8.3	1.00	0.96	1.58
21.	4	Leathfootw_s	15.0	18.9	23.8	0.6	4.5	13.9	16.7	10.8	31.6	14.4	14.5	10.0	13.3	13.6	8.3	1.11	0.57	1.32
22.		Leathfootw_m	15.2	17.5	6.5	0.8	3.1	-2.1	14.9	14.6	14.4	14.4	14.4	8.6	13.3	13.6	8.3	0.98	0.83	2.21
23.		Leathfootw_l	18.2	9.8	-1.0	3.4	-3.9	-8.8	16.5	10.0	6.9	14.8	13.7	7.8	13.3	13.6	8.3	0.91	1.02	-6.82
24.		Leathfootw_xl	16.8	9.3	2.1	2.5	-4.6	-6.2	15.1	7.5	3.2	14.3	13.8	8.3	13.3	13.6	8.3	0.90	0.81	1.58
25.		Leathfootw_tot	17.0	9.9	2.0	2.6	-3.9	-6.2	15.4	8.6	5.8	14.4	13.9	8.2	13.3	13.6	8.3	0.91	0.86	2.87
26.	5	Woodfurn_s	15.2	23.6	9.8	1.9	5.9	3.0	15.9	19.5	14.6	13.3	17.7	6.8	13.3	13.6	8.3	1.05	0.83	1.49
27.		Woodfurn_m	14.9	25.0	8.8	1.7	7.1	2.0	15.8	21.0	8.2	13.2	18.0	6.8	13.3	13.6	8.3	1.06	0.84	0.93
28.		Woodfurn_l	14.9	18.6	1.2	1.7	1.2	-5.0	13.9	16.7	3.0	13.2	17.4	6.2	13.3	13.6	8.3	0.93	0.90	2.55
29.		Woodfurn_xl	17.5	11.1	9.5	4.2	-5.3	2.7	16.3	11.4	10.5	13.2	16.4	6.9	13.3	13.6	8.3	0.93	1.02	1.10
30.		Woodfurn_tot	16.2	15.8	6.8	3.0	-1.2	0.1	15.3	15.3	8.1	13.2	17.0	6.6	13.3	13.6	8.3	0.95	0.96	1.19
31.	6	Pappulp_s	19.4	12.2	23.9	4.5	-4.4	10.2	17.0	15.2	21.8	14.9	16.6	13.7	13.3	13.6	8.3	0.88	1.25	0.91
32.		Pappulp_m	17.7	18.9	15.4	3.1	1.3	2.7	16.3	18.3	12.6	14.6	17.6	12.8	13.3	13.6	8.3	0.92	0.97	0.82
33.		Pappulp_l	20.8	18.8	11.6	5.9	0.9	-0.6	19.3	16.1	6.6	15.0	17.9	12.1	13.3	13.6	8.3	0.93	0.86	0.57
34.		Pappulp_xl	19.0	17.5	13.6	4.5	-0.4	1.1	15.7	18.1	9.6	14.5	17.9	12.6	13.3	13.6	8.3	0.82	1.03	0.70
35.		Pappulp_tot	19.3	17.6	13.8	4.7	-0.2	1.2	16.7	17.3	10.0	14.6	17.8	12.6	13.3	13.6	8.3	0.87	0.99	0.72
36.	7	Chemsetc_s	21.4	13.6	22.0	6.2	-0.8	15.3	20.4	19.9	21.9	15.3	14.4	6.7	13.3	13.6	8.3	0.95	1.47	0.99
37.		Chemsetc_m	21.2	18.3	18.2	6.0	3.2	11.7	20.6	22.0	12.1	15.2	15.0	6.5	13.3	13.6	8.3	0.97	1.20	0.67
38.		Chemsetc_l	24.1	11.4	13.8	8.5	-3.1	7.7	20.8	12.2	12.5	15.5	14.5	6.1	13.3	13.6	8.3	0.87	1.07	0.91
39.		Chemsetc_xl	21.4	13.2	9.9	6.5	-1.7	3.8	21.3	12.8	5.1	14.9	14.9	6.1	13.3	13.6	8.3	1.00	0.97	0.51
40.		Chemsetc_tot	21.8	13.1	11.4	6.8	-1.7	5.2	21.2	13.3	7.6	15.0	14.8	6.1	13.3	13.6	8.3	0.97	1.02	0.67
41.	8	Nmmins_s	14.5	27.1	4.5	-0.7	10.1	-2.2	17.0	20.5	11.1	15.2	17.0	6.6	13.3	13.6	8.3	1.18	0.76	2.50
42.		Nmmins_m	18.7	20.1	11.7	3.0	4.0	4.6	17.4	19.4	13.3	15.7	16.2	7.1	13.3	13.6	8.3	0.93	0.97	1.13

43.		Nmmins_l	18.6	16.3	10.4	2.9	0.3	3.6	17.7	15.5	12.4	15.7	16.0	6.8	13.3	13.6	8.3	0.95	0.95	1.19
44.		Nmmins_xl	17.2	11.1	9.8	2.0	-4.3	2.8	16.1	10.9	5.1	15.2	15.4	7.0	13.3	13.6	8.3	0.94	0.98	0.52
45.		Nmmins_tot	17.5	13.4	10.0	2.2	-2.3	3.0	16.7	13.2	8.4	15.3	15.7	7.0	13.3	13.6	8.3	0.95	0.99	0.85
46.	9	Metals_s	21.5	0.8	76.4	5.0	-11.8	63.4	23.4	-6.2	21.7	16.4	12.5	13.0	13.3	13.6	8.3	1.09	-8.03	0.28
47.		Metals_m	14.6	25.1	0.1	-0.9	9.5	-7.3	15.6	12.9	6.7	15.5	15.6	7.4	13.3	13.6	8.3	1.07	0.51	61.24
48.		Metals_l	15.1	12.7	0.3	-0.4	-1.7	-7.0	14.9	11.7	0.8	15.5	14.4	7.3	13.3	13.6	8.3	0.98	0.93	2.72
49.		Metals_xl	17.5	12.0	15.5	1.9	-2.5	7.0	16.0	11.0	11.1	15.6	14.5	8.6	13.3	13.6	8.3	0.92	0.91	0.72
50.		Metals_tot	17.3	12.1	14.9	1.7	-2.4	6.4	16.0	10.9	10.5	15.6	14.5	8.5	13.3	13.6	8.3	0.92	0.90	0.71
51.	10	Machinery_s	19.9	14.1	16.0	5.1	-1.2	9.1	19.0	14.7	19.4	14.8	15.3	6.9	13.3	13.6	8.3	0.96	1.04	1.21
52.		Machinery_m	18.1	14.3	9.4	3.6	-1.0	2.9	18.0	13.2	10.8	14.5	15.4	6.5	13.3	13.6	8.3	0.99	0.92	1.15
53.		Machinery_l	16.4	9.9	10.1	2.1	-5.2	3.8	16.5	7.6	12.5	14.3	15.1	6.4	13.3	13.6	8.3	1.01	0.77	1.24
54.		Machinery_xl	16.6	11.4	11.8	2.6	-4.0	5.1	15.3	10.5	8.4	14.0	15.5	6.7	13.3	13.6	8.3	0.92	0.92	0.71
55.		Machinery_tot	16.9	11.7	11.6	2.8	-3.7	5.0	16.1	10.6	10.7	14.2	15.4	6.6	13.3	13.6	8.3	0.95	0.91	0.92
56.	11	Othmanf_s	17.6	19.3	15.0	3.2	3.0	5.9	15.9	18.7	5.5	14.4	16.3	9.1	13.3	13.6	8.3	0.90	0.97	0.37
57.		Othmanf_m	16.0	19.6	10.6	1.9	3.2	1.8	14.1	15.9	-1.1	14.1	16.4	8.8	13.3	13.6	8.3	0.88	0.81	-0.10
58.		Othmanf_l	16.3	20.6	9.1	2.2	3.7	0.6	14.8	19.0	-3.8	14.2	16.9	8.5	13.3	13.6	8.3	0.91	0.92	-0.42
59.		Othmanf_xl	21.0	12.6	3.9	6.6	-3.3	-4.3	17.5	16.6	31.2	14.4	15.9	8.3	13.3	13.6	8.3	0.83	1.31	7.91
60.		Othmanf_tot	17.6	17.9	9.2	3.4	1.5	0.6	15.3	17.8	7.8	14.3	16.5	8.6	13.3	13.6	8.3	0.87	0.99	0.85

Source: Ntsika (1999, Table 4.2) & own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

In rows 1-5 of Table 6, it can be seen that the rates of increase in nominal and real value added of small size manufacturing firms (as a whole) – with almost 18% and more than 9% respectively – have been much higher than for other size classes between 1993-1996 (see row 1, columns 3 and 6). The same applies for the nominal wage increase.

All other sectors appear to display the same pattern, except beverages and tobacco and non-metallic minerals. The question remains, however, whether this has translated into higher than average employment growth or real wage growth in small manufacturing firms. The first indication in this regard is provided in the last set of three columns of Table 6 (rows 1-5, columns 16-18). It can be seen that, overall, the growth in the nominal wage bill is lower relative to the growth in value added for all manufacturing firm classes, but least so in the case of small manufacturing firms. In small manufacturing firms, nominal wage increases have managed to keep up more with nominal value added increases than larger sized manufacturing firms. This pattern seems to apply to most 3-digit manufacturing industries.

The results of the decomposition for total manufacturing are shown in Table *7*.

Table 7: Results of the decomposition exercise, all manufacturing (average annual growth rates)

Size-group	Output Effect	Employment Effect	Real Wage growth	α	DRER	Wage Share Effect
			A: 1972-1988			
Small	3.6	3.9	0.3	0.96	1.1	-0.6
Medium	2.4	2.6	0.4	0.97	1.0	-0.4
Large	2.8	2.0	1.1	0.95	1.0	-0.7
Very large	3.4	1.6	1.9	0.93	1.1	-1.0
All	3.2	1.9	1.5	0.94	1.1	-1.3
			B: 1988-1993			
Small	0.0	4.5	-2.3	1.02	1.9	0.3
Medium	1.5	3.0	-0.4	0.93	2.2	-1.2
Large	-0.4	-0.5	0.7	0.92	1.9	-1.3
Very Large	-2.3	-2.9	1.2	0.93	1.5	-1.0
All	-1.0	-1.3	0.5	0.94	1.7	-0.9
			C: 1993-1996			

Small	8.5	3.0	4.8	0.91	0.0	-0.8
Medium	3.1	0.9	-0.2	0.75	-0.4	-2.0
Large	1.0	-0.8	0.2	0.87	-0.6	-1.0
Very large	2.8	0.6	0.1	0.79	-0.4	-1.6
All	2.7	0.4	4.8	0.82	-0.5	-1.4
			D: 1972-1996			
Small	3.5%	3.9%	0.3%	0.96	1.2%	-0.5%
Medium	2.3%	2.4%	0.1%	0.94	1.0%	-0.8%
Large	1.9%	1.1%	0.9%	0.94	1.0%	-0.8%
Very large	2.2%	0.5%	1.5%	0.92	1.0%	-1.1%
All	2.2%	1.1%	1.1%	0.93	1.0%	-1.0%

Source: Table 6 *above*

We have already drawn attention to the fact that output growth was higher in the SME groups than in the larger firms (column 1 – the 'output effect'). This is confirmed for the growth rate of the wage bill for all three periods in Table 7. The price effect, which constitutes a leakage from the growing output available for distribution either as employment growth or wage growth, consists of two elements: (i) the wage share effect, which is negative if α is less than one; and (ii) the DRER effect. For all size groups, the DRER effect was positive in the first two periods as the producer prices increased faster than consumer prices.

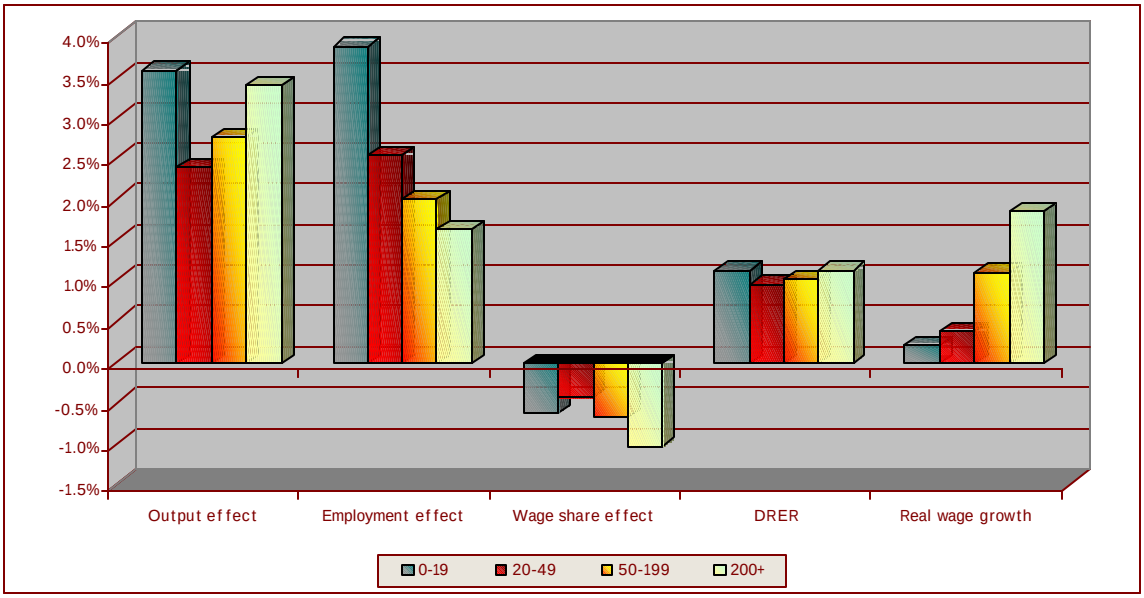
This was offset – sometimes more than completely – by the wage share effect, which was negative throughout since the wage bill increased at a slower rate than value added (i.e., α was less than unity). Only in the third period did the DRER effect turn negative for most size groups. Thus the "leakage" due to the price effect was not very significant except in the 1993-1996 period.

Turning to the division of the wage bill between employment and wage growth, it is clear that the SME groups in the first two periods tilted strongly toward employment growth, resulting in a stagnation of real wages in the 1972-1988 period, and an actual decline over the years 1988-1993. This is in sharp contrast to the experience of the large and very large size groups, which clearly favoured wage growth at the expense of employment increase. This is in accordance with expectations that the 'insider power' of those already in employment would be stronger in larger firms. Wages in the SME sector would largely be determined by the supply price of labour, which did not increase significantly over time in the South African economy. These trends were continued in the latest 1993-1996 period, with the exception of the smallest size group.

The small size class of firms had a spectacular increase in the reactor growth of output and of the wage bill in the 1993-1996 period, and contrary to the experience of the previous years, the larger part of this increase was taken in the form of real wage growth, although employment growth was still substantial at 3% per annum. The abrupt shift in the trade-off to wage increases (which, incidentally, is not shared by the medium size class of firms) requires explanation. There is no evidence of a significant increase in alternative earnings of labour outside formal manufacturing that would have led to an upward pressure on wages in small enterprises. It is possible that institutional factors, like minimum wages, impacted disproportionately on the small firm sector. Before 1994, it could be argued that small firms were displaying relatively lower

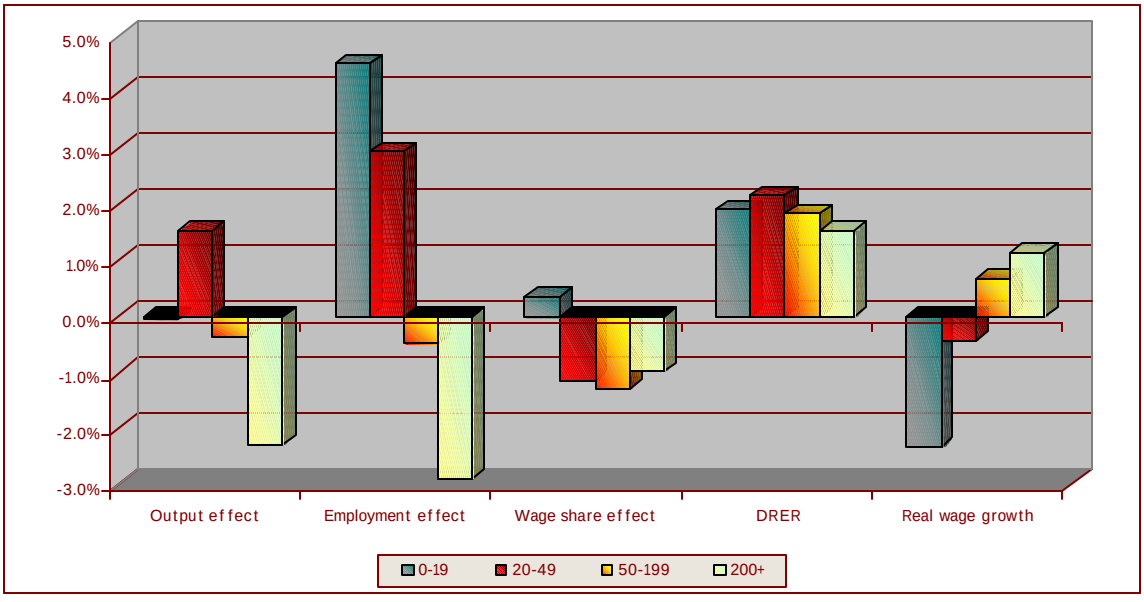
wages rate (see table above). A sudden change in labour market regime required SMEs to adjust more rapidly than larger firms to new formal sector wage determination rules. Therefore, there was more of a catch-up effect for SMEs compared with large firms.[2] The relative importance of each variable in the decomposition exercise is graphed in Figures 1, 2 and 3 for the three periods.

Figure 1: Results of the decomposition technique for manufacturing as a whole (unweighted average annual growth rates 1972-1988)



Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

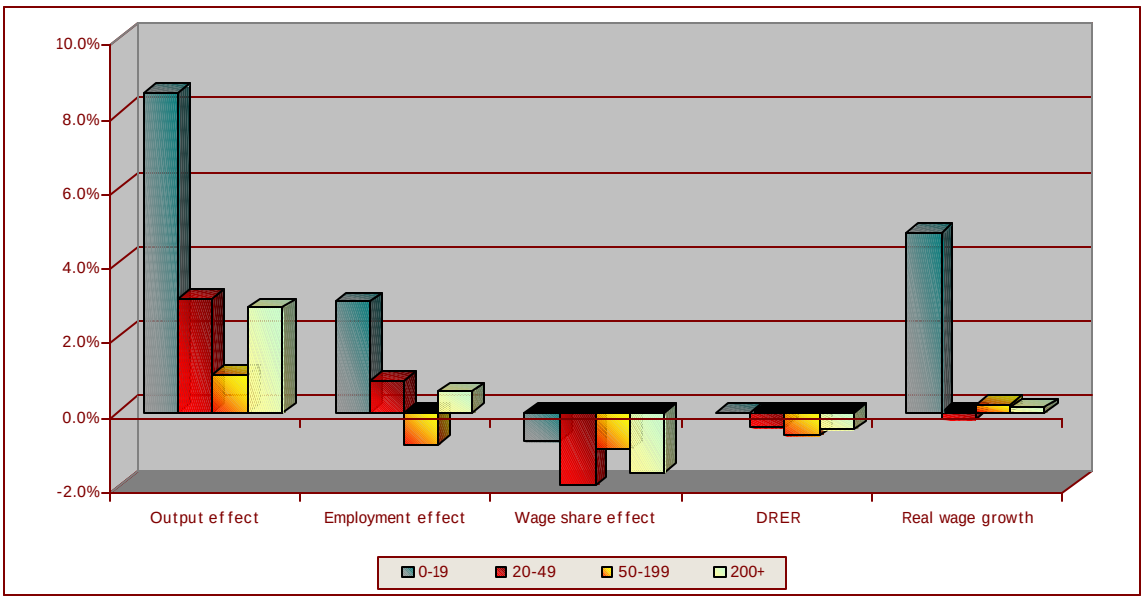
Figure 2: Results of the decomposition technique for manufacturing as a whole (unweighted average annual growth rates 1988-1993)



[2] Haroon Bhorat is gratefully acknowledged for making this suggestion.

Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

Figure 3: Results of the decomposition technique for manufacturing as a whole (unweighted average annual growth rates 1993-1996)



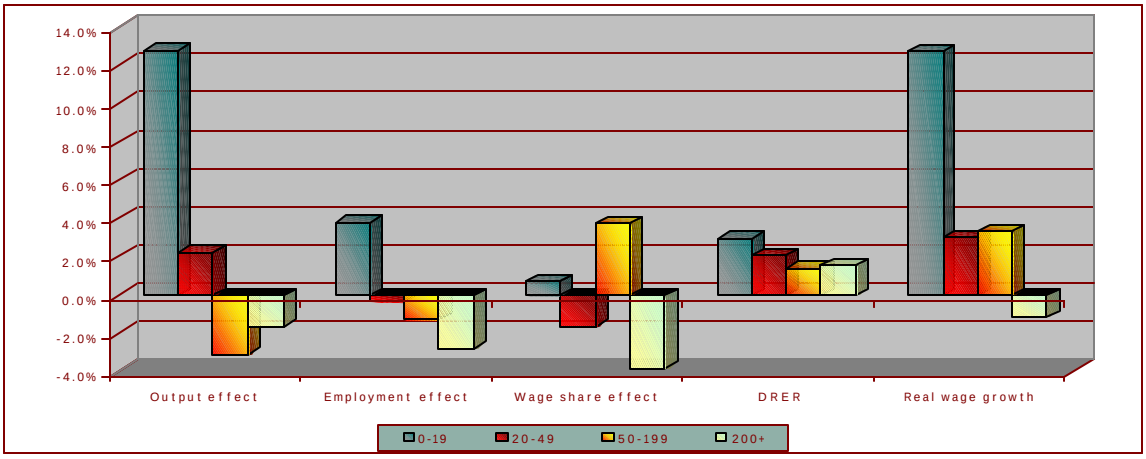
Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

Section 5: Industry Differences

It can be seen from Table 2 that the SME sector is fairly well distributed among the 2-digit industry groups in South Africa. Nevertheless, it is useful to see if the trends noticed in the 1993-1996 period – with the reversal in the wage-employment trade-off for the small enterprises – is observed at the disaggregated industry level.

Figure 4 depicts the results of the decomposition exercise for the food processing industry. The difference between the small and large sectors has the same general pattern as for all industry, but is quantitatively more pronounced. Output growth is highest for the small enterprises, and it is also interesting to see that the medium enterprises now join the small ones in having a larger output growth. The price effect also adds to the growth rate of the wage bill available to support employment and wage growth. For both the small and medium firms, the trade-off tilts toward wage growth – quite spectacularly for the small size group.

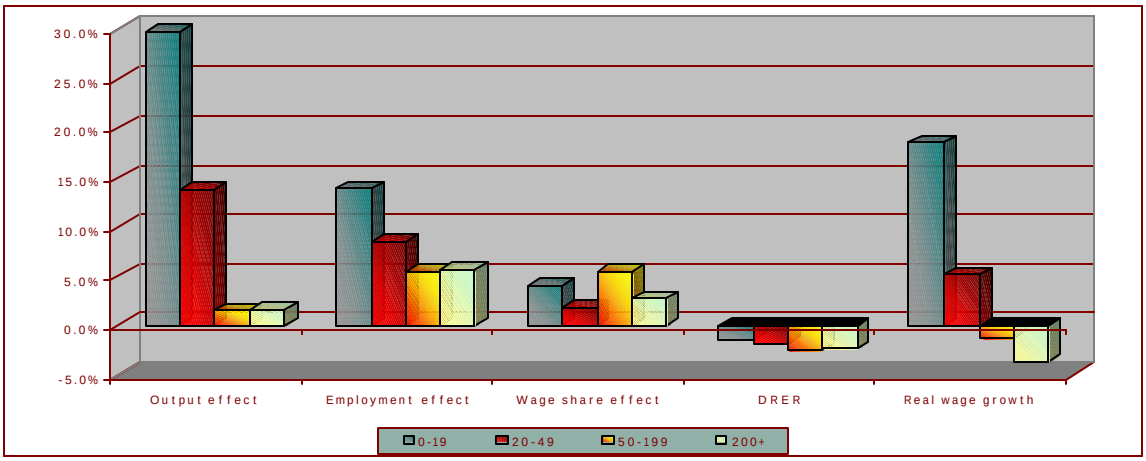
Figure 4: Results of the decomposition technique for the food processing industry (unweighted average annual growth rates 1993-1996)



Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

The beverage and tobacco industry is ignored here as it covers only a limited number of establishments. The textile and clothing industry should give us more robust results. They are shown in the next figure. Again, for the 1993-1996 period, the same pattern emerges, with small firms showing higher output growth. The DRER effect in this case accounts for some leakage from the available cake to be shared between employment and wage growth, but the impact is more than offset by the positive wage share effect (showing that the wage share increased for all size classes). The small size group (but to a lesser degree the medium scale group) join the larger size classes in having a larger part of the cake in the form of wage growth.

Figure 5: Results of the decomposition technique for the textiles and clothing industry (unweighted average annual growth rates 1993-1996)

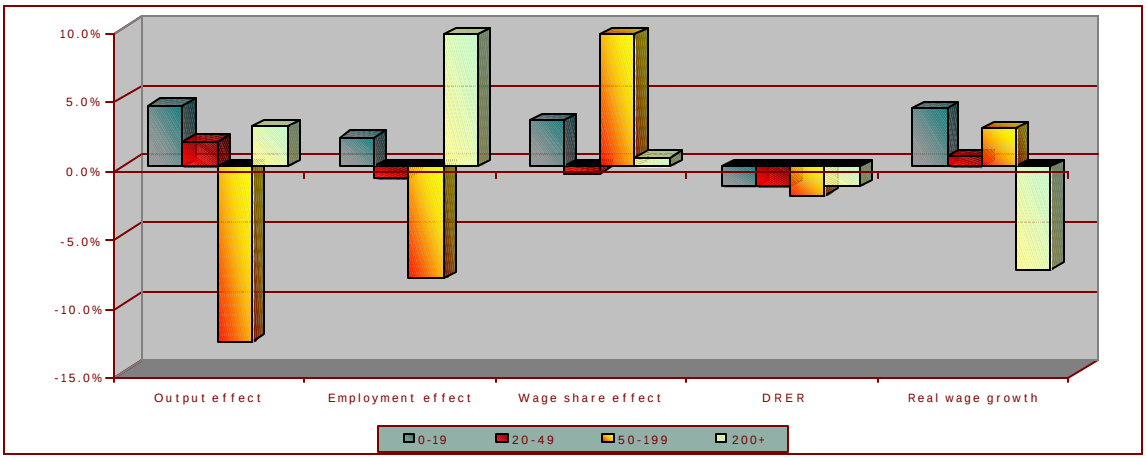


Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

The leather and footwear industry does not contain sufficient numbers of establishments to warrant further discussion. However, the wood and furniture industry has close to 3000 establishments and therefore offers a reasonable sample. It can be seen in the next figure that in

this industry, the patterns of real wage growth and its components are less clear. The picture is, however, somewhat distorted by the large (50-200 employees) firms having negative output growth, while all other size groups had a positive output effect. From an inspection of the figure, it is clear that the trade-off was in favour of wage rather than employment growth in all size groups except the smallest and the largest.

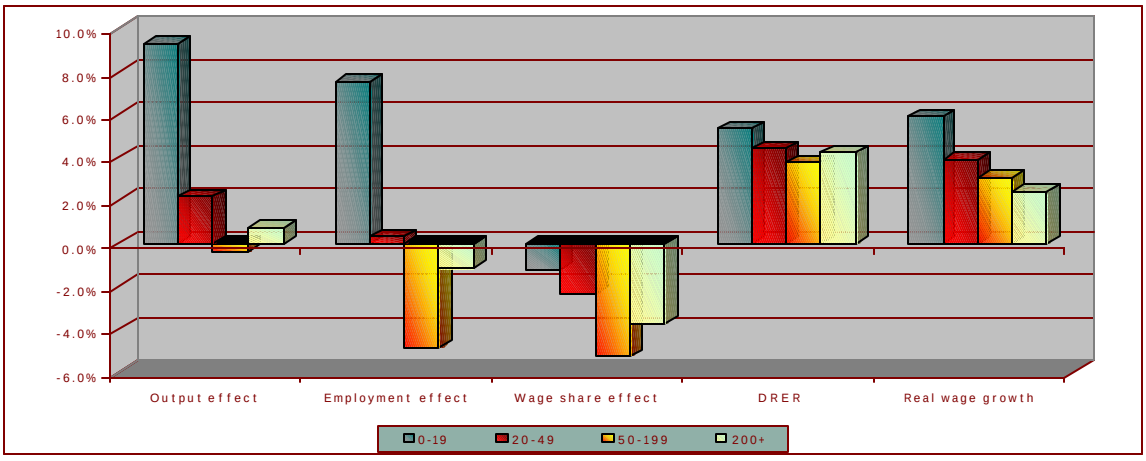
Figure 6: Results of the decomposition technique for the wood and furniture industry (unweighted average annual growth rates 1993-1996)



Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

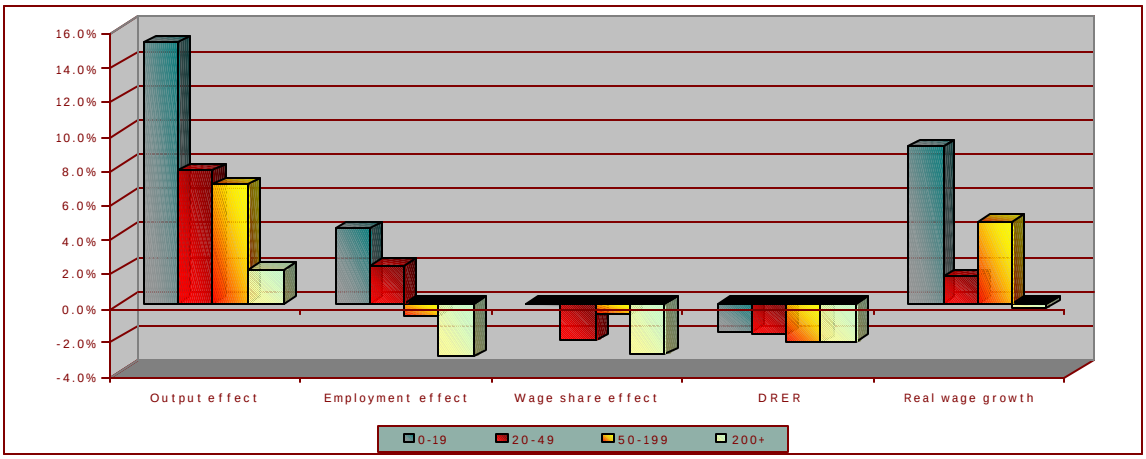
The pattern for the paper and pulp and the chemicals, rubber and plastic industries are qualitatively similar for industry as a whole, although there are differences in detail. Output growth is strongest in the smallest and medium size groups of firms. The DRER effect helps the growing cake in the paper and pulp industries, but is negative in the chemicals group of industries. The trade-off favouring wage growth in the small firms is more pronounced in the paper industry.

Figure 7: Results of the decomposition technique for the paper and pulp industry (unweighted average annual growth rates 1993-1996)



Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

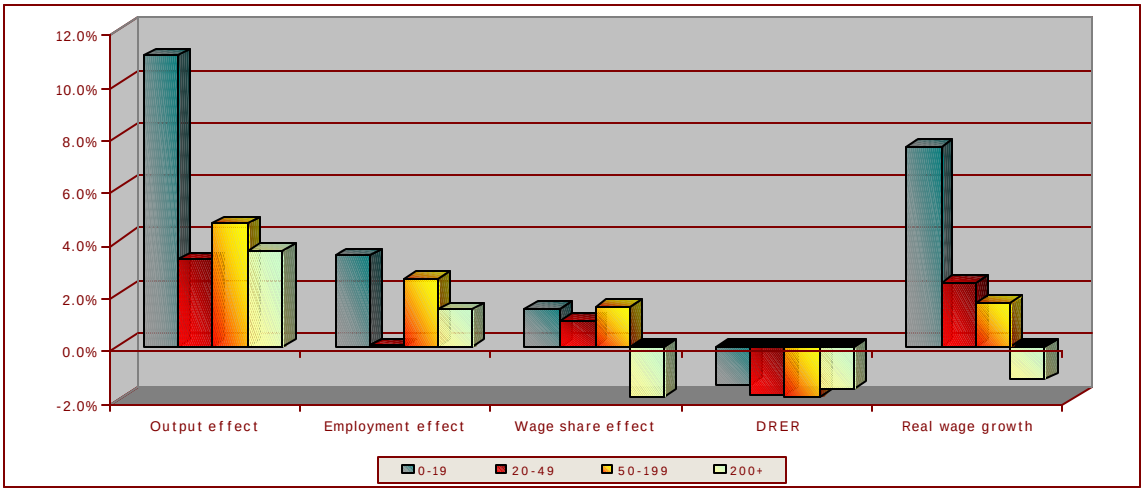
Figure 8: Results of the decomposition technique for the chemicals, rubber and plastic industry (unweighted average annual growth rates 1993-1996)



Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

The non-metallic minerals (bricks, pottery, glass, etc) and metals and metal products show inconclusive results for the period 1993-1996 on the basis of a limited number of observations. However, the largest industry in terms of number of establishments is the machinery industry. Although this industry is broadly defined, the results are perhaps more reliable. They show the familiar pattern of relatively high real wage growth for small firms. Again, this is driven by output growth, while offering modest employment gains in the face of adverse domestic real exchange rate developments. The other positive contributor to real wage growth in this industry, at least over the 1993-1996 period, is the wage share effect, which allowed labour to benefit from increasing producer prices due to a higher share in value added.

Figure 9: Results of the decomposition technique for the machinery industry (unweighted average annual growth rates 1993-1996)



Source: Ntsika (1999, Table 4.2) and own calculations, note: s=0-19, m=20-49, l=50-1999, xl=200+

Section 6: International Comparisons

The type of analysis by size class of firms has not been done systematically for many other countries. Mazumdar and Sarkar (2002) have undertaken a similar exercise for the post-liberalisation period in Indian manufacturing, though the size groups differ somewhat from those defined for South Africa. Some readers might nevertheless be interested in the broad orders of comparison between the two countries; both countries in the post-liberalisation phase are trying to promote dynamic industrial programmes that are less dependent on restrictive import-substituting strategies. The results for India for the 1984-1994 period are reproduced in the next table.

Table 7: Decomposition results by size-classes of factories in India 1984-1985 to 1994-1995 (average annual growth rates)

	1	2	3	4	5	6	7	8
Size Groups (# of workers)	Real wage growth	Real value added growth	Employ-ment growth	Producer price increase	Consumer price increase	Constant wage share parameter	Price Effect	Output Effect
	$\hat{w}$	$\hat{v}$ v	$\hat{L}$	$\hat{P_p}$	$\hat{P_c}$	a	$a\hat{v}$	$a\hat{P_p} - \hat{P_c}$
10-49	3.179	8.893	2.534	8.777	9.348	0.850	-1.888	7.599
50-199	2.905	11.467	6.637	8.777	9.294	0.840	-1.921	9.632
200-499	2.337	11.553	3.493	8.777	9.303	0.750	-2.720	8.665
500-999	1.344	10.943	2.967	8.243	9.295	0.710	-3.442	7.770
1000 & above	1.883	5.027	-1.554	8.318	9.295	0.710	-3.389	3.569

Source: Mazumdar and Sarkar (2002)

The major point of similarity between the Indian experience and that of South Africa in the 1993-1996 period is that in both countries, output growth was stronger in the small-medium size groups. In the Indian case, however, the smaller firms increased at the expense of enterprises employing more than 1000 workers. Also, in the Indian case, the fastest output growth took place in the medium size group (200-499), while in South Africa, the growth seems to have been most spectacular in the very small size group. There is significance in the fact that there is a pronounced shift of output to smaller firms in both countries after liberalisation. It reflects the worldwide tendency, noted most prominently in the US, that smaller firms have taken the lead in recent output growth in manufacturing.

Another point of similarity between the Indian and South African experiences is that, contrary to expectations, the trade-off between employment growth and wage growth has tilted to wage growth in the smallest size groups of firms. It has been suggested that in the South African case, this may have been due to institutional policies favouring wage growth among the less well-paid sectors of industry. In India, there is some evidence that the supply price of labour in the unorganised or informal sector has increased in the period under consideration, giving an upward push to wages in the small scale sector, where wages are generally tied to the alternative earnings of labour in the informal sector. However, it is worth mentioning another hypothesis that may be equally applicable to both the Indian and the South African cases. As the small-scale enterprises get going in the manufacturing sector, they may need to upgrade the quality and skills of the

labour force to meet the needs of changing product market. The tilt to higher wages may reflect the superior skills of labour being used in the more dynamic small enterprises as they upgrade their position in the market. (Note that our data on wages are the average earnings of all workers employed in the enterprises). We cannot test this hypothesis because the Indian statistics do not record the measurable skills of workers in terms of education or experience, and while South African statistics do record this information, they do not record wage rates at the skill level.

Section 7: Conclusions

This paper has looked at growth in South Africa's manufacturing sector for different employment size groups of enterprises. We have brought together data at different points of time (1972-1988, 1988-1993 and 1993-1996), which have enabled us to study the differences in growth pattern of four sub-groups: small (1-19); medium (20-49); large (50-299); and very large (200+). Despite the relatively small share of the SME sector in total manufacturing, the growth rate of this sector has been in all three periods very satisfactory in terms of value added and employment. In the 1972-1988 period, the output growth of small enterprises was higher than the larger group of firms, and in the 1988-1993 period, when output growth was negative in manufacturing as a whole, the SME sector registered a small but positive rate of growth. The rate of growth of output in the latest 1993-1996 period has exploded in the small sector, but has also been higher in the medium scale firms relative to that in the larger firms.

As far as employment is concerned, the SME sector has generally performed even better. We studied the way output growth was divided between employment growth and wage growth in terms of a decomposition model that allowed us to take into account the price effect emanating from changes in the terms of trade between producer goods and consumer goods (the DRER effect), and also from changes over time in the share of wages. We concluded that, net of the price effect, the wage-employment trade-off tilted towards employment growth for the SME sector in both earlier periods, 1972-1988 and 1988-1993. However, a change seems to have occurred in the 1993-1996 period, when the trade-off shifted decisively to wage growth in the small-scale sector. This led to a sizable rate of growth of real wages in the smallest size group of firms. However, because of the high output growth, employment growth continued to be significantly positive.

The reasons for the wage increase in the small-scale sector need to be researched further. Our study at the disaggregated industry level showed that the pattern observed for all manufacturing was valid for most somewhat disaggregated industries. It is likely that institutional factors were responsible for the substantial "wage push" in small enterprises. It should be noted that the latest time period for which data have been assembled is a short one. It is important to lengthen the time period by incorporating data for more recent years when they become available.

The policy conclusions that follow from the above observations are rather clearcut. SMEs have made a positive contribution to real wage growth while increasing the demand for labour, although the kind of labour is uncertain. That these potential trade-offs have been achieved has been the result of rather phenomenal output increases. Policy makers, it would seem, should therefore focus on supply-side constraints to SMEs, rather than the labour market. Such

constraints may be the result of lack of demand or capacity, perhaps in the form of sufficient credit.

While our attempt to decompose real wage growth in manufacturing with regard to size class is useful, it should, however, be noted that the data on which the analysis is based can be significantly improved. The most obvious improvement is with regard to industry coverage; in particular, the service industry is characterised by large numbers of small sized enterprises. Furthermore, in order to examine the impact of trade liberalisation, it is important to start exploring more recent data.

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Appendix A: Abbreviations of sectors and size classes

	Industry	Size class	Abreviation		Industry	Size class	Abreviation
1.	Total Manufacturing (3000)	0-19	Totmanf_s	31.	6 Paper and Pulp (3400)	0-19	Pappulp_s
2.		20-49	Totmanf_m	32.		20-49	Pappulp_m
3.		50-199	Totmanf_l	33.		50-199	Pappulp_l
4.		200+	Totmanf_xl	34.		200+	Pappulp_xl
5.		Total	Totmanf_tot	35.		Total	Pappulp_tot
6.	1 Food (3100)	0-19	Food_s	36.	7 Chemicals, rubber and plastic (3500)	0-19	Chemsetc_s
7.		20-49	Food_m	37.		20-49	Chemsetc_m
8.		50-199	Food_l	38.		50-199	Chemsetc_l
9.		200+	Food_xl	39.		200+	Chemsetc_xl
10.		Total	Food_tot	40.		Total	Chemsetc_tot
11.	2 Beverages and Tobacco (3100)	0-19	Bevtob_s	41.	8 Pottery, glass and bricks (3600)	0-19	Nmmins_s
12.		20-49	Bevtob_m	42.		20-49	Nmmins_m
13.		50-199	Bevtob_l	43.		50-199	Nmmins_l
14.		200+	Bevtob_xl	44.		200+	Nmmins_xl
15.		Total	Bevtob_tot	45.		Total	Nmmins_tot
16.	3 Textiles and wearing apparel (3200)	0-19	Textcloth_s	46.	9 Iron and metals (3700)	0-19	Metals_s
17.		20-49	Textcloth_m	47.		20-49	Metals_m
18.		50-199	Textcloth_l	48.		50-199	Metals_l
19.		200+	Textcloth_xl	49.		200+	Metals_xl
20.		Total	Textcloth_tot	50.		Total	Metals_tot
21.	4 Tanneries and laether products (3200)	0-19	Leathfootw_s	51.	10 Machinery	0-19	Machinery_s
22.		20-49	Leathfootw_m	52.		20-49	Machinery_m
23.		50-199	Leathfootw_l	53.		50-199	Machinery_l
24.		200+	Leathfootw_xl	54.		200+	Machinery_xl
25.		Total	Leathfootw_tot	55.		Total	Machinery_tot
26.	5 Wood and furniture (3300)	0-19	Woodfurn_s	56.	11 Other manufacturing (3900)	0-19	Othmanf_s
27.		20-49	Woodfurn_m	57.		20-49	Othmanf_m
28.		50-199	Woodfurn_l	58.		50-199	Othmanf_l
29.		200+	Woodfurn_xl	59.		200+	Othmanf_xl
30.		Total	Woodfurn_tot	60.		Total	Othmanf_tot