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Employment, Wages & Skills Development: Firm-Specific Effects

Evidence from Two Firm Surveys in South Africa

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Draft

Introduction

Studies on the South African labour market have almost exclusively focused on the factors determining and shaping the current and future supply of labour in the country. This has, in the main, been driven by the availability of national data sets that have been limited essentially to household surveys produced by Statistics South Africa. This has of course resulted in an extremely rich flow of useful and interesting results on the determinants of participation, employment and earnings in the South African labour market. However, the more integrated model of the labour market, would of course also need to examine the contribution of intra- and inter-firm dynamics in shaping the domestic labour market. Until the very recent release of two firm surveys for the country, scant else was available to undertake such research. The purpose of this paper therefore is firstly to expose the reader to the labour market information embedded in the two surveys. Secondly, and perhaps more importantly, we will attempt to concentrate on those labour market issues that shed more light on firm-level skills development, skills acquisition and labour demand factors that are dictated by human capital attributes. In essence, the paper will try and assess the contribution of firm-specific effects in shaping employment and earnings, together with providing a more coherent grasp of firms' activities and perceptions in relation to the recruitment, development and shortage of skilled personnel in their respective organisations.

The Data Sets

The two firm surveys that we will utilise for this study are the World Bank's Large Firm Survey for the Greater Johannesburg Metropolitan Area (WBLMS) and the National Enterprise Survey (NES), which was a national government managed survey, specifically through Office of the President. The intention is to draw on the results of the two surveys, as they pertain to skills issues in particular and labour market issues in general. While comparisons of the results from the two datasets will be made where possible, we will treat the analysis and overview of the data sets as discrete segments of this paper.

The WBLMS was conducted under the joint auspices of the City of Greater Johannesburg and the World Bank. The survey firm contracted to undertake the task was the Bureau for Market Research (BMR). The survey went into the field in 1999 and ultimately 325 firms within the manufacturing sector in the Greater Johannesburg area were surveyed. The sampling design ensured that eight manufacturing sub-sectors were represented. The survey was then further stratified by employment size, namely small (50-99 workers), medium (100-199 workers) and large (200+) employers. Stratification by employment size within the different sub-sectors was accordingly proportion to size. Finally, within these multi-

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strata, simple random sampling was performed. Tangibly, the survey team started from a national census of manufacturing firms broken down by sub-sector and size class of 6174 firms. This was then used to create a sample frame of 2346 such firms within the Greater Johannesburg area. On the basis of the latter number then, the firms actually approached was 369, with 325 full responses obtained.

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While the results from both surveys will be presented here, there are significant differences in the representivity and coverage of the two data sets, which would make a direct comparison of the results from the two data sets difficult. For example, there is no question around wages in the NES, ensuring that any of the results on the role of firm size on wages gleaned from the WBLMS, would be impossible to compare with. More generally, the NES covers large firms in both the manufacturing and services sectors. Hence, while details in the two questionnaires may be similar, for example, on training expenditure, they each pertain to a different sample of firms. Finally the geographic differences in the survey, the one being national and the other very localised, further constrain the direct comparisons that can be made. While mindful of these obstacles, we will endeavour to draw oblique cross-references to each of the surveys, where possible and suitable.

The first part of this paper concentrates on the results obtained from the WBLMS. An attempt is made to sketch some of the key labour market results from the survey, focusing disproportionately on training and skills development issues. Hence, the first set of results are concerned with wage and employment trends in the data set, with attention placed, toward the end of this discussion, on how the size of the firm – one of the key variables isolated in international country studies – impacts on the wages of different skills groupings. The second component of the WBLMS results examine the various issues around training and skills development. We analyse in particular, firms' expenditure on in-house and external training and furthermore how this varies by firm size. Firms' shortages for skilled workers are presented and, as with the previous section, the discussion concludes with a detailed econometric estimation of how training may impact on the production levels of a firm.

Wages and Employment

Table 1 below confirms the above overview of the WBLMS data set, namely that 325 manufacturing firms were sampled. In addition though, the eight sub-sectors that were identified are made clear, with the three largest share of firms being involved in the production of metal production, electrical and electronic machinery and iron & steel.

Table 1: Number of Firms in Sample, By Manufacturing Sub-Sector

Sector	No. of Firms	% Share
Chem. Products	48	14.77
Elec. Machinery	56	17.23
Food prss.& bev.	26	8.00
Iron & steel	56	17.23

Metal products	57	17.54
Paper & fur.	34	10.46
Textile	14	4.31
Vehicle&auto comp.	34	10.46
Total	325	100

The smallest number of firms, not surprisingly given that it is the Greater Johannesburg region being covered, are textiles and food processing & beverages. One important fact to be remembered on the basis of the above data, is that the total number of firms remains small. As a consequence therefore, one needs to be cautious about undertaking detailed sectoral profiles, given that the sample size diminishes even further. Hence, for example, a detailed sub-sectoral overview of the paper and furniture industry will not be valid with this data base. In this case only 34 firms of a possible 967 such firms nationally are represented in the sample. In addition, the small sample size often leads, in certain instances, to a far reduced number of respondents when specific questions are asked. For example, in the questions around sales volumes and mean wages by occupation, we found that on average only about half of the firms responded to these questions. Thus, while the survey has been carefully set up, together with a well designed questionnaire, the small sample size does have its drawbacks.

One of the key issues and indicator variables of how the internal labour market of a firm operates, is the size of the firm. This has been established in the international literature and continues to be a subject for analyses and debate (Oi, 1999). Studies of developed country firms have found for example, that the size of the firm explains about 35% of the wage differential between workers of the same skill level and occupation. This compares with a gender gap of about 36% for men over women and a racial differential of 14% for white over black employees (Oi,1999). Indeed numerous studies of the US and other labour markets have consistently shown that when controlling for a range of individual and firm characteristics, ranging from education levels of workers to capacity unionisation rates, the size of the firm is a significant contributor to higher wages in the economy (Dickens & Katz,19??). It is with this background in mind, that we turn to Table 2, which provides an overview of the distribution of firms by firm size.

Table 2: Number of Firms by Employment Size

Firm size	No. of firms	% share
50 – 99 workers	145	44.62
100 – 199 workers	88	27.08
200 + workers	92	28.30
Total	325	100

The three size categories utilised in the data set are imposed on the user by the coding system, but do provide an acceptable nomenclature for firm size. In addition, note that small manufacturing firms, those with between 50 and 99 workers, dominate the sample. While the numbers do constrain the ability to rigorously estimate the contribution of size to mean wages and other variables, the data below will illustrate that some useful results can be obtained.

The first key labour market snapshot that is provided is the distribution of employment by race and occupation. It needs to be remembered of course that this distribution is reflective of manufacturing industries in the Greater Johannesburg area only. Nevertheless the distribution in many instances mimics the national distribution of employment by occupation. The table provides and overview of the distribution of employment within each occupation, by race and gender. Hence, for example, of all the craft workers in the sample, 6.32% are African females. Looking at managers in the sample of manufacturing workers, firms collectively reported that about 67% of all their managers were White males. The second largest cohort represented amongst managers, was White females. African males are then ranked third, as 10.13% of all managers are African males. This is a result that seems at odds with the national data. For example, according to the 1999 October Household Survey (OHS99), African managers in manufacturing constituted close to 30% of all managers in the sector. This contrast in this result and the national data is magnified with distributions for professional workers. In this instance, Africans constitute about 19% of all professional workers, whereas the national sample reflects an African share of about 37% in manufacturing.

There would seem to be two possible reasons for this apparent under-representation of African workers in the upper echelons of the occupational ladder. Firstly, the survey is extremely constrictive in size terms and in terms of number of firms actually interviewed. Hence we may not be getting as representative a picture of occupation-race data with such a small sample. Secondly, the differences arise from the different data sources: one is an employer survey and the other a household survey. Whether employers or employees are better in explaining occupations is difficult to determine. Finally, we do not isolate the GJA in the national sample, and so the comparison is not as direct as it could be. Note though that even though when the sample was restricted to the Gauteng province, discrepancies in the share values do arise. The table ultimately points to the importance of being cautious with drawing too literally from the survey, particularly when other more representative data sources are available.

Table 3: Share of Employment in Individual Occupations, By Race and Gender

Race	African		Coloured		Asian		White		Total
Occupation	Male	Female	Male	Female	Male	Female	Male	Female	
Managers	10.13	1.33	3.79	1.04	4.43	0.78	66.68	11.84	100
Profs& Tech	16.31	2.35	4.57	1.01	5.55	0.98	55.84	13.38	100
Clerks	19.16	7.30	3.62	3.92	5.94	3.20	17.81	39.06	100
Sales&ser	25.59	3.68	3.38	1.89	3.24	1.11	39.74	21.37	100
Craft	35.26	6.32	12.24	2.55	3.14	0.22	38.83	1.44	100
Operators	70.16	11.33	6.34	3.52	2.28	0.19	5.28	0.90	100
Labourers	74.49	18.34	2.18	1.90	1.27	0.22	1.33	0.27	100

Notwithstanding the above difficulties, the dominance of the race-occupation structure is striking. Hence, for all occupations from Managers through to sales and service workers, White male and female workers remain over-represented. White workers account for about 79% of all managers in manufacturing in the GJA, and 61% of all service and sales staff in the region. It is only within the bottom three occupations, that the distribution of racial employment begins to alter. With regard to craft workers there remains a fairly

equal distribution between White and African workers, with the former accounting for 40% and the latter about 42% of all craft workers. However, in the case of operators, over 80% are African, while only about 6% are White. Labourers in the manufacturing sub-sectors of the GJA are overwhelmingly African, as less than 8% of these unskilled workers are non-African. This skewed racial distribution at the bottom-end serves to reinforce the fact that despite the fairly positive results for African workers at the top-end, they remain wholly over-represented as unskilled workers in the manufacturing industries of the GJA.

One of the advantages of this WBLMS, and one that isn't present in the NES, is that an attempt was made to collect past employment data, if only as a double-check on the available national household survey databases. Unfortunately, as the table below suggests, the data probably yielded inexact estimates of employment shifts over time. The questionnaire asked firms to provide the employment levels in their respective firms for the period 1994 to 1998. The table below reproduces these figures for the first and the last year in the sample, according to the three size classes. It is immediately evident that, should the figures be believed, employment in the manufacturing the GJA has risen by some 71% over the four years. Even under the most optimistic estimates this seems improbable. As a comparison, national employment figures for manufacturing between 1995 and 1999, reveal that employment increased by about 7% (Bhorat,2001).

Table 4: Change in Full-Time Employment by Size Category, 1994-98

Size category	Employment, 1994		Employment, 1998	
Variable	Number	Share	Number	Share
50-99	7391	16.01	9645	12.22
100-199	6912	14.97	12606	15.97
200 +	31862	69.02	56684	71.81
Total	46165	100.00	78935	100.00

What may be more interesting from the data, and we present in the table above, is the *distribution* of employment by size class. Hence, the data shows that the share of employment of small firms in fact declined from 16% to about 12% over the period. In contrast the share of employment of medium and large manufacturing firms in the GJA in fact increased marginally over the same period. While the underlying figures are indeed suspect, this data may contain very useful firm-specific information about national employment trends. It may be possible therefore that medium and large firms are growing in importance in terms of their share of aggregate employment, while smaller firms – despite much national industrial policy focus – are in fact displaying a declining relative employment contribution. While the evidence is at best tentative, it is this type of labour market information on the nuances of labour demand trends at the firm level, that can only be answered with firm-level, as opposed to individual- or household-level data.

As an extension to the above data, and one again that may be less true in terms of absolute numbers, is the incidence of part-time employment in manufacturing in the GJA. Table 5 below attempts to describe the growth in part-time employment by the three firm size classes. The first important point about the data below is that we in fact, unlike the full-time employment above, do not have nationally representative time-series data on part-time employment. The household surveys first start measuring part-time employment in 1999

(?), and hence the statistics below are difficult to verify. What is clear though is that the trend towards part-time employment has increased over the 1994-1998 period – a result that would be hard to dispute given the knowledge of South African and indeed global labour markets.

Table 5: Change in Part-Time Employment by Size Category, 1994-98

Size Category	1994	1998	% change
50-99	75	376	401.33
100-199	129	546	323.26
200 +	656	3028	361.59
Total	860	3950	359.30

What is also interesting if the figures are to be believed, is that part-time employment varies by size class. More particularly, small firms have shown the fastest increase in part-time employment growth relative to medium and large firms. This has of course been off a much smaller base. By all accounts however, the shift to part-time employment across all size classes has been both significant and rapid. If anything, it reflects on the ability of these manufacturing firms in GJA, to change their methods of hiring and utilising labour in a fairly efficient and effective manner. The presence of labour legislation must arise as a significant factor. It would have been illuminating, although beyond the scope of this paper, to try and correlate the move to part-time employment with firms' views of the relevant pieces of labour legislation such as the Labour Relations Act.

Firm-Effects and Wage Determination

Having provided a very brief overview of employment distribution and employment trends in the data set, it may be useful to try and ascertain the responses firms provided to some of the wage-related questions in the survey. Table 6 below is an attempt at providing the first basic snapshot of wage levels in the manufacturing industry of Greater Johannesburg. In turn, it also attempts to provide initial evidence on why size does matter in determining intra-occupational wages. Firstly though, the mean wages by occupation within each size class suggest minor, yet important differences. Hence, we take the ratio of the highest (managers) and lowest (labourers) mean earners within each size category. In this case we find that managers in small and medium firms earn 6.2 times more than labourers. In large firms however, the differential is 6.25 – indicating undoubtedly that a wage-size premium is in effect.

Table 6: Mean Wages By Occupation and Size Category

Occupation/ Firm size	50 - 99	100 – 199	200 +	Ratio[a]
Managers	10747	10747	13000	1.21
Profs& Tech	8667	8667	10400	1.20
Clerks	4333	5027	4853	0.97
Sales & Service	6413	6413	6587	1.03
Craft	5200	5200	6067	1.17
Operators	2600	3293	3207	0.97
Labourers	1733	1733	2080	1.20

Ratio[b]	*6.20*	*6.20*	*6.25*	n.a.
Total	5931	6557	6670	1.12

[a]: Refers to ratio of $Wage_{200+}/Wage_{50-99}$

[b]: Refers to ratio of manager's wage to Labourer's wage by size class.

The more optimal descriptive manner in which to determine this wage-size effect though, is to examine the ratios of the mean wages of individuals in the same occupations – but divided according to the size of the firm. Admittedly, we do not have more detailed occupational breakdowns, and this may bias the mean estimates. Indeed, we do not even have actual wages of individuals in the sample, and simply the average across an entire firm for the occupation. Nevertheless, the fact that we are examining one sector within a confined geographical area serve as at least two control variables in the estimates, so ensuring some level of robustness to the results. The last column of the table presents the ratio of the mean wage in the large firm relative to the small firm by occupation. What is clear is that in 6 of the eight occupations listed above, large firms are on average paying more than small firms. For managers and professionals, the premium for being in a large firm stands at about 20%. Put differently, simply by virtue of being in a large firm, managers and professionals are likely to earn 20% more than if they were employed by a medium or small manufacturing firm. Interestingly though, in two occupations – clerks and operators – there is a minor premium to being in a small relative to a large enterprise. Note that even for unskilled workers, namely labourers, working in a large firm offers a wage premium of 20%. Finally, note that in the aggregate, a worker can expect to earn about 12% more if she finds employment with a large as opposed to small manufacturing firm in the GJA.

There are numerous arguments for why larger firms tend to pay higher wages for ostensibly the same worker. One of the key reasons though, revolves around the efficiency wage hypothesis. Efficiency wage models suggest that firms will be willing to pay higher wages to workers in return for increased effort, reduced shirking, lower monitoring costs, a higher quality labour force and so on. The implication of this is that controlling for firm and sector characteristics, different firms may (depending partly on their ability to) pay higher wages for workers with identical labour supply characteristics. On the basis of the efficiency wage theory therefore, it has been postulated that larger firms have a tendency to pay higher wages for the same work, relative to smaller firms (Dickens & Katz,19??). In addition, others have argued that greater discretionary power provided to managers and employers will result in them paying higher wages on the basis of rewarding workers. Others still have argued that in larger firms which have considerable market power in an industry, workers will participate in the excess profits earned by the firm, via higher mean wages relative to smaller competitors (Oi,1999). What is important here though is that we do have provisional evidence for South Africa, that a wage-firm size gap exists. While we cannot control for the impact of individual characteristics (age, education level, race and gender) on these wages, it is clear that the size of the firm must enter in as a relevant determinant of the earnings of workers in the South African labour market.

To close off this descriptive discussion of wage data in the firm survey, it may be illuminating to present data on the non-wage relative to wage costs that firms bear. This is extremely interesting data, once again because individual-level databases, such as household surveys often cannot or do not try and disentangle the pure wage from the non-wage costs

that employers have to bear in their overall factor costs. In many instances policy decisions, such as for example, the recent investigation into minimum wages for domestic and farm workers, hinge on the contribution of non-wage costs to overall labour costs of employers. We have therefore, in Table 6, preliminary yet crucial evidence on the value of these costs to pure wage costs.

Table 6: The Mean and Median Ratio of Non-Wage to Wage Costs (expressed as a Percentage)

Size Category	Mean	Median
50-99	24.24	20.88
100-199	26.34	20.32
200 +	21.53	25.92
Total	25.51	20.66

It is evident firstly that whether we examine the mean or the median ratios, non-wage costs relative to wage costs do not exceed about 26%. In most cases, the median ratio is lower than the mean. Larger firms tend to be better able to keep down their non-wage costs, as these constitute on average about 22% of wage costs, whereas they are about 24% in small firms and 26% in medium-size enterprises. The outliers in the sample for small firms though, may be raising this average and here the median is a more distribution-sensitive reflection of non-wage cost trends. Here, in keeping with the wage-size differentials noted above, the median non-wage to wage costs for small enterprises is about 5 percentage points below that of large firms. But perhaps the more important result to emanate from this table is that we have now – admittedly for a confined sample though – robust empirical evidence of the contribution of non-wage costs to wage costs in the domestic economy.

In trying to derive a more nuanced analysis of the impact of firm size on wages for this sample, we ran a very simple, yet quite powerful regression equation. The equations, the results of which are provided in Table 7 below, measure the impact of firm size, proxied by the volume of sales per firm, on the mean wage prevailing in each firm for the seven respective occupations. Put differently, the equations try and determine whether firm size is a significant determinant of the mean wages paid to different occupations in the manufacturing sector of the GJA. At the outset, it should be noted that the specification of the equation is riddled with problems. We should, ideally, be inserting individual characteristics variables such as education levels of workers, their age, gender and race, in order to better isolate the impact of firm-level variable such as size of the firm. In addition, another obvious candidate for the equations would be the level of unionisation within each firm. However, for both the individual characteristics and the union variable no such data was present in the survey, and we were thus forced to proceed with the very tight specification provided below. At any rate, as the table below testifies, the results are fairly powerful.

Table 7: Regression of Determinants of Size on Wages by Occupation[a]

Variable/Occupation	Managers	Profs& Tech	Clerks	Sales&ser	Craft	Operators	Labourers	Total
Sales	0.089*	0.076*	0.090*	0.066***	0.096*	0.094*	0.031	0.065**
Constant	7.74*	7.78*	6.86*	7.58*	6.84*	6.32*	7.05*	7.59
F-Statistic	7.91	6.76	13.51	3.78	11.51	13.39	1.84	6.20
N	170	152	174	147	163	174	186	94

[a]: The equation that was estimated was the log of $W_{ij} = S_j^{\zeta}$, where Wij represents the average wage of occupation *i* in firm *j* and S*j* is the annual sales of firm *j*.

*: Significant at the 1% level

**: Significant at the 5% level

***: Significant at the 10% level

Firstly, all the equations, with the exception of that for Labourers, yield significant (at the 1% or 10% level) for the size variable. In other words, for all bar one of the occupations, the size of the firm is significant and positive determinant of their mean earnings. For example, in the case of managers, a 10% increase in the size of the firm, will lead to a 0.8% increase in their mean earnings. In the case of professionals, this mean wage- firm size elasticity is slightly lower at 0.76%. The lowest wage response to firm size is found amongst sales and service staff, where a 10% increase in the size of the firm results in a 0.66% rise in their mean wages. The occupation most responsive to size change is craft workers, where a 10% change in firm size would result in close to a 1% alteration in the mean wage. The aggregate result, represented in the total column in the table, suggests that for manufacturing in the GJA as a whole, the wage-firm size elasticity is 0.065. The fascinating aspect of this result is that a study of US firms using the same specification as above yielded an elasticity across all skill levels, according to the hourly wage rate, of 0.06 (Doms *et al*,1997). In other words, we can be fairly confident that the wage-firm size relationship we are deriving here is in keeping with results found elsewhere on the importance of firm size to wage determination within the firm. Despite the concerns about the size of the sample and its geographical and sectoral focus, the above results do provide strong initial evidence for the relevance and significance of firm size in determining the mean earnings of different skills groupings.

Training and Skills Development

Extending on our above labour market discussion, we turn now to a more detailed assessment of the various and training and skills development issues that arose within the survey. We turn firstly to the differing skills intensities by sub-sector and size class within the survey. Then a more detailed analysis of training expenditure patterns, focusing on both internal and external training, is provided. We then assess three responses in the questionnaire to skills-specific issues, before proceeding to a more nuanced and technical assessment of the importance of training to firms' output levels.

Table 8 below presents estimates of the skills intensity of the different sub-sectors within the sample. We measure this in two ways: firstly simply by the number of managerial, professional and technical staff in the sub-sector. And secondly, the ratio of the latter number to all employees within the respective sub-sector, provides us with the skills coefficient measure. It is clear that the sectors with the largest quantum of skilled workers

are Chemical Products, Electrical Machinery and Food processing & beverages. The lowest skilled worker need was found, not surprisingly, in the textiles industry.

Table 8: Measurement of Skills Intensity By Sector

Sector	Employment	No. of Skilled Employees[a]	Skills Co-efficient[b]
Chem. Products	8345	1181	14.15
Elec. Machinery	10450	1345	12.87
Food prss.& bev.	17165	1517	8.84
Iron & steel	11067	1115	10.07
Metal products	8080	869	10.75
Paper & fur.	6657	684	10.27
Textile	2948	123	4.17
Vehicle&auto comp.	6173	766	12.41
Total	70885	7600	10.72

[a]: Skilled employees are defined as Managerial, professional and technical staff.

[b]: Calculated as the ratio of the second to the first column, and expressed as a percentage.

The importance of the skills coefficient though is of course that it provides for a more accurate value of skills intensity, in that it measures *relative* shares of skilled workers. Hence, in terns of the coefficients, the most skills-intensive sub-sector is Chemical Products, followed by Electrical Machinery and Vehicle and automotive components. Once again though, the textile industry reflects the lowest skills intensity of just over 4%. Interestingly, the national estimate of skills intensity, based on the OHS99 for the economy as a whole was 21.91%, while that for manufacturing only stood at 16.91%. In addition, the OHS99 estimate for manufacturing skills intensity in the Gauteng province, stood at 20.03%. Hence, irrespective of which cut we take on the national data sets, we still find that the estimates of skills intensity exceed those of the WBLMS data set. Once again though, it may be the case that the small sample size of the WBLMS does bias the results. It remains unclear though whether, as argued above, employers are better informed on job descriptions of workers than the individuals themselves.

Training Incidence and Expenditure

Of the 328 firms in the sample, 182 answered the question on how much they had spent in the last year on in-house training. Of the 182, 29 firms, representing about 16% of this sample, answered that they spent nothing on in-house training. With regard to outside training, a larger number of firms, 212, answered this question. However a larger portion of these firms, numbering 57 firms and so constituting about 27% of this sample, indicated that nothing was spent in the last year on outside training. Hence, as a starting point it is useful to note that for this sub-sample of firms, a fairly significant portion indicated that no resources were dedicated to internal or outside training. In addition though, a larger proportion of firms seem to be dissuaded from investments in external training opportunities for their employees. The figures however are illuminating when derived

according to the size of the firm. The table below therefore presents the percentage of firms that are *not* investing in either in-house or external training by size class.

The aggregate figures on those firms not spending on either internal or external training provided above are thus more succinctly presented in Table 9 below. The first important fact about the table is that the percentage of firms not investing in outside training always exceeds those not spending on in-house training. This is to be expected, as the resources, time and costs attached to outside training would invariably exceed those of internal training.

Table 9: Percentage of Firms *Not* Investing In In-House And Outside Training[a]

Size Class	In-House Training	Outside Training
50 - 99 workers	21.43	38.75
100 - 199 workers	14.89	16.67
200 + workers	10.77	22.22
Total	15.93	26.89
Malaysia[b]		
101-250	11.2[c]	74.4[d]
250 +	7.6	49.2
Mexico		
101-250	55.3	54.3
250 +	69.6	59.8

[a]: The sample is those firms that answered the question concerning their quantity of expenditure on training.
[b]: Drawn from Tan & Batra,1995.
[c]: Percentage of firms not investing in informal training programmes
[d]: Percentage of firms not investing in external training programmes

It would seem though, that once again the size of the firm is important in determining whether it invests in either form of training. Specifically, the table illustrates that smaller firms are more likely than medium or large firms not to invest in in-house training. Thus, while about 21% of all small manufacturing firms in the GJA do not invest in internal training, this figure is only 15% for medium size firms, and 11% for large firms. Likewise, for external training, while the absolute figures are all higher, it is evident that small firms are more likely not to access outside train opportunities than medium and large firms. The differential between small and large firms for internal training is about 11 percentage points. In the case of external training, it is 17 percentage points. While a tentative conclusion, these relative suggest that accessing external training is much more of a problem for small firms, than internal training options.

The international comparisons in Table 9 are derived from a World Bank study on training and productivity (Tan & Batra,1995), which studied training patterns in four developing countries. We present here the relevant results from two of these countries, Malaysia and Mexico. The first point about this international data is methodological, namely that the definition of training, particularly in-house training can affect the estimates you derive.

The World Bank study referred to *informal* internal training and *formal* internal training and tried to estimate what percentage of firms in fact has in place specific and well planned internal programmes as opposed to more *ad hoc* arrangements. The WBLMS one suspects, did not account for this subtle difference, and hence the estimates derived would seem to be of both formal and informal internal training. The upshot of the question around informal internal training in Mexico and Malaysia is very different results, with a large share of Mexican firms not investing in informal internal training[2]. The external training figures are thus probably more comparable, and what is clear here is that a much higher share of firms, irrespective of their size class, in both Mexico and Malaysia, are not investing in any form of external training relative to South African manufacturing firms in the GJA.

Moving beyond the incidence of training, we turn to those firms that do train either internally or externally, and try to ascertain the relative values of this training expenditure. Table 10 below therefore provides the first basic cut of this data, as it estimates training expenditure by manufacturing sub-sector in GJA. As is clear, the figures are annual, and both the mean and median numbers are provided. In terms of internal training, the median and means figures suggest that firms in the sample are spending about R50 000 per annum on in-house training, in 1998 Rands. In terms of the sub-sectoral divisions, the median training expenditure figures illustrate that the largest spenders on training were Chemical Products, Food Processing & Beverages – each spending at the median R50 000 per year. The sub-sector, motor vehicles and automotive components follows, spending a median amount of R45 000 annually. The lowest median, and reflective perhaps of its low skills intensity, is the Textiles industry, which lays out about R10 000 for in-house training.

Table 10: Mean and Median Annual Expenditure on In-House and Outside Training, By Sub-Sector

Sector	In-House Training		Outside Training	
	Median	Mean	Median	Mean
Chem. Products	50000	166055	100000	673883
Elec. Machinery	30000	110844	12500	69655
Food prss.& bev.	50000	1237731	100000	472067
Iron & steel	30000	105668	14000	66484
Metal products	25000	67496	25000	71101
Paper & fur.	30000	1374478	5000	19252
Textile	10250	141438	6473	17243
Vehicle&auto comp.	45000	189548	5000	86791
Total	50000	50000	30000	30000

The mean figures do reflect a change in the ranking, although one needs to remember that the mean numbers are not as distribution-insensitive as the median. The presence of outliers in the sample will therefore impact on the results obtained for the mean expenditures. The figures for internal training reveal that Paper and furniture is the largest spender on average on internal training, followed by Food processing and motor vehicles and automotive components.

[2] It has been argued that this result is a function of the different way in which the questions on informal internal training were asked in the two countries. In Malaysia firms simply had to state the nature of the training whereas in Mexico firms had to specify actual numbers trained.

In terms of outside training, and comparing it with the incidence figures, we note that matching the lower incidence of outside training, is the fact that both the median and mean outside training expenditure figures are below those for internal training. Indeed, it seems that for the firms in the sample, for every R1 spent on external training, approximately R1.67 is spent on in-house training. The ranking of outside training expenditure by sub-sector contains the same three sectors, namely Chemical Products, Food processing and beverages and Metal Products. Interestingly, motor vehicles and automotive components yield the lowest median expenditure, which to may to some extent reflect on the difficulty of trying to undertake what is highly firm-specific training externally.

In attempting to analyse training expenditure trends by firm size, Table 11 estimates the mean and median training expenditure per annum by the three size classes. Firstly, the internal-external training results from Table 10 above are not entirely replicated. While firms across all three size classes, spend more on internal training than external training by the median values, at the mean, medium size firms spend more on external than internal training. For small firms, for every Rand spent on external training at the median, R2.76 is spent on in-house training. For medium size firms, the gap is R1.23. However, in the case of large firms the extent of the differential decreases somewhat, as for every R1 on external training, large firms spend R1.42 on internal training.

Table 11: Mean and Median Annual Expenditure on In-House and Outside Training, By Size Class

Firm size	**In-House Training**		**Outside Training**	
	Median	Mean	Median	Mean
50 - 99 workers	11000	26551	3981	16395
100 - 199 workers	40000	184021	32500	290062
200 + workers	142000	749042	100000	236219
Total	50000	50000	30000	30000

In terms of the size classes, it is evident that large firms invariably spend more than small and medium firms on both internal and outside training. In one case, that of medium firms mean expenditure on outside training, the Rand amount is larger than that for the 200+ firms. We can assume that this is an aberration, due to an outlier in the medium firm sample. Specifically, in examining the median data, for every R1 that large firms spend on in-house training, small firms spend 7*c* and medium firms 28*c* on internal training. In the case of outside training, the differential rises to 4*c* for small firms but falls to 33*c* for medium firms. It would seem then that small manufacturing firms in the GJA are highly disadvantaged with regard to outside training, but medium firms surprisingly appear to have the capabilities to invest relatively more in external training.

The problem with the above data is that it does not provide us with relative training expenditure. We cannot ascertain each firm's contribution to training relative to its overall cost structure. Tables 12 and 13 below attempt to calculate firms' annual expenditure on

total training as a percentage of its annual total costs[3]. Table 12 thus calculates annual training expenditure by sub-sector. At the median the best relative investor of training in the sample, is surprisingly, the textiles industry. This result displays the importance of examining relative expenditure patterns of firms, and so what was ostensibly a low training investment sub-sector, in relative terms turns out to be the best performer. Following textiles, food processing & beverages and motor vehicles & automotive components contribute the largest to training relative to their annual total costs.

Table 12: Annual Training Cost as a Percentage of Annual Costs, By Sector

Sector	Median	Mean
Chem. Products	0.42	2.15
Elec. Machinery	0.26	0.35
Food prss.& bev.	0.58	0.09
Iron & steel	0.23	0.51
Metal products	0.25	0.50
Paper & fur.	0.20	0.84
Textile	0.96	0.46
Vehicle&auto comp.	0.57	0.55
Total	0.27	0.73

In terms of the distribution-sensitive mean results, the ranking changes with the largest relative investor being the Chemical Products industry. This is followed by paper & furniture and then motor vehicles and automotive components. What is important to take away from these figures are the aggregate results. Hence, on the basis of the restrictive sample, we can argue that manufacturing firms in GJA spend on average the equivalent 0.73% of their total costs on training every year. At the median, again a more accurate reflection, this figure drops to 0.27%.

In terms of relative total training expenditure by firm size, the results are perhaps even more interesting. The advantage of taking training as a share of total costs, is that we are controlling for an important aspect of the ability of firms to train either internally or externally, namely their internal cost structure. One would expect that larger firms, in having more manoeuvrability within their total cost structure would spend more on total training.

Table 13: Annual Training Cost as a Percentage of Annual Costs, By Firm Size

Firm size	Median	Mean
50 - 99 workers	0.24	0.48
100 - 199 workers	0.30	1.37
200 + workers	0.27	0.55
Total	0.27	0.73

[3] The components of firms' total cost function are purchases of material inputs into production, expenditure on utilities, labour costs, goods transport costs, machinery and equipment rental, land and/or building rental, telecommunication and postal services, royalty or licence fees and interest & other financial charges.

This fact is confirmed by the data above, where both at the median and the mean, large firms spend more than small firms on training as a share of total costs. Hence, large firms at the median spend 0.27% of total costs per year on training, while the figure for small firms in=s 0.24%. What is interesting though, is that for both the median and mean figures, medium size manufacturing firms in the GJA, are spending relatively more on training than their large counterparts. This result points to either the better performance of medium size firms in attempting to include training as part of their productive activities, or perhaps reflects on the poor ability of large firms to more effectively utilise their internal resources for expenditure on training. One would have expected that larger firms would be more serious about training than small or medium firms, but this result clearly suggests that the best performers in terms of training relative to total costs, are medium-sized enterprises.

Finally, in terms of measuring training expenditure in terms of the requirements of the Skills Development Act (SDA), we present in Table 14 below, annual total training expenditure as a share of total labour costs of firms. According to the SDA, the skills levy charged to firms would be set at 1% of firms' total payroll, as of April 2001. In this case, the data below is very useful for comparative purposes. Firstly, at the aggregate level, in both mean and median terms manufacturing firms in the GJA currently spend the same or more than the stipulated legal amount. Hence at the median, firms are spending the equivalent of 1% and at the mean, 3.17% of total labour costs on training every year. These are figures of course for the 1998 calendar year, and we cannot be sure if they have changed over the last three years.

Table 14: Annual Training Expenditure as Percentage of Total Labour Costs

Firm size	Mean	Median
50 - 99 workers	1.35	0.79
100 - 199 workers	5.57	1.66
200 + workers	3.3	1.04
Total	3.17	1

The higher relative expenditure of medium size enterprises is again evident, as according to both mean and median expenditure, these firms spend the most on training as a share of total labour costs. Small firms again spend the least, and at the median are spending less than the stipulated skills levy. What remains a worry however, is the relatively low share of expenditure undertaken by large firms. One would have thought and hoped that the anchor around which a successful national skills development strategy would be built, would be large firms. The advantage from a skills development policy perspective, is that these firms are far more visible and hence would be more easily accessed to ensure that some correction does take place in the level of importance placed on training.

Measuring the Importance of Skills and Training

This section deals with three discrete, yet inter-linked issues, that arise out of the WBLMS data set in relation to skills development issues. In particular they are concerned with firms' perceptions on firstly, the difficulty in accessing occupations, secondly the importance of outside training institutions and finally their views on the impact of the SDA on employment levels within the firm.

Taking the first of these, the table below presents the results from a question in the survey, which asked firms to list the broad seven occupational categories, and then to rank whether they found it very, hard, or not hard at all to recruit individuals within these different occupations. We tabulate here the percentage of firms, by size class, that found it hard or very hard to find specific occupations. For example, 34.25% of all small firms found it hard or very hard to find clerks. The first aspect of the data to note is that firms' ranking of the difficulty in finding specific occupation increases as we move into higher occupational categories. Furthermore, it is only for labourers that there is an almost insignificant share of firms across all sizes, that find it hard or very hard to find these worker types. For all other occupations, at the aggregate level, a minimum of about a 33% 'search difficulty rate' exists. In other words it seems that firms, for all occupations bar one, find it relatively difficult to source qualified candidates.

Table 15: Hard or Very Hard to Find Specific Occupations (Percentage), By Size Class

Occupation/Size Class	50 - 99 workers	100 - 199 workers	200 + workers	Total
Managers	70.55	81.82	90.43	79.27
Profs& Tech	71.23	81.82	90.43	79.57
Clerks	34.25	29.55	32.98	32.62
Sales&ser	50.00	64.77	71.28	60.06
Craft	51.37	64.77	72.34	60.98
Operators	36.99	47.73	43.62	41.77
Labourers	4.11	7.95	3.19	4.88

Clearly though, the occupations deemed the hardest to source were managers and professional & technical staff, where in the aggregate about 80% of the total sample found it hard or very hard to find these individuals. In turn, the 'search difficulty rate' seems to vary by firm size. The larger the firm, the higher the 'search difficulty rate', with 90% of large firms compared to about 71% of small firms finding to difficult to access these skilled workers. Interestingly, the next two occupation that firms found hardest to access, were craft workers and those employed as service & Sales staff. For both these occupations, the difficulty rate varied from about 50% for small firms to 72% for large enterprises. The final two occupations, outside of labourers, that firms found least difficult to find were clerks and machine operators. However, despite this low ranking, across all sizes, between about 30 and 48% of firms in the sample found it hard or very hard to source these occupations. Ultimately then, this data suggests that firstly, more skilled occupations are harder to find than less skilled occupations. However, within this obvious conclusion, lies the result that a fairly significant share firms find it difficult to access most occupations down to the level of machine operators. It is only amongst labourers, that no search difficulty is expressed. This information is crucial in that it suggests, that apart from South Africa's well-known skills deficit at the top-end of the labour market, semi-skilled workers are also in fairly short supply. Manufacturing firms in the GJA therefore apart from experiencing the obvious shortage of high-level person power, ostensibly also find that there is an inadequate supply of semi-skilled workers available to them. The one, perhaps simplistic, policy conclusion from this is that the national skills development programme needs to be focused on increasing the provision of skilled as well as semi-skilled workers, with the supply of the former of course increasing at a faster rate than the latter.

The table below is based on a question in the survey asking firms to individually training institutions, in terms of how valuable they found as an external training source. The results shed light on how employers perceive the quality and importance of the institutions of labour supply to their internal functioning. Each firm therefore had to rank each institution from the list in Table 16 below as either 'most important' or 'moderately important'.

Table 16: Importance of Outside Training Sources

Institution	Most Important	Moderately Important	Not Applicable
Unversity	16.23	22.51	61.26
Business Partners (Other firms)	12.83	25.67	61.5
Government Institutes	12.43	22.7	64.86
Vocational/Technikons	33.51	24.23	42.27
Industry Training Boards	34.9	22.92	42.19
Private Training Schools	41.58	29.21	29.21

The results are unexpected. In the case of the 'most important' ranking, the majority of firms, 41.58%, found that private training schools were an ideal source for outside training. Second-ranked were industry training boards, followed by vocational technikons. The biggest surprise from the results us of course the fact that universities are only ranked 4th in this tabulation of the most important sources of external training. In terms of the 'moderately important' category, private training schools remain the most preferred institution, followed by technikons and then firms' business partners. Although the difference in the last three institutions is marginal, universities are technically rated last. The crucial result from this table then is that universities are in fact perceived by employers to be a far less valuable source of skilled workers than say, for example, technikons or private training schools.

While of course the sample is only representation of manufacturing firms in the GJA, the results are powerful. They point to the importance of firstly revisiting university curricula and assessing whether they in fact remain relevant to the needs of employers. In short, is the supply of university labour matched adequately with labour demand trends. On this basis of the above, albeit tentative evidence, the answer is clearly 'no'. The second point to emphasise from the results relates to the financing of higher education – particularly as it pertains to universities as opposed to technikons. The state, it is known, operates under a different subsidy formula for technikons, with the latter garnering less per student than universities. It would seem from the above that employers value technikon graduates more than they do their university counterparts. In this case then, the pricing structure of the state is in disequilibrium. Put simply, the state may be paying technikons less to produce graduates that are more in demand than similar graduates at universities. In doing so, the subsidy formula may be a hindrance to ensuring a more rapid growth in the provision of skilled workers for the domestic economy[4]. This would appear to be at least one possible intervention required in order to ensure that the institutions of labour supply are in fact

[4] This anomaly will become much more stark with the pending restructuring of higher education, whereby technikon degrees will be accorded the same official accreditation as those in universities. In this scenario, the subsidy formula implicitly becomes more skewed.

being provided with the optimal incentive structure in order to meet ongoing labour demand needs in the economy.

One of the most heated aspects of the South African labour market debate has been the impact of the regulatory environment on both wages and employment. While the relevance of this issue is greater in the case of for example, the Labour Relations Act, it remains an important consideration in the case of the SDA. In particular, the role of the levy in affecting internal labour market dynamics remains an important avenue for policy consideration. In this regard, we present data from the survey, which asked firms to say whether they felt the SDA had the effect of either raising or lowering employment, or would have a neutral impact. Table 17 makes it clear that in the aggregate, about 68% of the firms sampled said that the SDA would have no impact on employment within their enterprise. Noticeably though, a no insignificant share, 13% felt that the Act would lower employment levels in their firm.

Table 17: The Effect of the SDA on Employment, By Size Class

Code	50 - 99 workers	100 - 199 workers	200 + workers	Total
Raise it	2.82	6.9	4.44	**4.39**
Lower It	14.08	11.49	14.44	**13.48**
No Effect	61.97	73.56	71.11	**67.71**
Not Familiar	14.08	6.9	5.56	**9.72**
NA	7.04	1.15	4.44	**4.7**

In terms of the size breakdown, about 14% of small and large firms both thought that the Act would lower employment. Interestingly, for the largest investors of training, medium firms, a lower share,11.49%, thought that the SDA would decrease employment. While across the firm sizes, the dominant response was that the Act would have no employment effect, medium and large firms were more convinced that there would be no adverse employment effects. Interestingly, quite a significant percentage of small firms, probably reflecting their lower resource capacity, had not given much attention to the possible employment effects of the Act at all.

The final set of results in this section of the paper are possibly the most important. An attempt is made here to determine the impact of training expenditure by firms on value-added in the firm. Put differently, we ask in the econometric estimation below whether increased expenditure on training within the firm leads to higher levels of value-added at the firm-level. As far as we are aware, it remains the first such attempt on analysing the impact of training, using South African data. The starting point of the estimation equation, is to model firms' production activity according to the standard Neo-Classical Cobb-Douglas production function. In most of these formulations of the C-D production function, production within a firm is seen to be a function of the value of the capital stock and the number of employed within the firm. In this context then, we are able to estimate the relationship between output and capital on the one hand and output and employment on the other hand. The innovation in this instance is to add an additional variable, namely expenditure on training by firms, to try and determine whether it has any significant

impact on firm production levels. Our model is drawn from Tan & Batra (1995), who estimate similar production functions for Colombia, Indonesia, Malaysia, Mexico and Taiwan, on the basis of firm-level data.

In our estimation we regressed the log of value-added on the log of the capital stock, labour and training expenditure[5]. In addition, we added a dummy variable for exports, on the assumption that exporting firms would have more access to technology transfers, that may impact positively on production levels. Finally a set of sectoral dummies were also included in the regression, to control for the sectoral effects on firm-level production. The results from this regression are provided in Table 18 below.

Table 18: Production Function Estimates: Dependent Variable Log of Value Added

Variable	Coefficient	Std. Errors
Log (Labour)	0.446122*	0.159181
Log (Capital)	0.326488*	0.078235
Log (Training Expenditure)	0.161114**	0.065667
Exports[a]	-0.06861	0.218196
Constant	9.546593*	0.665128
Sample Size	66	
F-Statistic	12.92	
R-Squared	0.7015	
Adjusted R-Statistic	0.6472	

Note: Sectoral Dummies were included and all reported insignificant coefficients.

[a]: This is an export dummy, where the referent is those firms who do not export

*: Significant at the 1% level

**: Significant at the 5% level

The first drawback of the regression is that we are working with a very small database of 66 observations. The lack of reporting by all firms on all questions was raised at the beginning of this paper, and this problem is probably best highlighted with this small sample size. Given that the variables, bar the dummies, are continuous, we can directly interpret the values of the coefficients. In addition, because the variables are in log form, the coefficients are in effect elasticity measures. Firstly, we note that employment (the log of labour) is a positive and significant determinant of firm output. Specifically, a 1% increase in employment would result in a 0.45% rise in firm output. This leads one to argue that for this sample of manufacturing firms in the GJA, the output-employment elasticity stands at about 0.45. This, incidentally is fairly close to some of the more recent output-employment estimates that have been derived for the national economy as a whole. In terms of the impact of capital stock acquisition on output, the results show that as with employment, the coefficient is significant and positive. Specifically, a 1% increase in the value of the capital stock would lead to a 0.33% rise in firm-level output. In both these

[5] Value-added was measured as the sum of factor incomes by firms, and thus as per the standard definition, included wages & salaries, rent, interest and profits. The detail of the survey on these issues allowed us to capture a fairly substantial portion of these factor incomes. Capital stock was measured as the replacement value of all machinery and equipment as at the end of 1998. Training expenditure refers to the annual expenditure by each firm on either external or internal training.

cases though, note that firm output responds fairly inelastically to changes in output or capital stock.

The most important result, for our purposes here though, is that of the training expenditure variable. The coefficient on the log of training expenditure is positive and significant at the 5% level. The variable suggests that for every 1% increase in training expenditure (either internal or external) a firm's output will increase by 0.16%. Put differently, a 10% rise in training spending is associated with a 1.6% increase in production levels. We have here then, empirical proof of the importance of training to firm-level output. Training is thus good for production and ultimately firm growth. Again though, a note of caution, namely that the sample is small and within that only reflective of manufacturing firms within the GJA. Notwithstanding these drawbacks however, the regression results serve as a vital point of departure for engendering further estimates on databases that will hopefully be forthcoming, that will hopefully buttress the above initial claims of the relevance of internal and external training to expansion in firms' production levels.

National Enterprise Survey Results

Size of Firms in Survey by Number of Employees			
	Type of Firm		Total
Number of Employees	Manufacturing	Service	
Less than 50	15	42	57
%	4.14	3.96	4.01
50-99	78	256	334
%	21.55	24.13	23.47
100-199	80	220	300
%	22.1	20.74	21.08
200 & Over	189	543	732
%	52.21	51.18	51.44
Total	362	1061	1423
%	100	100	100

Nature of Employment by Skill Category (1998) (President's Office Survey					
Skill Category	Full-time	%	Part-time	%	Part-time as a % of Full-time
Managerial & Professional	233597	11.63	371	0.03	0.16
Clerical & Sales	570974	28.43	433330	33.23	75.89
Skilled Technician (artisans etc)	186558	9.29	29888	2.29	16.02
Semi-skilled Production Workers	85203	4.24	1122	0.09	1.32
Unskilled Workers	932185	46.41	839314	64.36	90.04
Total Workforce	2008517	100.00	1304025	100.00	64.92

Nature of Employment by Skilled Category and Size of Firm (1998) (President's Office Survey)										
Skill Category	Firm Size according to Number of Employees									
Full-time	1-49	%	50-99	%	100-199	%	200 & Over	%	Total	%
Managerial & Professional	298	11.64	3292	13.83	3681	8.31	226302	11.68	233573	11.63
Clerical & Sales	531	20.74	11066	46.50	7305	16.49	552007	28.49	570909	28.43
Skilled Technician (artisans etc)	1113	43.48	2475	10.40	6952	15.69	176005	9.08	186545	9.29
Semi-skilled Production Workers	176	6.88	1994	8.38	3570	8.06	79395	4.10	85135	4.24
Unskilled Workers	442	17.27	4969	20.88	22794	51.45	903903	46.65	932108	46.41
Total Full-time	2560	100	23796	100	44302	100	1937612	100	2008270	100
Part-time										
Managerial & Professional	0	0.00	42	9.07	95	3.69	233	0.02	370	0.03
Clerical & Sales	4	19.05	144	31.10	99	3.84	433082	33.29	433329	33.23
Skilled Technician (artisans etc)	11	52.38	19	4.10	210	8.15	29629	2.28	29869	2.29
Semi-skilled Production Workers	0	0.00	47	10.15	56	2.17	1010	0.08	1113	0.09
Unskilled Workers	6	28.57	211	45.57	2118	82.16	836971	64.34	839306	64.36
Total Part-time	21	100	463	100.00	2578	100	1300925	100.00	1303987	100
Part-time as % of Aggregate Total										
Managerial & Professional	298	0	3334	1.2597	3776	2.5159	226535	0.1029	233943	0.15816
Clerical & Sales	535	0.7477	11210	1.2846	7404	1.3371	985089	43.964	1004238	43.15
Skilled Technician (artisans etc)	1124	0.9786	2494	0.7618	7162	2.9321	205634	14.409	216414	13.8018
Semi-skilled Production Workers	176	0	2041	2.3028	3626	1.5444	80405	1.2561	86248	1.29046
Unskilled Workers	448	1.3393	5180	4.0734	24912	8.5019	1740874	48.078	1771414	47.3806
Total	2581	0.8136	24259	1.9086	46880	5.4991	3238537	40.17	3312257	39.3685

Export Activities

Firms Engaged in Export Activities			
Activity	Manufacturing Firms	Service Firms	Total
Not Exporting	113	702	815
%	30.79	66.16	57.07
Exporting	254	359	613
%	69.21	33.84	42.93
Total	367	1061	1428
%	100	100	100

Overall Profitability of Firms in the Survey			
Profitability of Firms in Survey	Manufacturing Firms	Service Firms	Total
Increased by more than 30%	58	186	244
%	16.52	18.29	17.84
Increased by between 10% and 30%	63	186	249
%	17.95	18.29	18.2
Increased by less than 10%	35	90	125
%	9.97	8.85	9.14
Remained about the same	50	254	304
%	14.25	24.98	22.22
Decreased by less than 10%	35	165	200
%	9.97	16.22	14.62
Decreased by between 10% and 30%	46	49	95
%	13.11	4.82	6.94
Decreased by more than 30%	64	87	151
%	18.23	8.55	11.04
Total	351	1017	1368
Percent	100	100	100

Satisfaction

Firm Satisfaction with Labour Productivity according to Employment Size					
Level of Satisfaction	Less than 50	50-99	100-199	200 & Over	Total
Very Satisfied	0	1	3	8	12
%	0	0.3	1.02	1.11	0.86
Satisfied	5	146	65	194	410
%	8.93	44.51	22.03	26.98	29.33
Don't Know	1	3	4	12	20
%	1.79	0.91	1.36	1.67	1.43
Dissatisfied	46	169	174	440	829
%	82.14	51.52	58.98	61.2	59.3
Most Dissatisfied	4	9	49	65	127
%	7.14	2.74	16.61	9.04	9.08
Total	56	328	295	719	1398
%	100	100	100	100	100

Productivity Constraints

First and Second Most Important Reasons for Firm Dissatisfaction with Productivity				
	Most Important Reason		Second Most Important Reason	
Reason	Frequency	Percent	Frequency	Percent
Inadequate Skills	315	35.23	134	19.06
Inadequate Supervision	72	8.05	77	10.95
Low Wages	2	0.22	3	0.43
Poor Working Conditions	87	9.73	47	6.69
Trade union disruption	64	7.16	50	7.11
Inadequate equipment	212	23.71	295	41.96
Poor employee motivation	124	13.87	88	12.52
Other	18	2.01	9	1.28
Total	894	100	703	100

Most important reason for dissatisfaction with productivity by type of firm			
Reason	Large Manufacturing	Large Service	Total
Inadequate Skills	59	256	315
%	24.08	39.45	35.23
Inadequate Supervision	25	47	72
%	10.2	7.24	8.05
Low Wages	1	1	2
%	0.41	0.15	0.22
Poor Working Conditions	0	87	87
%	0	13.41	9.73
Trade union disruption	61	3	64
%	24.9	0.46	7.16
Inadequate equipment	5	207	212
%	2.04	31.9	23.71
Poor employee motivation	77	47	124
%	31.43	7.24	13.87
Other	17	1	18
%	6.94	0.15	2.01
Total	245	649	894
%	100	100	100

Second important reason for dissatisfaction with productivity by type of firm			
Reason	Large Manufacturing	Large Service	Total
Inadequate Skills	44	90	134
%	19.73	18.75	19.06
Inadequate Supervision	29	48	77
%	13	10	10.95
Low Wages	2	1	3
%	0.9	0.21	0.43
Poor Working Conditions	2	45	47
%	0.9	9.38	6.69
Trade union disruption	49	1	50
%	21.97	0.21	7.11
Inadequate equipment	5	290	295
%	2.24	60.42	41.96
Poor employee motivation	84	4	88
%	37.67	0.83	12.52
Other	8	1	9
%	3.59	0.21	1.28
Total	223	480	703
%	100	100	100

Dissatisfaction with Training According to Size of Firm		
Firm Size by Number of Employees	Most Important Reason	Second Most Important Reason
Less than 50	3	42
%	0.95	31.34
50-99	15	11
%	4.76	8.21
100-199	93	15
%	29.52	11.19
200 & Over	204	66
%	64.76	49.25
Total	315	134
%	100	100

Initiatives to Improve Productivity

Training Costs

Training Expenditure by Firms			
Rands	Frequency	Percent	Cum.
None	13	0.91	0.91
1-100000	583	40.71	41.62
100001-250000	147	10.27	51.89
250001-500000	206	14.39	66.27
500001-1000000	105	7.33	73.6
1000001-2000000	67	4.68	78.28
Over 2 million	311	21.72	100
Total	1432	100	

Conclusions

The results from the WBLMS have constantly been qualified with the small sample size nature of the data set, as well as its focus purely on manufacturing within the GJA. Despite this caution, the analyses above did reveal some useful and interesting trends. We saw that firm size, impossible to measure in household surveys, remains a critical and significant determinant of wages at the occupational level. Larger firms, the study shows, have been paying higher wages for workers in similar occupations. Through the descriptive statistics, we saw that large firms paid on average about 20% more than small firms for managers and professionals, with this premium being about 12% for the sample as a whole.

The training and skills development issues yielded extremely interesting data. After presenting data on skills intensity by sub-sector we found, for example, that South African manufacturing firms were more likely to invest in training than there counterparts in the developing world. More importantly perhaps, size was again a factor, with small firms more likely not to undertake internal or external training than medium or large firms. The one result that was surprising here was that medium size firms seemed more prone to investment in training than firms with more than 200 employees. This seemed an odd outcome, but one that does bear relevance for skills development interventions aimed at large, more high-profile enterprises. In terms of the 'search difficulty rates' uncovered, it was clear and expected that the two most skilled occupations yielded the highest search difficulty rates. What as illuminating though was that for all occupations, barring labourers, a fairly high share employers found it hard to access appropriately trained and experienced workers. The skills shortage therefore, while acute at the top-end, is also existent at the mid-level of internal job ladder.

A crucial result related to the relative unimportance placed on universities either as a very important or moderately important source for workers, by firms. In this particular question, firms felt that private training colleges and technikons were the most valuable institutions of labour supply. This outcome must surely activate a much-needed debate on amongst other issues, the current structure of the higher education subsidy formula. Finally, the production function regression results, provide the first empirically grounded proof that firms who invest in training will reap the rewards in the form of a growth in production levels. The simple message from the regression is that training ultimately makes very good business sense.

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