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Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
NIGERIAN FEDERAL MINISTRY OF INDUSTRY
CENTRE FOR THE STUDY OF AFRICAN ECONOMIES
Department of Economics, University of Oxford

*The Performance of Nigerian Manufacturing Firms: Report on the Nigerian Manufacturing Enterprise Survey 2004**

Centre for the Study of African Economies
University of Oxford
Oxford OX1 3UQ
UK

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Contents

Acknowledgements

In the summer 2001 the first wave of the Nigerian Manufacturing Enterprise Survey (NMES) was carried out by UNIDO with the assistance of the Centre for the Study of African Economies (CSAE) within the framework of the UNIDO-CSAE research collaboration agreement.

A follow-up survey—the second wave of NMES—was conducted in winter 2004. UNIDO representative in Nigeria, Dr David Tommy, offered excellent organizational and other support for the survey. Dr. Thiam Hee Ng at the UNIDO office in Vienna provided the necessary official support and Danjuma Mahmoud, a National Programme Officer in the Regional office provided some technical input into the survey questionnaire. The Survey Core Team consisted of Mr. Obi Okoye, National Coordinator of the project, Mr Caleb Owolawase, Mr Ganiyu Yakubu, Ms Kemi Parker, Ms Tega Igbanobi, Mr Chidi-Martins O-Martins, Mr Marcellinus Amadi, Dr Neil Rankin and Dr Adeel Malik. We also wish to thank Lilian Saidy for superb secretarial support. The survey also benefited from the timely assistance provided by MAN's representative, Shegun Ajaye Kadir.

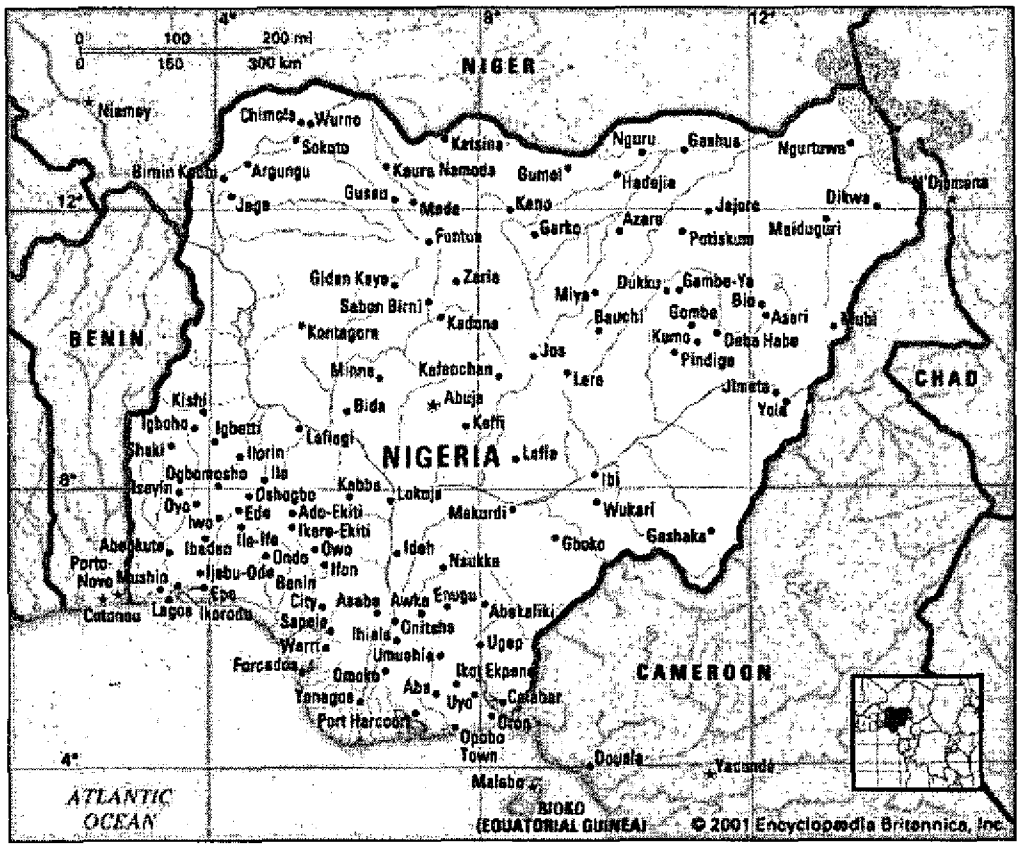
We want to express our deepest gratitude to the respondents. Without the cooperation of over 126 owners and managers and close to 1,000 workers, the survey and this report would not have been possible. The respondents were extremely generous in giving their time to the interviewers. The information they provided has made it possible to document and understand the challenges that face the Nigerian manufacturing sector.

We also wish to thank the Department for International Development (DFID) of the UK government which funded both this survey and the survey that was carried out in 2001.

We accept responsibility for any errors and shortcomings of the report.

Adeel Malik, Francis Teal and Simon Baptist
Centre for the Study of African Economies
University of Oxford
April 2006

Map of Nigeria



EXECUTIVE SUMMARY

UNIDO has identified the wide and growing gap in productivity levels between developed and the least developed countries, many of them in Africa, as a key policy issue that needs to be addressed in meeting its overall corporate objective of helping to achieve the Millennium Development Goals set out by the UN.

The UNIDO document "Operationalizing UNIDO's Corporate Strategy", which sets out its medium tern objectives over the period 2004-2007, identified a range of activities that need to be undertaken to meet its Corporate objectives. Two for its research program were:

- Building up a database on productivity and related indicators.
- Assessing the challenges involved in using productivity enhancement as a policy tool in the fight against poverty and for sustainable development.

The Medium-Term programme Framework posed five core questions for a research programme as follows:

- How best to foster and monitor the contribution of productivity growth to economic and social advancement?
- What is the impact of the new global setting in such areas as trade, investment and international regulations on the scope of industrial development policies and on the effective contribution of industry to economy-wide productivity growth and to the achievement of the MDGs?
- What are the most efficacious policy tools and forms of industrial governance to promote and support industrial development in the new global setting?
- What are the key barriers to speeding up the transfer, diffusion and absorption of technology and how best to remove them with a view to enhancing productivity growth in developing countries?
- How to maximise the development impact of entrepreneurship and SMEs?

Understanding how and why productivity differs across firms, sectors and countries requires detailed micro level information on firms in the industrial sector. The first round of the Nigerian Manufacturing Enterprise Survey (NMES) was undertaken in mid 2001, and was designed to collect both contemporaneous and

retrospective information and to be comparable to other studies of African manufacturing firms.

In 2004, as part of its overall research program, UNIDO organised a follow-up survey to identify the key constraints on the performance of Nigeria's manufacturing sector and to present answers to the core research questions as to how industrial policy can impact most effectively on poverty reduction. The CSAE in collaboration with UNIDO prepared a preliminary Report which provided a link between the data collected in the two surveys. This preliminary Report was presented on 18th November, 2005 at the Manufacturers Association of Nigeria (MAN) House, Awolowo Way Ikeja, Lagos. After the presentation of the report the participants were divided into four groups comprising - Trade and Environment, Productivity and Profitability, Infrastructure, and Finance. Each of these groups focused on some of the key policy implications of the preliminary Report.

In this final version of the Report we have taken these comments, and other we have received from UNIDO, into consideration in re-focusing our outline of the options open to Nigerian policy makers.

Enhancing Productivity and Growth

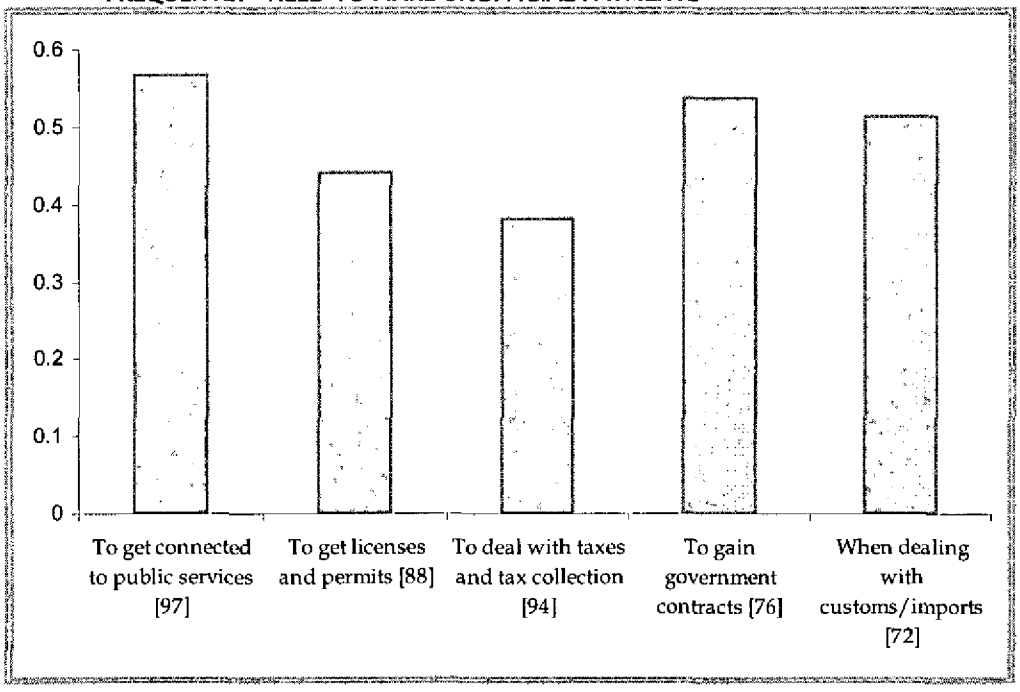
Key to understanding the fundamental determinants of poverty is an understanding of the efficiency with which firms operate in developing countries. The Report begins by identifying the key factors which are seen as constraining productivity by entrepreneurs and managers in Nigeria. In their reaction to the preliminary Report the firm managers, and owners, identified a range of factors that they saw as requiring urgent policy attention. The first of these was corruption which is affecting the cost of doing business in Nigeria thereby making the Nigerian manufacturers incapable of competing globally. The second was the unregulated importation of goods that are being produced locally has affected the local industries negatively. There was also a focus on skill development, entrepreneurship, finance and energy costs.

The results of the survey show clearly the importance that the firms attach to corruption. Figure ES.1 (taken from section 2 of the Report) shows the incidence of additional unofficial payments in five different situations. Of the five situations

referred to here, public service connections appears to be the one with the highest incidence of additional payments, 57 per cent.

FIGURE ES.1

PROPORTIONS OF FIRMS* THAT 'ALWAYS', 'USUALLY' OR 'FREQUENTLY' NEED TO MAKE UNOFFICIAL PAYMENTS



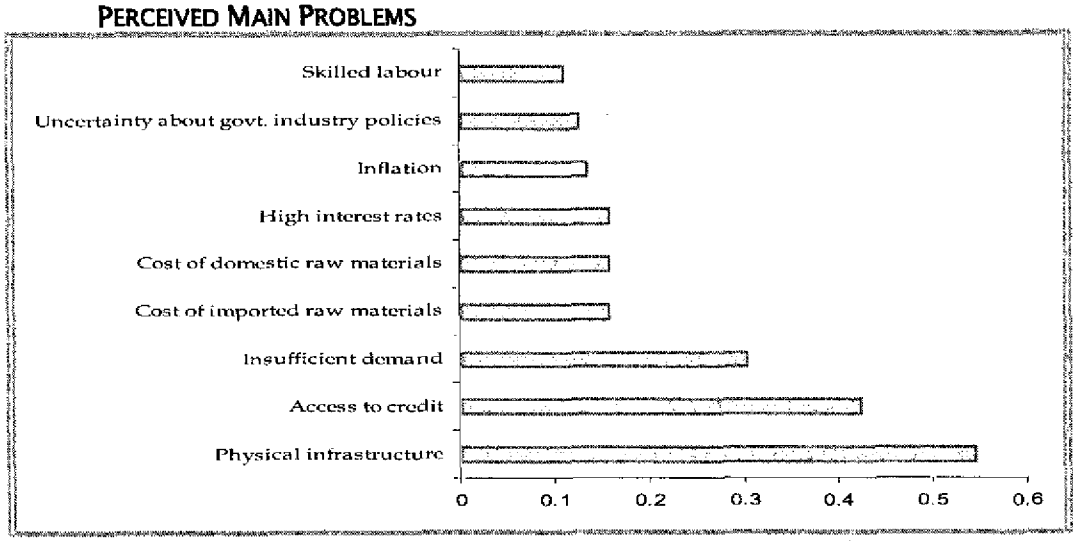
* The question asked of the respondents refers to 'firms like yours'. N denotes the number of firms that responded to the question.

Figure ES.2 (which is also taken from section 2 of the Report) allows a ranking to be made of these factors which are of major concern to the firms. The most frequently cited problem in the sample is physical infrastructure: about 55 per cent of the firms regarded ineffective provision of physical infrastructure as one of their three biggest problems. The second most important constraint perceived by firms in our sample was inadequate access to credit: 47 per cent of the firms placed access to credit among their top three problems. The third most frequently cited concern of the firms was the problem of insufficient demand (31 per cent).

The survey evidence points towards a growing dissatisfaction with the country's dilapidated physical infrastructure, in particular the unreliable and irregular power supply. This was identified as a priority area by the firms in their reaction to the preliminary Report.

FIGURE ES.2

PERCEIVED MAIN PROBLEMS



Note: The chart shows the percentage of firms considering a particular category as one of its three principal constraints. [N=124]

This concern regarding the ineffective provision of power supply emerged as a consistent theme of the survey:

- When asked to rate the overall quality, integrity and efficiency of services delivered by public institutions, firm respondents gave the worst average score to the services offered by National Electric Power Authority (NEPA).
- 57 percent of the respondents indicated the prevalence of unofficial payments (bribes) in accessing various public services, including NEPA.
- Firms generally have mains electricity for only less than 3 days per week.
- A large number of firms—mostly medium and large firms—are forced to rely on self-supply of electricity through private generators, which is about three times more expensive than the NEPA.
- Problems of power supply hit the small producers particularly hard, who are estimated to lose 24 percent of their annual output to power outages
- 69 per cent of the firms regarded problems of power supply as the main reason for low capacity utilization

These findings differ from those in other surveys of African firms in the importance attached by the firms to the poor quality of the infrastructure. Improving infrastructure can potentially have a large impact on the competitiveness of the firms.

The identification of insufficient demand and access to credit as major constraints is a common finding across firm-level surveys in Africa. In the Report it is shown that a lack of access to credit is in part related to the poor quality of the financial infrastructure that characterises the Nigerian economy and partly to the problems posed of lending to small firms. The following facts highlight the pressing nature of financial infrastructure problems:

- A strikingly high percentage of the sample—81 percent—admitted facing liquidity/cash flow problems during 2003.
- Only about 35 percent of the firms turn towards bank borrowing to overcome their liquidity problems—the large majority of firms rely on other means, such as personal cash reserves, supplier credit, cash advances from clients, etc.
- A small proportion of firms (27 percent), mainly large firms, applied for bank loans during the period 2001-03. More than 75 percent of these loan applications were accepted.
- The majority of firms were deterred from applying for bank loans due to high interest rates and inadequate collateral.
- Banks are not interested in advancing long-term loans—the dominant mode of bank financing is overdrafts.
- Bank overdrafts are mainly accessible to large and medium firms: only 11 percent of the small firms had any overdraft arrangement during the sample period.

Lack of demand is a problem that flows from the very low level of exporting that characterises the Nigerian manufacturing sector. It is often argued that as Nigeria is a large economy its manufacturing sector can rely on the domestic market and that there does not need to be a concern with exporting. The data confirms that firms do rely overwhelmingly on the domestic market but it also shows that firms do not grow. While very few firms do export there is some evidence that those firms are able to grow faster. Both being able to export and developing an ability to compete with imports are key factors which need to be addressed if the stagnation found from the survey is to change to a pattern of rapid growth.

The Impact of Industrial Policy on Poverty Reduction

Industrial policy can impact on poverty alleviation in two ways, by impacting on the demand for unskilled labour and by the enhancement of skill formation. These are the subject of section 3 in the Report.

In sub-Saharan Africa in the last decade most job creation has been in the self-employment sector, particularly in urban areas. Nigeria is no exception to this general trend. The **inadequate** growth in wage jobs has important implications for a range of policy issues. With the expansion of education the numbers of formal sector jobs is failing to keep pace with the growth of school leavers. Higher and higher levels of education are perceived as being necessary to get a job. An expansion of education without an expansion of jobs for the newly educated is a recipe for social unrest.

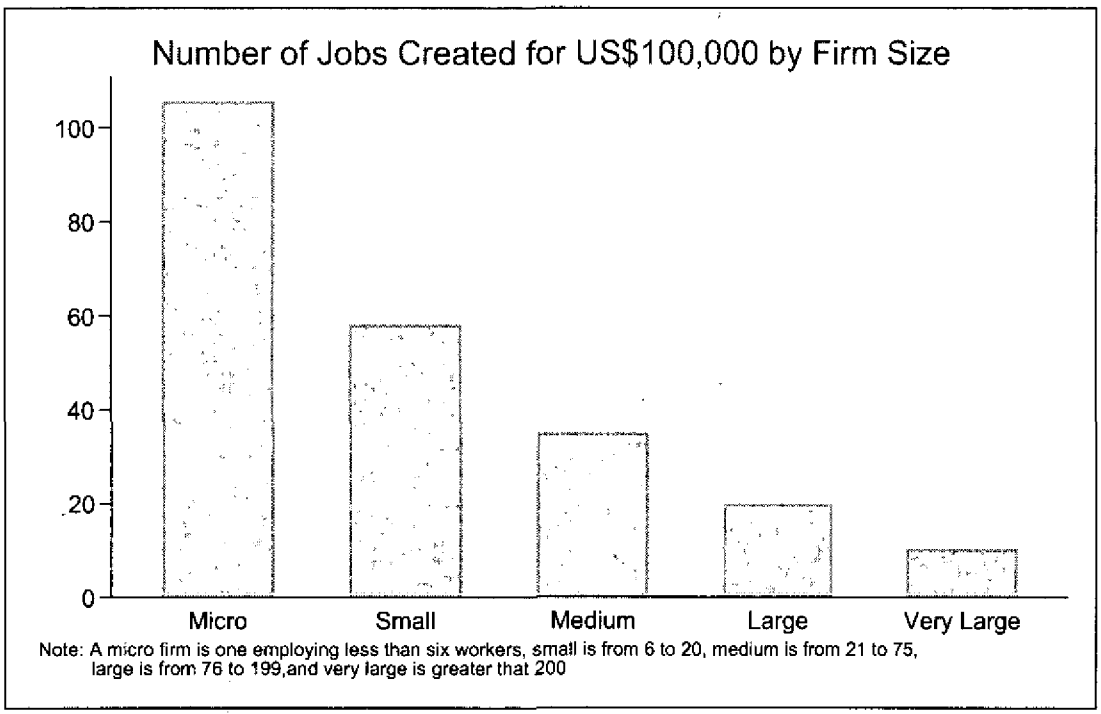
It is not simply the number of jobs that is of policy concern. It is **also** the wages these jobs pay. Policy needs to focus on creating high wage jobs. If those making a marginal living in the self-employed sector could be absorbed into a higher paying wage sector this would provide a powerful mechanism by which incomes for the poorest could expand. It is a mechanism that is powerfully driving the growth of the Chinese economy at present and this mechanism is conspicuously absent both in Nigeria and most African countries. Creating a high wage job creation machine needs to be a central objective of policy.

How does the data from the survey suggest that the demand for labour can be increased? It appears that smaller firms have the greatest potential for job creation for any given level of investment. Figure ES.3 shows how many jobs get created for US$100,000 of investment (the figure is taken from Section 3 of the Report). As can be seen from the Figure the differences are very large across the size range of firms. A micro firm, defined as one with less than six employees, creates more than 100 jobs for US$100,000 of investment. This compares with about 10 for very large firms, defined as those with more than 200 employees. Thus jobs in micro firms cost about US$1,000 in terms of investment while those in large firms cost US$10,000. A process of growth among small or micro firms may appear good for job creation but this process of firm growth has two problems both in terms of the number, and kind, of jobs that get created.

The first problem is that while a lot of jobs are created per unit of investment the amounts of investment are very low. This is a mirror image of the point that

FIGURE ES.3

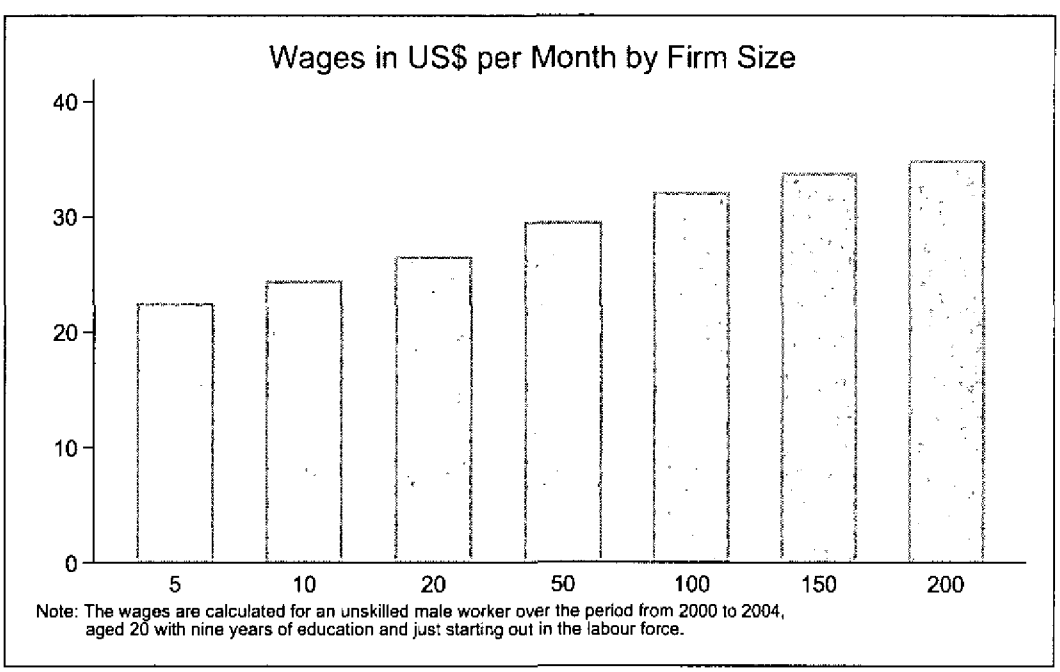
WHERE DO JOBS GET CREATED?



Note: A micro firm is one employing less than six workers, small is from 6 to 20, medium is from 21 to 75, large is from 76 to 199,and very large is greater that 200

FIGURE ES.4

WHERE DO BETTER JOBS GET CREATED?



Note: The wages are calculated for an unskilled male worker over the period from 2000 to 2004, aged 20 with nine years of education and just starting out in the labour force.

micro firms use capital very economically - because it is scarce and expensive for them. In total few jobs are going to get created because the micro firms are so constrained in their ability to invest.

Second jobs in smaller firms pay far less well than jobs in larger firms and these differences across firms of differing size are not due to differences in skills. Figure ES.4 shows how the earnings of younger workers currently entering the labour market vary depending on the size of firm in which they work. Wages for the young worker in a micro firm are about US$22 per month, compared with US$35 per month for those in larger firms, a 50 per cent differential.

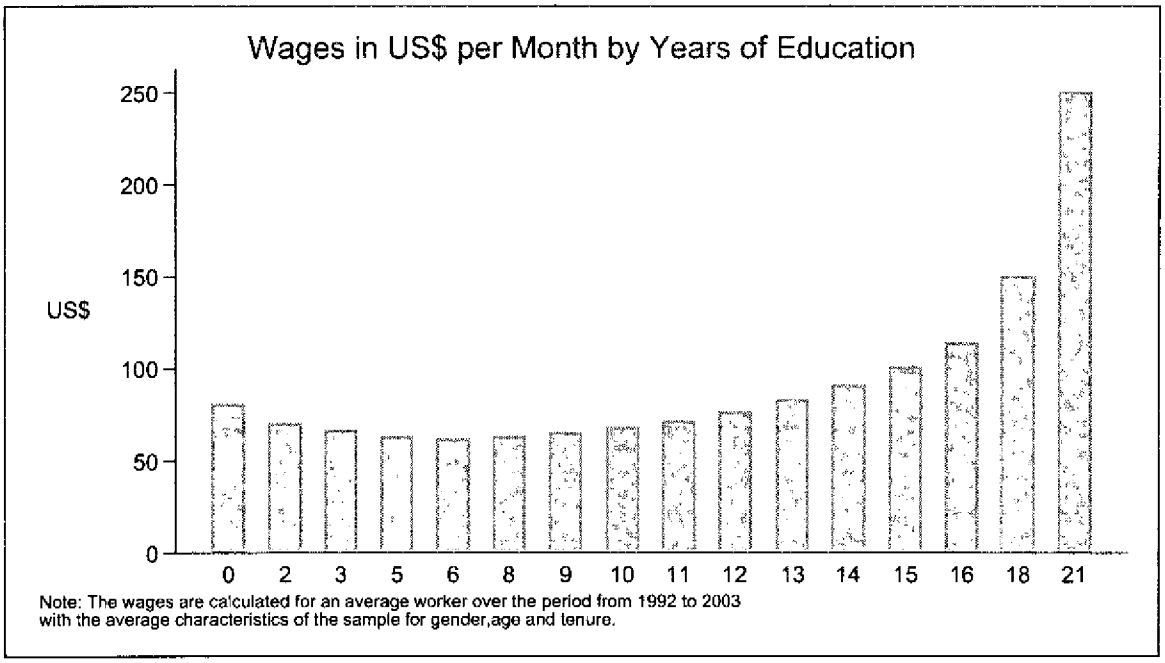
In summary, micro and small firms are good at creating jobs but not good at producing higher paying jobs.

Wages and Increases in Education

There is a general finding across research on labour markets in Africa—using both household and firm level data—that the economic value of education rises with the level of education. Figure ES.5 shows that this is true for the Nigerian data.

FIGURE ES.5

WAGES AND YEARS OF EDUCATION



Note: The wages are calculated for an average worker over the period from 1992 to 2003 with the average characteristics of the sample for gender,age and tenure.

Figure ES.5 shows how wages for an average worker in terms of their age and tenure in their job vary with the number of years of education they have. The striking feature of the data is that wages rise rapidly only for the relatively highly educated. Indeed there is no evidence for rises at all until after secondary school has been passed.

This is a very important finding for policy as it implies that an expansion of education at the primary and secondary level may not generate increases in income for those who stop education before the end of secondary school. An expansion of education without an expansion of jobs for the newly educated is a recipe for social unrest.

Skills and Technology

The role of skills and technology in generating the jobs required for poverty reduction is linked to how they impact on the efficiency with which firms operate. More efficient firms can compete more effectively with other firms, can compete with imports and, in exceptional cases in the context of Nigeria, they can enter the export market.

There is only limited evidence that either skills or new technology have a substantial impact on the underlying efficiency of the firms. This limited impact is almost certainly due to the low levels of investment in the sector. In any year only about half the firms in the sample carry out any investment. As it is large firms that are more likely to invest and as the sample over-represents large firms the implication is that the average rate of investment in the population of Nigerian manufacturing firms is very low.

With low investment rates, there is limited demand for skills - reflected in the data in the limited rises in earnings which occur with secondary education - and limited new machinery which can have a substantial impact on overall efficiency.

The Survey has identified the key factors which explain this outcome for investment. The quality of the infrastructure—both physical and financial—and the inability to export are both linked to the dominance of small firms which are unable to invest mainly because of the cost of credit. The workshop on the preliminary version of this Report identified a range of policy recommendations which we now set out. These recommendations came from the firms and arose from discussions

held at the Workshop. They cover four broad areas: trade and the environment, productivity and profitability, infrastructure and finance.

Recommendations regarding Trade and the Environment

The following recommendations focused on the issues which arose from a consideration of the environment in which firms operated.

- Government agencies should develop concrete programmes to support exporters especially SMEs. Manufacturers should also be encouraged to embrace the idea of investing in the free trade zones.
- There is need for enlightenment and information dissemination on where and how to source for raw materials as well as the quality and cost.
- The government and SMEs and the big manufacturing outfit should be involved in the formation of clusters. In addition, concession should be given to SMEs by the following organizations namely; NAFDAC, SON, and PHCN.
- Products finishing and packaging should be emphasized for competitiveness.

Recommendations regarding Productivity and Profitability

The following action steps/recommendations were agreed as the way forward to combat the problem of low productivity and profitability in the sector

- Government should look into ways of combating the problem of multiple taxation by defining the tax to be paid and to who it should be paid. Any local authority found violating should be fined and if possible punished appropriately according to the law
- Government should adhere strictly to the policies that have been formulated to check importation, encourage research and the dissemination of research findings to the manufacturing firm. More so we should look within and determine areas where we have comparative advantage and develop such areas. Nigerians should be encouraged to buy Nigerian goods.
- Enterprise development training should be introduced as par of the basic curriculum in both the secondary and tertiary institutions. Staff should be sent on relevant trainings to keep abreast of new technologies.

- The BOI as well as commercial banks should make available facilities such as overdraft and medium term loans at lower interest rate. Government should be committed to the funding of BOI.
- Public Private Partnership on infrastructure should be encouraged and practiced.

Recommendations regarding Infrastructure

The recommendations in this area were as follows:

- Public Private Partnership should be encouraged and power generation capacity should be increased to more than 10,000MW to meet the demand for power in the country.
- Alternative sources of energy should be sought and developed by both the government and the manufacturing sector. More research should be encouraged in this regard.
- The transport system in the country should be diversified and developed. The government and the people on Nigeria should put into efficient use the waterways as well as the rail lines.
- Gas pipelines should be efficiently networked nation wide to ensure full utilization by consumers. An effective gas policy should be put in place by the policy makers as well as a workable gas pricing mechanism.
- In terms of communication, service coverage should be extended to all states of the federation particularly the rural areas.
- There should be an immediate overhauling of available security systems through regular/routine emphasis on crime prevention.
- Donor agencies such as UNIDO, DFID etc. should partner with government in the provision of infrastructure instead of limiting their services to consultation.

Finance

Recommendations agreed upon include the following;

- The guidelines for accessing SMEs should be relaxed and implemented. Meanwhile, SMEs should accept the memorandum of understanding being drawn up by banks. SMEs should also avail themselves of the services provided by various service providers to help access the fund.

- Government should reduce the MRR to a single digit so that banks can have lending rates of one digit.
- The government should develop a workable and realistic national business data bank to provide information to investors as well as other Nigerians.
- BOI should be recapitalized to at least 150 billion naira as funds required for retooling and working capital by Nigerian business exceeds 200 billion.
- Banks should allocate about 80% of their loan portfolio to the development of SMEs.

1 Introduction

The first round of the Nigerian Manufacturing Enterprise Survey (NMES) was undertaken in mid 2001, and was designed to collect both contemporaneous and retrospective information and to be comparable to other studies of African manufacturing firms. The NMES was financed by UNIDO as part of a joint UNIDO-CSAE research programme, and the fieldwork was carried out by a team led by UNIDO officials in Nigeria. The NMES concentrated on four broadly defined manufacturing sub-sectors, namely food processing, textiles and garments, wood working including furniture and paper processing, and metal, machinery and chemicals. The survey covered three major regions in the country: the western region, (Lagos and Ibadan); the eastern region (Enugu, Onitsha, Nnewi and Aba); and the northern region (Kaduna and Kano). Small as well as large firms were included in the sample. In November 2004 UNIDO organised the second round of the NMES which had as its principle objective a follow-up of the firms initially interviewed in 2001.

A preliminary version of this Report was presented on 18th November, 2005 at the Manufacturers Association of Nigeria (MAN) House, Awolowo Way Ikeja, Lagos. After the presentation of the report the participants were divided into four groups comprising - Trade and Environment, Productivity and Profitability, Infrastructure, and Finance. Each of these groups focused on some of the key policy implications of the preliminary Report. In this final version of the Report we have taken these comments, and other we have received from UNIDO, into consideration in re-focusing our outline of the options open to Nigerian policy makers.

This report focuses on three broad policy areas. The first is the role of the investment climate in the performance of Nigerian firms which is the subject of chapter 2. The second is the success of Nigerian firms at creating jobs which is the central focus of chapter 3. The link between the policies required to improve the investment climate and the creation of many more jobs is the performance of firms in Nigeria's manufacturing sector. In chapter 4 we present the key results from the survey in this area.

All these areas are crucial if Nigeria's reform programme is to result in a substantial reduction of poverty in the country.

2 The investment climate for Nigerian manufacturing

Manufacturing activity can only flourish in a good investment climate. Features of the investment climate—such as physical infrastructure, financial markets, and governance conditions—create the enabling environment for investment and determine the "opportunities and incentives for firms to invest productively, create jobs and expand". This section will use the survey data to document how managers and entrepreneurs view the current state of industrial and economic policy in Nigeria, and attempt to shed some light on the characteristics of the business environment for Nigerian manufacturing.

In doing so, a clarification is in order. An inherent difficulty in this analysis is that the analyst to a large extent has to rely on qualitative and subjective data. One reason why this may be problematic is that different respondents may not use the same benchmark in giving their responses, a point raised by Lall (2001) in his critical assessment of World Economic Forum's competitiveness index. It is therefore important to be careful when attempting to infer what is the true underlying problem from the self-reported data.[1]

2.1 Perceived main problems

The NMES directly asked firms about their perceived problems. In this sub-section we examine the data on problems viewed by Nigerian manufacturing firms as being most important. Firm respondents were asked to indicate their three biggest problems from a large menu of options, which included various factors affecting the investment climate. Figure 2.1 shows the nine most frequently cited problems, which have been identified by respondents as one of their three principal constraints in 2003. [2]

Three concerns figure more prominently in the firms' responses: infrastructural constraints, access to credit and the broader macroeconomic conditions affecting the demand for goods produced by the manufacturing sector. Consistent with findings of the Wave-I survey carried out in 2001, Nigerian firms in

[1] This is not because respondents are believed to intentionally provide false information, it is simply because perceptions may not always reflect the true state, perhaps because of imperfect information.

[2] Multiple responses were permitted (percentages do not add up to 100).

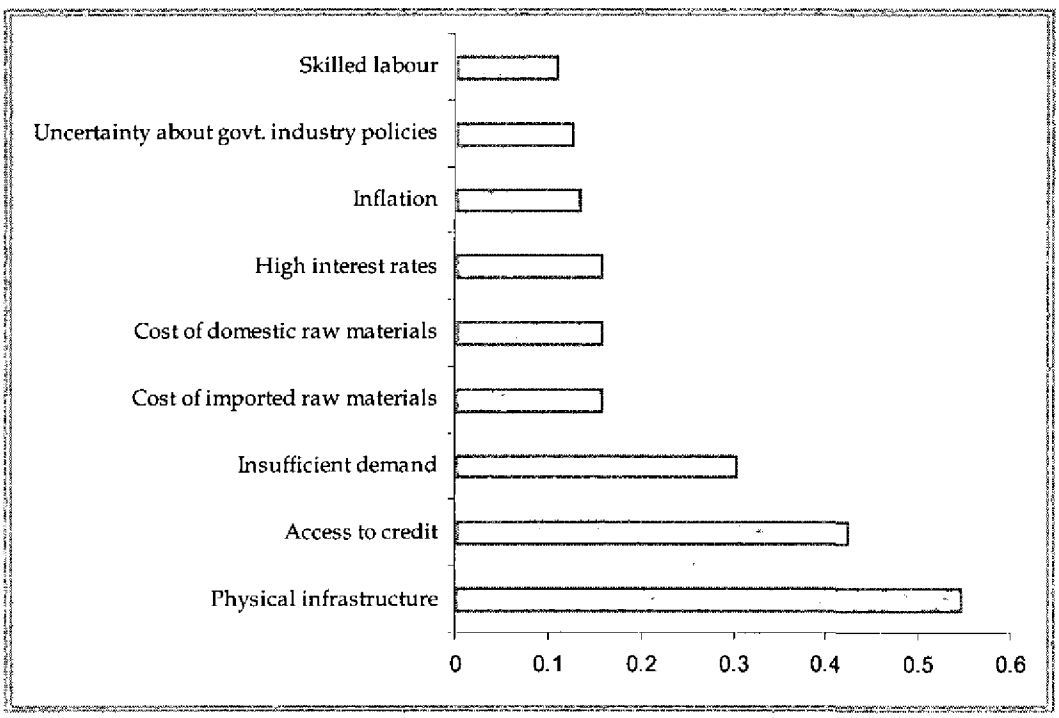
our sample have continued to express their concern regarding infrastructure, access to credit and demand conditions.

The most frequently cited number-one problem in the sample is physical infrastructure: about 55 per cent of the firms regarded ineffective provision of physical infrastructure as one of their three biggest problems. A second most important constraint perceived by firms in our sample was inadequate access to credit: 47 per cent of the firms placed access to credit among their top three problems. The third most frequently cited concern of the firms was the problem of insufficient demand (31 per cent). These concerns will be discussed more systematically in later sections.

Cost of raw materials – both domestic and imported – also came up as an important concern, with 16 per cent of the sampled firms citing it as one of the three biggest problems. A smaller percentage of firms also indicated high interest rates, inflation, uncertain government policies and lack of skilled labour as part of their dominant concerns.

FIGURE 2.1

PERCEIVED MAIN PROBLEMS



Note: The chart shows the percentage of firms considering a particular category as one of its three principal constraints. [N=124]

These concerns are more pronounced for small and medium-sized firms. The first category is more frequently cited by firms in the two intermediate size categories than by micro or large firms. This suggests that intermediate sized firms rely on government provision of public goods such as infrastructure, and cannot supply their own—as many large firms do. Credit access is more often cited as the main problem by micro and small firms than by medium and large/macro firms. One third of the micro firms, and 18 per cent of the small firms, rate lack of credit access as their main problem, while only 11 per cent of firms in the two largest categories rate credit access as their biggest problem.

2.2 Supply of utilities and infrastructure

For a sound investment climate, firms need to have access to the basic infrastructure—such as electricity, water, roads and telephones. An efficient infrastructure connects markets and expands investment opportunities. However, in much of the developing world poor infrastructure fails to meet the needs of firms. As section 2.1 shows, the ineffective provision of physical infrastructure figures as the most dominant concern of Nigerian manufacturers as well. This sub-section will provide more disaggregated information on the supply and reliability of essential utilities.

By far, the most significant problem of the physical infrastructure relates to unreliable and irregular power supply. The large majority of firms interviewed in Nigeria expressed their dissatisfaction with the services of National Electric Power Authority (NEPA). Uninterrupted supply of electricity is a rare occurrence in Nigeria. In Lagos, which is the hub of Nigeria's commercial activity, it is common to expect as many as five power breakdowns a day. In fact, many interviews for this survey were conducted in an environment without electricity. Voltage fluctuations are also common and are frequently held responsible for damaging the machinery.

Erratic power supply has become a fact of life for most manufacturers in Nigeria, who now increasingly rely on personal generators, voltage stabilizers and motors to keep their machines running. However, the self-supply of electricity can be considerably more expensive—about three times more expensive than NEPA charges. This can significantly raise the cost of production for domestic firms and put them at a significant cost disadvantage relative to their foreign competitors.

Estimates based on this survey suggest that real electricity costs have increased substantially since 2001. It is safe to conclude that a large part of this rising cost is attributable to reliance on private generators that run on expensive fuel.

Inadequate power supply can be particularly costly for small firms, which often lack resources for self-generation of electricity. As a result, according to independent estimates 16 per cent of small firms relied only on NEPA service; no such dependence was observed for medium and large firms. Power outages can cause firms to loose sales. Small firms lost 24 per cent of their output to ppower outages; medium firms lost 14 per cent and large firms 17 per cent (WDR 2005; pg 132).

Table 2.1 summarises the data on electricity and water supply, and the usage and reliability of telephone services. Firms generally have mains electricity for less than 3 days per week. Unreliable power supply appears to be a more pressing constraint for micro and small firms, who have mains electricity an average of 2.58 days per week compared to the 3.39 days per week of mains electricity for an average large/macro firm. That small firms are most badly hit by lack of power is easy to understand. Small firms are not well-connected to NEPA officials and are also not generally able to afford private generators. In contrast, many of the large firms visited by the survey team had dedicated lines of power supply courtesy of NEPA.

Water supply is also limited for many of the firms. On average firms have an adequate water supply for 2 days per week. Large firms are particularly badly affected with less than two days of adequate water supply a week. It is noted that one common response to unreliable water supply is for firms to invest in a well or cistern. Firms whose production relies quite heavily on water, such as cosmetics and foam industry, have especially reduced their dependence on publicly provided water supply. While this solves the supply problem, it certainly involves additional costs that could have been avoided had the central supply been adequate.

Telephone connections are generally more reliable than other utilities: telephones work on average 4.66 days per week. For medium and large firms this is slightly larger - about five days a week. Mobile connections, which are more readily available and generally more reliable, are gradually changing the telecommunications landscape of Nigeria. The waiting time for mobile telephones is considerably shorter and connections are faster. Several firms noted improvements in the telephone services as a consequence of growing reliance on mobile telephones.

TABLE 2.1

SUPPLY AND RELIABILITY OF UTILITIES

	All	Micro/Small	Medium	Large/Macro
How many days per week do you have mains electricity?	2.98	2.58	2.98	3.39
How many days per week do the telephones work?	4.66	3.89	5.52	5.01
How many days per week do you have an adequate water supply?	2.00	2.06	1.92	1.97
N	121	49	25	47

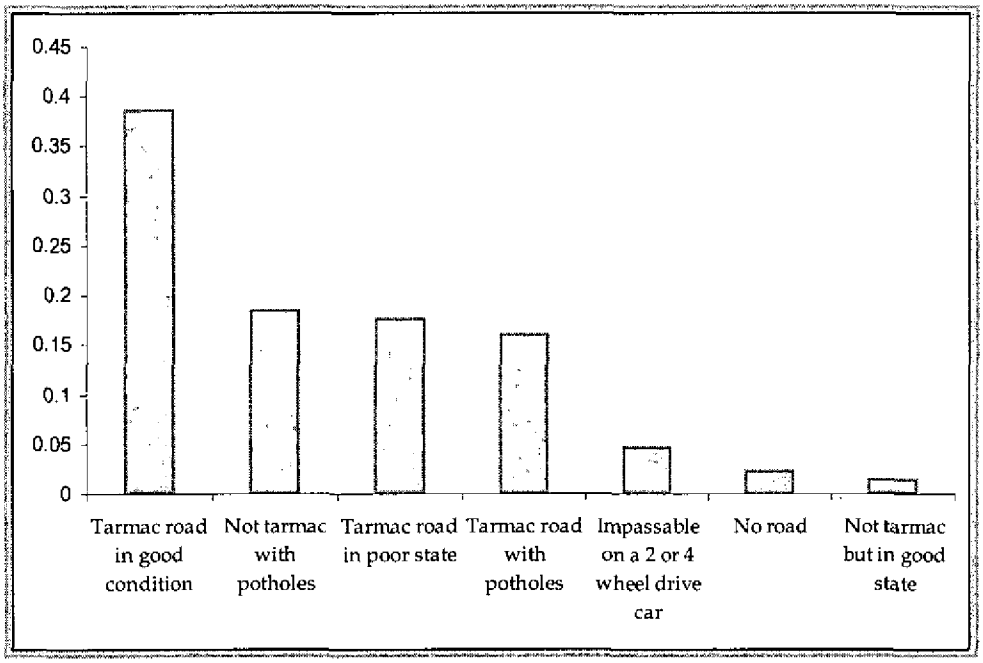
Note: *N* denotes the number of firms.

Another facet of the physical infrastructure is the condition of roads. The NMES collected additional information regarding the state of roads directly outside the enterprise. The often cited problem of poor infrastructure is difficult to quantify, particularly from the perspective of the individual firms. Asking individual respondents to rank the state of the infrastructure on some ordinal scale often produces misleading results. This is the case because often respondents believe the infrastructure in their area to be of a certain quality, but they have limited information about infrastructure in other areas.

In the NMES an alternative approach was used, designed to get objective rather than subjective data on the matter. As Figure 2.2 shows, most firms seem to have a road directly outside the enterprise: only about 2.5 per cent of the firms lacked a road in the immediate vicinity. However, despite the existence of a road only 38 per cent of firms in the sample have a tarmac road 'in good condition'. The next largest category was 'not tarmac with potholes and bumps' – this was reported to be the case by 18.5 per cent of the firms. This was followed by tarmac road in poor state of repair (17.7 per cent) or with potholes (16 per cent).

FIGURE 2.2

THE STATE OF ROADS DIRECTLY OUTSIDE THE ENTERPRISE



Note: The graph shows proportions of firms in each category. The total number of firms in these calculations is 114.

The state of road infrastructure appears to vary by firm size, as shown in Table 2.2. Medium and small firms are less likely to have a tarmac road in good condition: only 28 per cent of medium firms and 35 per cent of small firms have a tarmac road in a good condition, as opposed to the corresponding figure of 44 per cent for large firms. Large firms require good roads for the transport of raw materials and finished products. It is for this reason that they locate along good roads. Medium-sized firms are also more likely to be situated in areas without tarmac roads or where tarmac roads are in a poor state: between 28 and 32 per cent of the medium-sized firms are in the categories 'not tarmac with potholes' and 'tarmac road in poor state' respectively. This is particularly costly from an efficiency point of view given that medium firms tend to be more infrastructure-intensive than smaller firms.

TABLE 2.2

THE STATE OF ROADS, BY FIRM SIZE

	Micro/Small	Medium	Large/Macro
Tarmac in good condition [N=46]	0.35	0.28	0.44
Not tarmac with potholes [N=23]	0.22	0.28	0.10
Tarmac road in poor state [N=20]	0.08	0.32	0.17
Tarmac road with potholes [N=19]	0.18	0.12	0.14
Impassable on a 2 or 4 wheel drive car [N=6]	0.06	0.00	0.06
No road [N=3]	0.04	0.00	0.02
Not tarmac but in good state [N=2]	0.04	0.00	0.00

Note: *N* denotes the number of firms.

2.3 Access to finance

Well-functioning financial markets are an important ingredient for promoting economic growth. Developed financial markets allow access of firms to new markets, and help to promote greater competition, innovation and productivity in the economy. Even when faced with profitable investment opportunities, many firms lack the resources to exploit these. With financial markets unwilling to lend, investment decisions of firms become more dependent on internally generated cash flow or resources from family, friends and the informal sector.

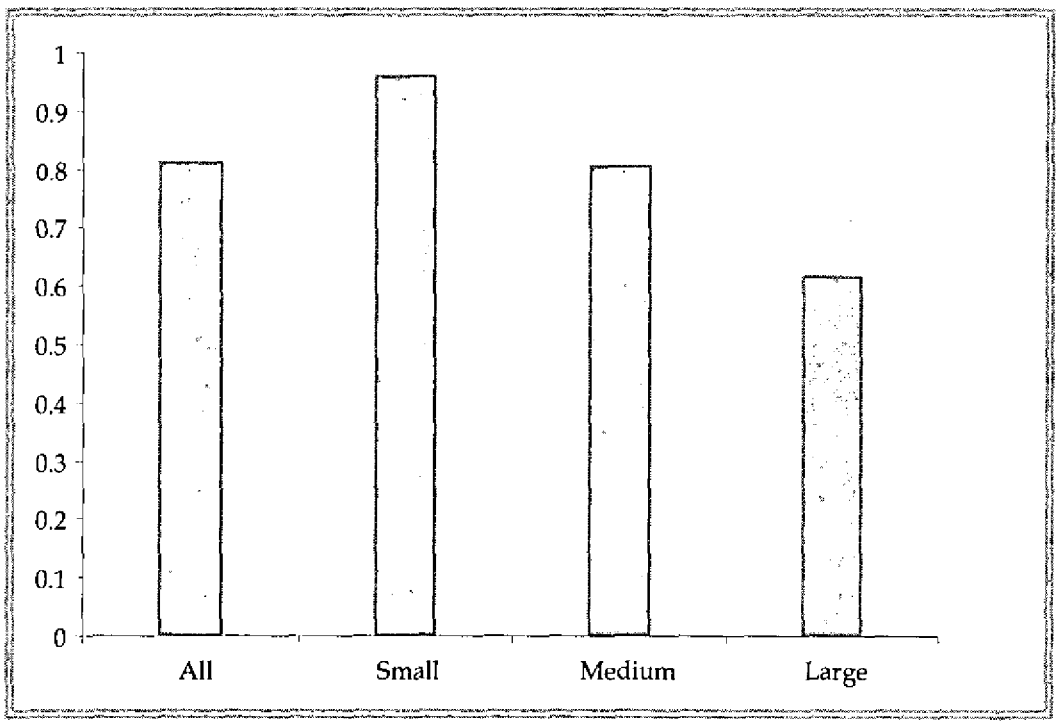
The costs of an inadequate financial infrastructure are demonstrably higher for small and medium-sized firms, because these firms are not well-connected to lenders and often lack the necessary credit history and collateral required for accessing bank finance. Cross-country evidence from investment surveys suggests that smaller firms are 50 per cent more likely to view access to credit as a severe constraint (WDR 2005). Yet it is precisely these smaller and less privileged firms that are especially important for creating investment and job opportunities for the poor. A financial system that alleviates credit constraints of smaller firms is thus essential not just for promoting growth, but also for poverty reduction.

Like other low-income developing countries, weak financial markets are an important constraint for the average Nigerian manufacturer. As section 2.1 shows, "access to credit" consistently ranks as a leading investment constraint of Nigerian manufacturers, both small and large (see Figure 2.1). This section provides more detailed evidence on the various financial imperfections faced by firms in our sample.

The large majority of firms in our sample appear to have witnessed cash flow problems during the last year. When asked if they were faced with liquidity problems in 2003, a strikingly high percentage of the sample—81 per cent—responded in affirmative (see Figure 2.3). As expected, a higher percentage of smaller

FIGURE 2.3

PROPORTION OF FIRMS FACING LIQUIDITY PROBLEMS IN 2003



Note: The graph shows proportions of firms in each category. The total number of firms in these calculations is 124.

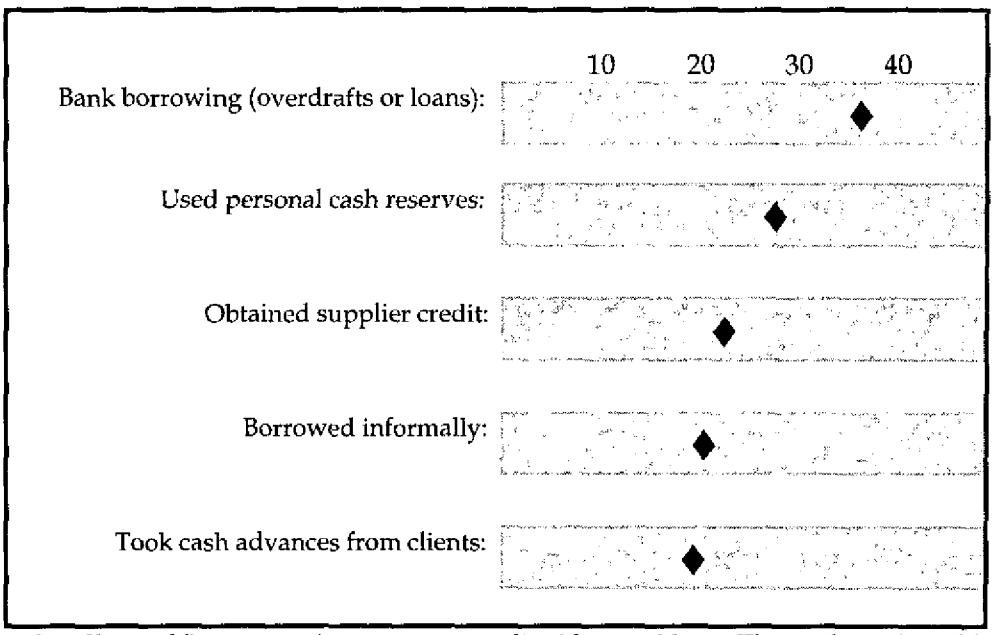
and medium-sized firms reported to have faced liquidity constraints: 96 and 80 per cent, respectively. In contrast, only 62 per cent of the large firms had cash flow problems in 2003.

Firms may respond differently to these liquidity problems, depending on the constraints and opportunities open to them. Figure 2.4 summarizes the importance of five major firm responses to overcome liquidity problems.[3] A convenient and natural response of firms suffering from resource shortfalls is to turn towards bank finance, whether through loans or overdrafts. About 35 per cent of the respondents ranked bank borrowing as their principal means of overcoming cash flow problems. But not *all cash strapped firms have access to bank finance - smaller firms especially feel* abandoned by the financial system (see discussion below).

Firms rely on a variety of methods to deal with liquidity constraints. A second prominent response, relied upon by 28 per cent of firms in the sample, is to use personal cash reserves when faced with acute cash shortages. A modest

FIGURE 2.4

HOW DO FIRMS RESPOND TO LIQUIDITY PROBLEMS?



Note: Share of firms reporting a response to liquidity problems. The total number of firms in these calculations is 101.

percentage of firms stayed afloat by obtaining supplier credit (21 per cent) and taking cash advances from clients (19 per cent). Those denied credit by the formal banking system—mainly micro and small firms—also depended on informal borrowing: 20

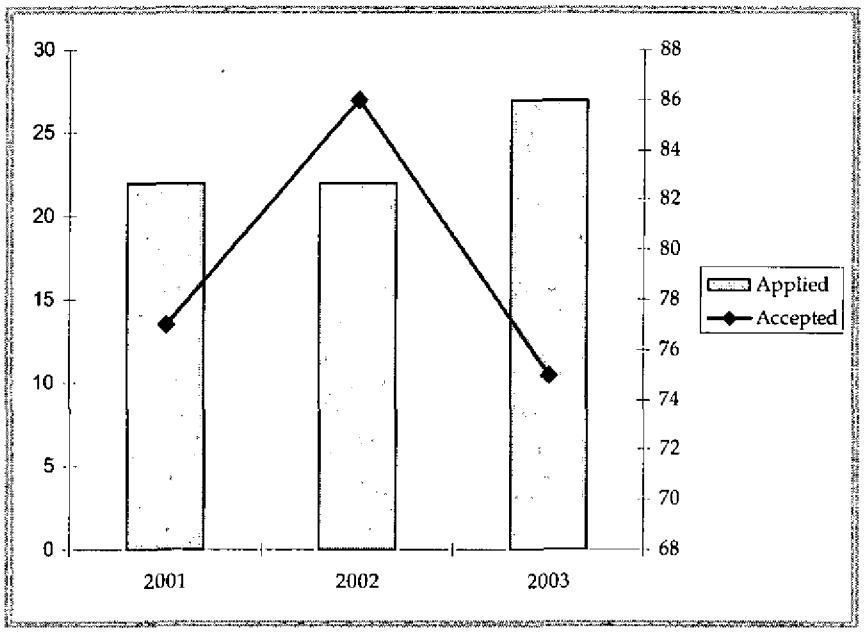
[3] Since each respondent was allowed to report multiple answers, figures in the chart do not add up to 100.

per cent of the firms reported to have relied upon informal borrowing at some point in time. A tiny percentage of sampled firms sold off raw materials and equipment or relied on injection of funds from shareholders (under 10 per cent; not reported in the chart).

As Figure 2.4 shows, a larger percentage of firms mitigate their liquidity problems by using means other than bank borrowing. It is instructive to examine the pattern of bank borrowing among the sampled firms. In this regard, the NMES posed a series of questions on the prevalence of loans and overdrafts from formal financial institutions. Survey evidence suggests that long-term loans, especially loans whose repayment period exceeds one year, are a rarity in the sample. The vast majority of sampled firms did not even apply for a bank loan during the period 2001-03. At most 27 per cent of the firms submitted an application for a bank loan (see Figure 2.5). A high proportion of these submitted applications—between 75 and 86 per cent—were accepted.

FIGURE 2.5

RELIANCE ON BANK LOANS REMAINS LIMITED



Note: Share of firms in each category.

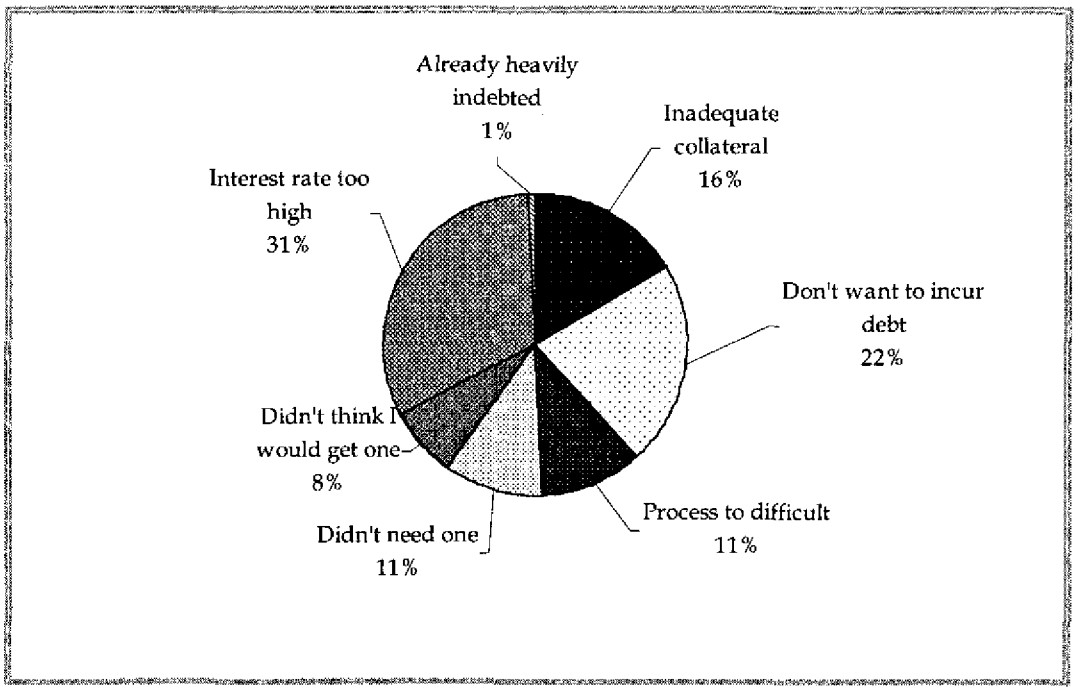
Clearly, only a minority of firms have sought loans from formal financial institutions—and these appear to be firms that have a promising chance of loan applications being accepted. Applications for bank loans primarily came from large

firms: a mere 18 per cent of the firms that furnished loan applications could be characterized as small. Firms that were successful in obtaining bank finance took, on average, 2-3 loans during the period 2001-03. Few of these loans required any third-party guarantees to be successful. However, bank loans did require collateral in the form of plant, property and other fixed company assets.

It is important to ask why so few firms rely on bank financing. For firms that did not seek bank funding, the NMES probed possible reasons for refusing to apply for bank loans during 2001-03. Figure 2.6 summarizes the firm responses into major categories. A majority of firms, 31 per cent, were deterred from applying for bank loans due to high interest rates. In the next major category are firms that do not want to incur debt (22 per cent of firms that responded). However, it is important to note that this is not because these firms *do not* require a loan.

FIGURE 2.6

REASONS FOR NOT APPLYING FOR A BANK LOAN



Note: Share of firms reporting a particular reason. The total number of firms in these calculations is 101.

In fact, when firms that did not want to incur debt were asked if their enterprise does not require a loan, they unanimously disagreed. The lack of fixed assets that could

possibly act as collateral serves as another major reason for the absence of loan applications, cited by 16 per cent of the firms as being important. This is more likely to be true for smaller firms who generally lack collateralizeable assets. Other firms regarded the loan process as too difficult (11 per cent) or did not express a need for loan (11 per cent) or were not hopeful that a loan would actually be approved and granted (8 per cent).

During the period 2001-03, there appears to be a greater reliance on bank over drafts, especially among medium and large firms. Compared to only 18 per cent of the firms that obtained bank loans, about 42 per cent of the sampled firms availed the overdraft facility from various banks. But like other modes of bank financing, large and macro firms were the prime beneficiaries of overdraft facilities. As Figure 2.7 shows, 83 per cent of the large firms had taken overdrafts from banks during the period 2001-03. By contrast, 46 per cent of the medium-sized firms and only 11 per cent of the smaller firms had any overdraft arrangement during the above period.

Many firms have entered into an arrangement, whereby banks provide an overdraft facility that is renewed on an annual basis. Smaller and medium-sized firms may be asked to renew this facility on a monthly or quarterly basis. The maximum combined overdraft facility, averaged over the entire sample, was 350 million Naira for a single year. The very large or macro firms had the facility to borrow in excess of 1 billion Naira as well.

The annual interest rate charged on these overdrafts ranged between 21 and 25 per cent. Thanks to the Nigerian Government's attempts to cut down borrowing costs, prevailing interest rates have fallen from the high range of 30-35 per cent a couple of years ago. Still, most firms believed that the interest rates remained effectively high, especially when combined with various hidden costs in the guise of bank charges and special conditions. This is also consistent with findings of Figure 2.6

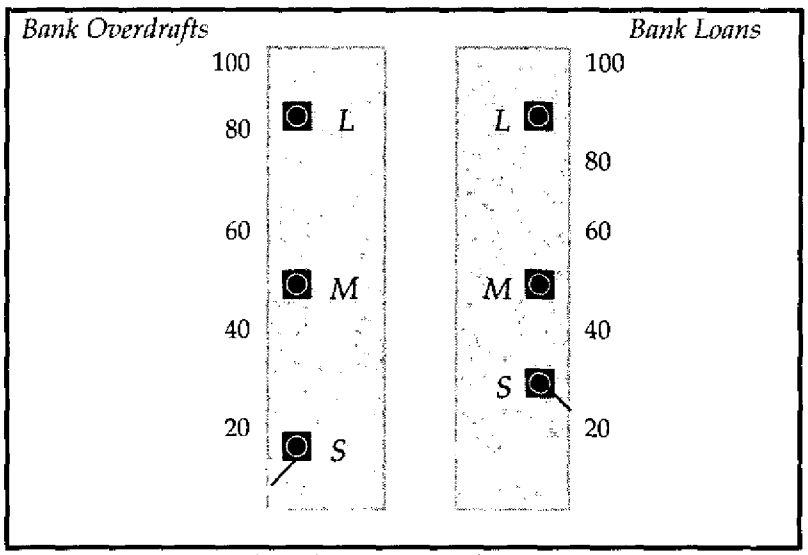
While bank lending during 2001-03 was dominated by overdrafts, many firms had taken bank loans prior to 2001. The NMES specifically asked individual firms if they had "ever" taken a bank loan in the past. The right-hand column of figure 2.7 describes the results. About 44 per cent of the firms had drawn a bank loan at some point in the past—the majority of these were large and medium firms (81 and 46 per cent, respectively). Only about 20 per cent of the small firms had "ever" taken a bank loan in the past.

As is clear from the survey evidence, overdrafts remained the primary mode of bank finance during the 2001-03 period. It is clear that banks appear hesitant to advance long-term loans whose repayment period exceeds one year. This was confirmed by firm managers in informal conversations with enumerators. Firm managers frequently complained that banks are simply not interested in lending on a long-term basis. One perception, held by many entrepreneurs, was that banks were interested in making quick money, finding it easier and more convenient to earn greater returns by advancing short-term loans. However, the situation is slightly more complex, especially when viewed from the perspective of banks. Most Nigerian banks are under-capitalized and are faced with limited resource flexibility.

Another concern that propped up regularly was the critical role of macroeconomic and political uncertainty in influencing lending behaviour of banks. Macroeconomic distortions, regular depreciation episodes, and low credibility of public policies may have created an environment where banks are hesitant to commit financial resources for longer time periods. This suggests that another channel through which uncertainty might affect firm performance is by shaping lending behaviour. Equally, this is consistent with the suggestion that uncertainty may be more costly for countries with lower levels of financial development; see for example, Serven (2003).

FIGURE 2.7

FIRMS WITH OVERDRAFT & LOAN FACILITIES, BY FIRM SIZE



Notes: The symbols should be read as follows, *L:* large; *M:* Medium; *S:* Small Data on overdrafts is based on the question; "Has

your enterprise had any overdraft facilities with banks since 2001?" Data on loans is based on the question: "Have you ever obtained a loan from a bank or a similar institution"?

While bank lending remains mainly limited to large and medium firms, smaller firms may be pushed towards the informal financial market. To assess the importance of informal borrowing and lending, the NMES asked a range of questions on the subject. Survey evidence indicates that no medium and large firm reported to have participated in the informal financial market. But surprisingly enough, even the smaller firms seem to avoid informal modes of borrowing and lending. Only about 15-16 per cent of the sampled firms (mainly micro and small firms) engaged in informal borrowing and lending during 2001-03.

Firms that did engage in informal lending or borrowing dealt mainly with friends or families rather than professional money lenders. It appears that informal loans were advanced for benevolent rather than pecuniary reasons, which is why not even a single firm charged an interest premium on these loans. When asked why firms extended informal loans, most firms regarded this as a family/friendly obligation. Others believed that this was driven by reciprocal behaviour, in the sense that lending to family and friends makes it easier to borrow from them later.

Overall, the weight of evidence points towards important deficiencies in the country's financial system, particularly in its ability to meet the financing needs of smaller and medium-sized firms. Improving the operation of financial markets in Nigeria remains a high priority. But in doing so, it is important to avoid the pitfalls of traditional government interventions, such as providing subsidized credit to favoured sectors and firms. Recent development experience is replete with failed experiments at providing subsidized credit to small and medium enterprises. Such schemes have often been ill-designed and poorly implemented, with the result that funds are unable to reach the intended beneficiaries. The end result: poor countries, by implementing subsidized credit schemes, substituted one kind of financial imperfection with another.

As the *World Development Report 2005* argues, new and innovative strategies need to be designed for a stronger financial sector. These may include, among others, such measures as promoting greater banking competition, facilitating information flows, securing property rights, preventing excessive risk-taking and promoting

macroeconomic stability. The Nigerian Government is alert to the broader challenges of financial sector reform and has taken several active measures for the sector.

While financial reform is often slow and painful, firm perceptions indicate some optimism at the prospects for reform. The NMES asked managers how confident they were in the ability of the country's financial system in providing finance to private firms like theirs. They were asked to rate their degree of confidence in the financial system before democracy in 1999, now and two years from now. Results are summarized in Table 2.3.

For the pre-democracy period, no firm fully agreed with the statement: "I have full confidence in the ability of my country's financial system to provide financing to private firms like mine". To the contrary, a staggering 57 per cent of the respondents expressed dissatisfaction with the financial system before democracy was introduced in 1999. 62 per cent of the respondents agreed with the statement for the current period. More importantly, a higher percentage—75 per cent—expressed greater confidence in the financial system in two years time. This suggests a fair degree of optimism regarding the future of the financial sector.

TABLE 2.3

CONFIDENCE IN THE FINANCIAL SYSTEM

	Before democracy in 1999	Now	Two years from now
Disagree	57	35	23
Agree	29	62	75
Fully agree	0	0	0
Fully disagree	14	3	2

Note: Proportion of firms agreeing with the following statement: " I have full confidence in the ability of my country's financial system to provide financing to private firms like mine". Calculations based on a sample of 120 firms.

2.4 Governance and the cost of doing business

Corruption, rent-seeking and patron-client relationships contribute to a poor investment climate in developing countries. This is because corruption acts as an additional tax on entrepreneurial activity and compounds the costs of doing business. The *Investment Climate Surveys* conducted by the World Bank have shown that most firms in developing countries expect to pay bribes to public officials. Corruption is mainly a "public sector phenomenon" and is mostly prevalent in accessing public services—such as getting connected to public utilities, clearing goods through customs, submitting tax returns, or getting licenses and permits.

Firms in many developing countries, especially those in Africa are required to make additional unofficial payments for ensuring a steady supply of basic public services. While firms are already handicapped by poor infrastructure, limited demand, and liquidity constraints, corruption further compounds the costs of doing business. Firms that are required to bribe officials for getting connected to electricity or clearing goods through customs have to factor these additional costs in their expenses, which can hinder their productivity and efficiency.

For the Nigerian manufacturers, the secure supply of water and electricity is a major challenge. Power failures are a regular occurrence, and restoring the supply of electricity can often involve additional payments to NEPA officials. Firms that are dependent on government contracts are rarely successful without greasing the palms of government officials. A respected engineering firm complained that it had been witnessing a drastic fall in sales since it started following a policy of "no gratification".

There was a widespread view that when firms do business with the government, they are required to pay unofficial payments to secure the contract. About 56 per cent of the firms admitted that firms in their industry pay some proportion of the contract value as a bribe, and this could range from less than 1 to more 25 per cent. 23 per cent of the firms believed this unofficial payment to be 10-17 per cent of the original contract value; 15 per cent of the firms placed this in the range of 2-9 per cent of the contract value; and 14 per cent thought this bribe to be more than 18 per cent of the contract value.

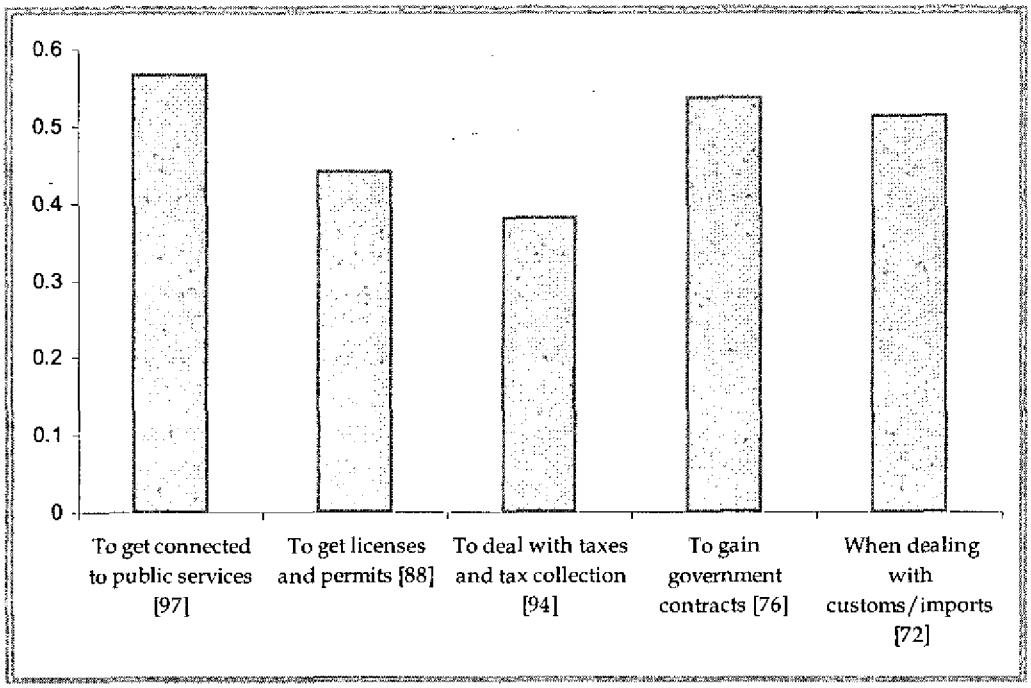
Firms may also require connections with public officials for securing other training and support services from the government. Firms that imported raw materials and machinery from abroad complained of excessive delays in clearing

goods through customs. These delays are often meant to extort unofficial payments from importers. To prevent such delays, most importers are relying on private agents that specialize in customs clearance—which clearly add to the overall cost of production. Other than the financial costs, such delays can waste precious managerial time and interfere with crucial firm planning. Some firm managers reported that 50 per cent of their time was spent with government officials, negotiating contracts, dealing with tax authorities, or solving anomalies on import duties.

More systematic evidence indicates the high prevalence of unofficial payments in accessing various public services. Figure 2.8 illustrates the incidence of additional unofficial payments in five different situations.[4]

FIGURE 2.8

PROPORTIONS OF FIRMS* THAT 'ALWAYS', 'USUALLY' OR 'FREQUENTLY' NEED TO MAKE UNOFFICIAL PAYMENTS



* The question asked of the respondents refers to 'firms like yours'. N denotes the number of firms that responded to the question.

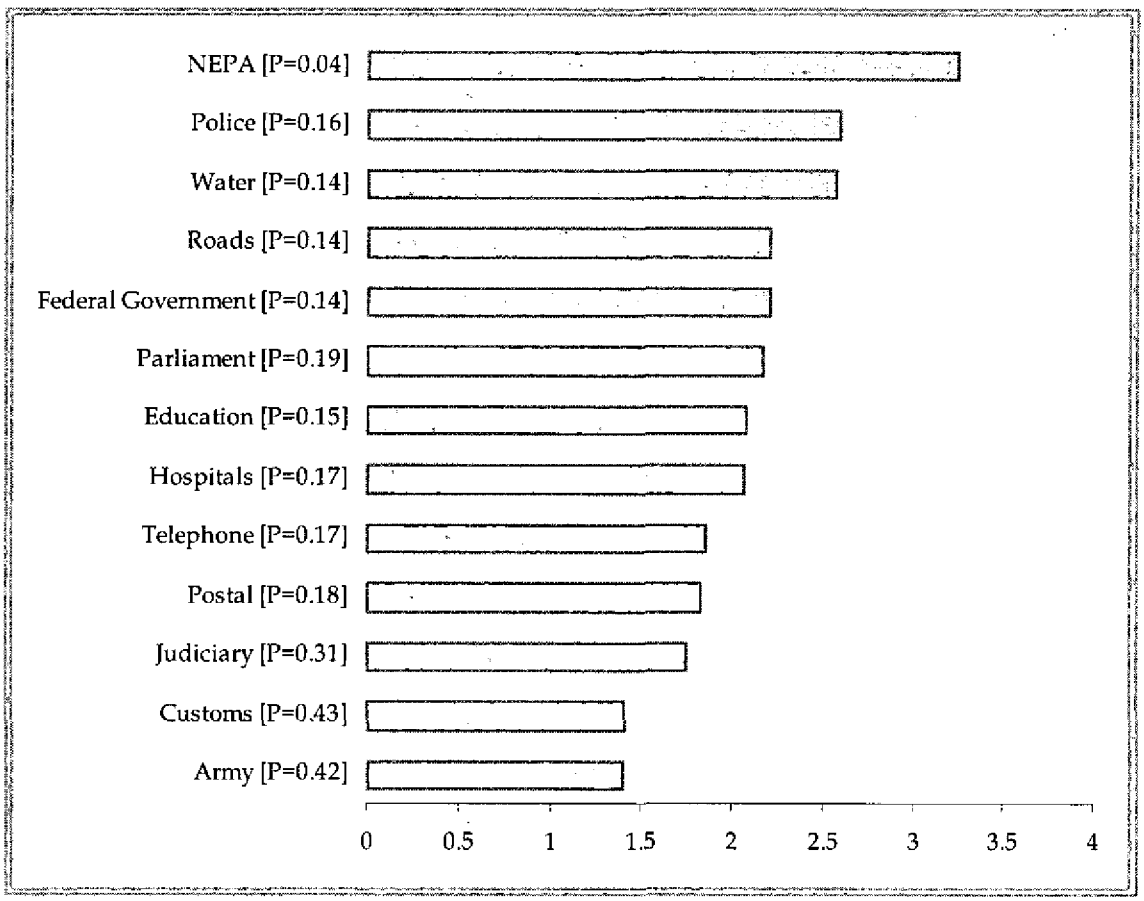
[4] The data used for these calculations were based on a question where respondents were asked to indicate how often 'firms like yours' need to make extra, unofficial payments in various situations.

Of the five situations referred to here, public service connections appears to be the one with the highest incidence of additional payments, 57 per cent, followed by government contracts (54 per cent), customs (51 per cent), licence/permit processing (44 per cent), and tax collection (38 per cent).

The broader issue of how respondents rate the overall quality, integrity and efficiency of services delivered by various public services and agencies is examined in Figure 2.9. Respondents were asked to use an ordinal scale from 1 to 4, where 1 was 'very good' and 4 'very bad'. The figure shows the average scores ranked from the poorest to the best. Next to each category is the proportion of non-responses for each category. This proportion is atypically high for armed forces, customs, and the judiciary courts. This is because many firms may have limited exposure to these services.

FIGURE 2.9

RATING OF OVERALL QUALITY, INTEGRITY AND EFFICIENCY OF SERVICES DELIVERED



Note: The following scale was used: 1 = 'Very good'; 2 = 'Good'; 3 = 'Bad'; 4 = 'Very bad'. Pr(N/R) = Proportion of non-responses are contained in parenthesis. The full sample consists of 124 firms.

The worst average score is given to the electricity service, 3.26, confirming earlier results about the dilapidated state of infrastructure and the growing dissatisfaction on the services offered by NEPA. This was followed by the police at 2.60, water services, 2.58 and roads, 2.26. There have been some changes in the perceptions about the quality, integrity and efficiency of public services since the first wave of the NMES was carried out in 2001. The Parliament and Federal Government have received less favourable ratings in the current survey (2.18 and 2.22, respectively). Compared to the Wave-I results, telephone services are now more favourably viewed (1.87). This could be the result of more reliable mobile connections available in the market. Similarly, postal services are better perceived by firm respondents, with an average score of 1.84.

3 Creating Jobs in Nigerian Manufacturing

The last section focused on how the performance of firms in Nigeria's manufacturing sector can be improved. This section focuses on another key policy objective that superior firm performance can help to achieve—the creation of better paid jobs.

3.1 Introduction

During the last decade, job creation in sub-Saharan Africa has primarily taken place in the self-employment sector, particularly in urban areas. Nigeria is no exception to this general trend. Using household survey data for the late 1990s, Aromolaran (2004) documents that total wage employment was no more than 12 per cent of the labour force in his sample (page 437). The growth in self-employment rather than in wage jobs has important implications for a range of policy issues. With the expansion of education, the number of formal sector jobs is failing to keep pace with the growth of school leavers. Higher and higher levels of education are perceived as being necessary to obtain a job.

One way to assess this is to consider the returns to education—that is to estimate how much earnings increase with the level of education. Aromolaran (2004) showed that the returns to education tend to increase with the level of education. This is a very important finding for policy as it implies that an expansion of education at the primary and secondary level may not generate increases in income for those who stop education before the end of secondary school. An expansion of education without an expansion of jobs for the newly educated is a recipe for social unrest.

It is not simply the number of jobs that is of policy concern. It is also the wages these jobs pay. Policy needs to focus on creating high wage jobs. If those making a marginal living in the self-employed sector could be absorbed into a higher paying wage sector this would provide a powerful mechanism by which incomes for the poorest could expand. It is a mechanism that is powerfully driving the growth of the Chinese economy at present and this mechanism is conspicuously absent both in Nigeria and in most African countries. Creating a high wage job creation machine needs to be a central objective of any policy.

So how can more, better paying, jobs best be created? In this report we focus on three ways to meet this objective. First, it is necessary that firm expansion is

linked to employment creation—how that can be done is set out in section 3.2. Second, the increase in labour demand needs to be concentrated among relatively unskilled workers. It is these workers who, as will be shown in section 3.3, have low incomes and for whom more employment opportunities are urgently required. Third, more skills are required among the workforce but it will be argued that the value of these skills—both to those acquiring them and the economy—will depend on the ability of firms to grow rapidly. The relationship between skills and earnings is the subject of section 3.4.

The common factor across all these measures for creating more and better paying jobs is for firms to be able to expand. It is not simply that firms must grow but that they must grow very rapidly. What is the key to rapid firm expansion? It is here that we see the link with the concerns of Nigerian manufacturers documented in the previous section. Some 30 per cent of the firms cited a lack of demand for their products as one of their three principal problems. For firms in the manufacturing sector there are two possible sources of demand—demand driven by the domestic market and demand for exports. As will be shown in the next section, very few firms in Nigeria's manufacturing sector export their products to foreign markets—and are hence overwhelmingly reliant on the domestic market. So at present firms will only be able to grow rapidly if the growth rate of the domestic economy also accelerates. As will be shown below, it is very unlikely that domestic demand alone will be able to provide the necessary growth for the massive creation of jobs that is required.

3.2 Firm Growth and Employment Creation

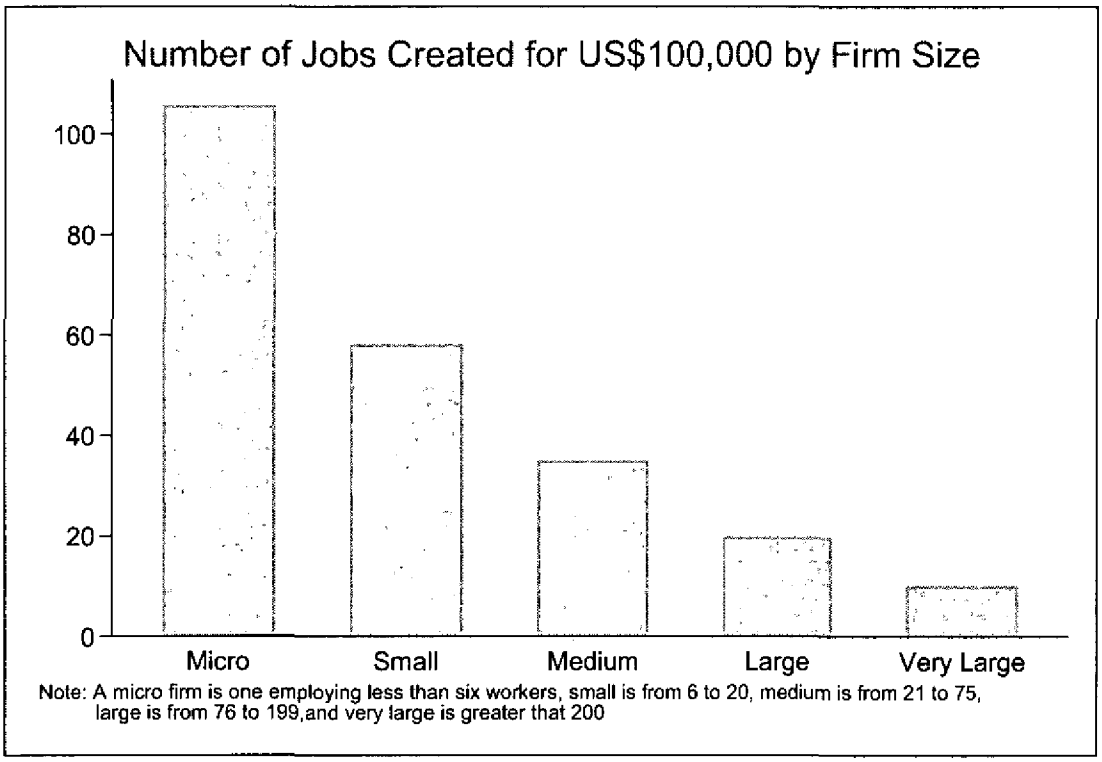
The growth of firms does not necessarily translate into greater job opportunities. This is because growth can be jobless. To see how this has occurred in Nigeria's manufacturing sector, we document differences in the rate of job creation between large and small firms. As the later sections will show, the amount of capital per employee that a firm uses differs very substantially depending on the size of the firm. The survey findings suggest that for a given level of investment, the micro and small firms have a greater potential for job creation. Figure 3.1 uses survey results to show how many jobs get created for US$100,000, depending on the size of the firm. As can be seen from the Figure, the differences are very large. A micro firm, defined as one with less than six employees, creates more than 100 jobs for US$100,000 of investment. This compares with about 10 for very large firms, defined as those with

more than 200 employees. Thus, jobs in micro firms cost about US$1,000 in terms of investment while those in very large firms cost ten times as much at US$10,000.

As will be shown in the next section, firm growth—whether measured by employment or output—has been virtually zero in our sample, and appears not to have varied either by the sector of the firm or by its size. The implication of these findings is that the rate and kind of employment creation will depend on which

FIGURE 3.1

WHERE DO JOBS GET CREATED?



Note: A micro firm is one employing less than six workers, small is from 6 to 20, medium is from 21 to 75, large is from 76 to 199,and very large is greater that 200

kind of firms are being set up in the economy. If, as is very likely, the newly created firms are mainly micro and small firms then a large number of jobs will be created for each unit of capital that is being spent on setting them up. Such a process may appear good for job creation but this process of firm growth has two problems both in terms of the number and kind of jobs that get created.

The first problem is that while a lot of jobs are created per unit of investment the amounts of investment may be very low. This is a mirror image of the point that micro firms use capital very economically—because it is scarce and expensive for

them as the last section showed. However, in total fewer jobs are going to get created because the micro firms are generally constrained in their ability to invest.

Notice, however, what would happen if micro firms were to invest. At present, the median micro firm employs 4 workers and has a capital stock of US$2,000. In contrast, the median very large firm employs 800 people with a total capital stock of US$9 million. If 200 micro firms were founded they would generate the same number of jobs as the present typical very large firm but the amount of capital required for this task would be only US$400,000 less than 5 per cent of the capital used in the very large firm. In practice, firms have a limited ability to invest and capital sums as large as US$2,000 are very high for most Nigerian entrepreneurs. For the most newly formed firms, the amounts of capital are less than those proposed in this example and these lower amounts of capital will be generating either fewer jobs or jobs with lower pay. And this leads to the next problem that a pattern of job creation through micro enterprises faces—the jobs being created carry low remuneration.

3.3 Earnings, Skills and Education in Nigerian Manufacturing

The last sub-section noted the differences between firms in their use of capital and explored its implications for job creation for each unit of capital. This sub-section will provide more detailed evidence on earnings, education and skills of workers in the NMES sample.

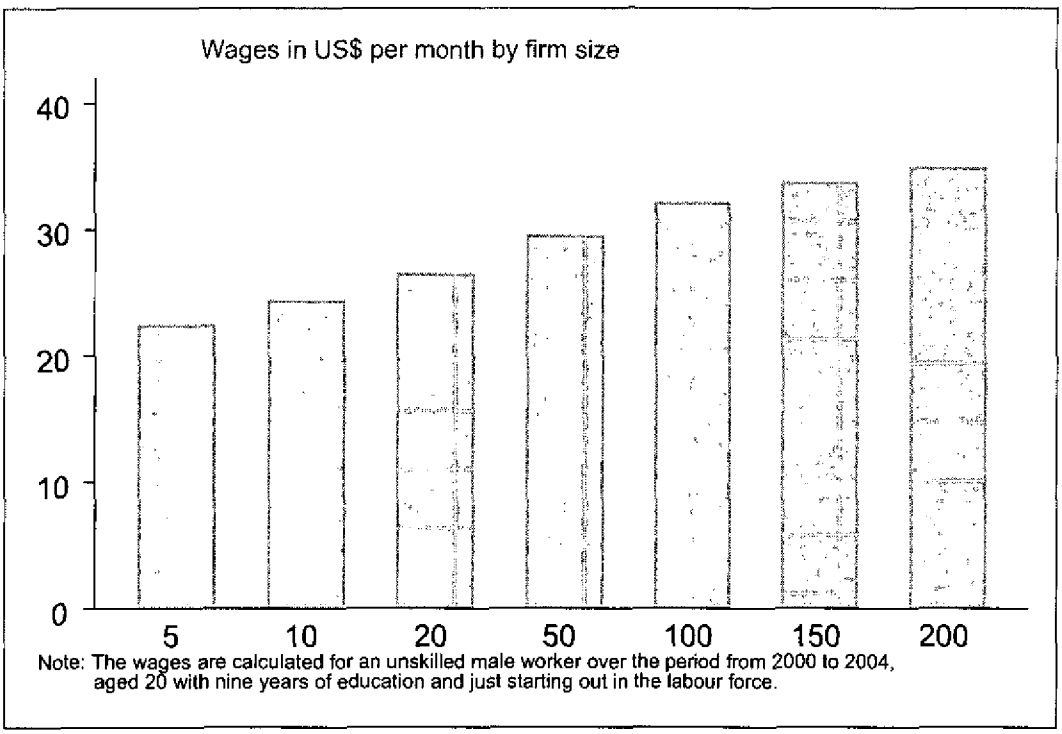
- ***Unskilled workers earn more in larger firms***

An important policy objective in the developing world is to generate gainful employment opportunities for the poor who remain largely unskilled. The poor could be lifted out of poverty if the get more and better-paid jobs. We use the survey evidence to ask the question: what is happening to the wages of unskilled workers in Nigeria? We will focus initially on younger workers as these are the workers who are currently entering the labour market and looking for jobs. In order to be specific, we consider production or support workers with nine years of completed education aged 20.

Figure 3.2 documents the pattern of earnings which results across firm size when we hold the skills and age of the worker constant. This is based on more formal estimations reported in the appendix. It is clear from Figure 3.2 that there is a continuous rise of wages with firm size, with unskilled workers earning more in larger firms. Given the way we have constructed the data, this is not due to the human capital of workers differing across the firms by size. For firms with 5 employees, the micro firms defined above, wages are just over US$ 20 per month. This rises to US$30 for firms employing 50 workers and continues to rise, although less rapidly for firms with 100 or more workers. It is clear that while micro firms produce a lot of jobs per unit of investment they pay much less than larger firms.

FIGURE 3.2

WHERE DO BETTER JOBS GET CREATED?



Note: The wages are calculated for an unskilled male worker over the period from 2000 to 2004, aged 20 with nine years of education and just starting out in the labour force.

- ***Real earnings only start to increase after secondary school education***

Skills are an important determinant of earnings. The earnings of workers depend in particular on their level of education, as education is often an important proxy for

skills. The data is drawn from the sample of workers undertaken at the same time as the firms were surveyed.

Table 3.1 provides the mean of real monthly earnings by education level. Education levels are divided into four categories: No education (which includes primary school dropouts); primary school graduates with no further education; secondary school graduates with no further education; and those that have had some post-secondary school education. As the table shows, the post-secondary school category is the largest category in the 2005 survey. This is in contrast to the 2001 survey where secondary school graduates were the largest category.[5]

Table 3.1 shows that real earnings only start to increase on the completion of secondary school. Thereafter, the increase is clearly non-linear. Secondary school graduates earn about 35 percent more than primary graduates but those with post-secondary education earn almost twice that of secondary school graduates. The non-linear nature of this relationship means that there is little, or no, income gain from education until a certain critical level is reached, which is 10 years of education in this sample. In fact, these descriptive statistics suggest that mean real earnings actually fall with primary school education.

TABLE 3.1

EARNINGS AND EDUCATION IN NIGERIAN MANUFACTURING, 2000–2004

	2000-2001			2002-2004: matched sample			2002-2004: unmatched sample		
Education level	Sample proportion (%)	Earnings in Naira (2000 prices) Mean	Earnings in US$ (2000 exchange rate) Mean	Sample proportion (%)	Earnings in Naira (2000 prices) Mean	Earnings in US$ (2000 exchange rate) Mean	Sample proportion (%)	Earnings in Naira (2000 prices) Mean	Earnings in US$ (2000 exchange rate) Mean
None	2.2	9,951	106	6.9	7,782	83	5.5	7,782	83
Primary dropout	0.7	5,134	55						
Primary	21.0	7,080	76	16.6	6,865	73	14.5	7,265	78
Secondary	62.1	9,363	100	33.4	9,361	100	34.8	9,162	98
Post-secondary	13.9	19,755	211	43.0	17,248	184	45.1	19,849	212
All	100	10,317	111	100	12,228	131	100	13,632	146
n	1131			679			860		

[5] The post-secondary school category is not directly comparable across the surveys. In 2001 the figures are for the university graduate category.

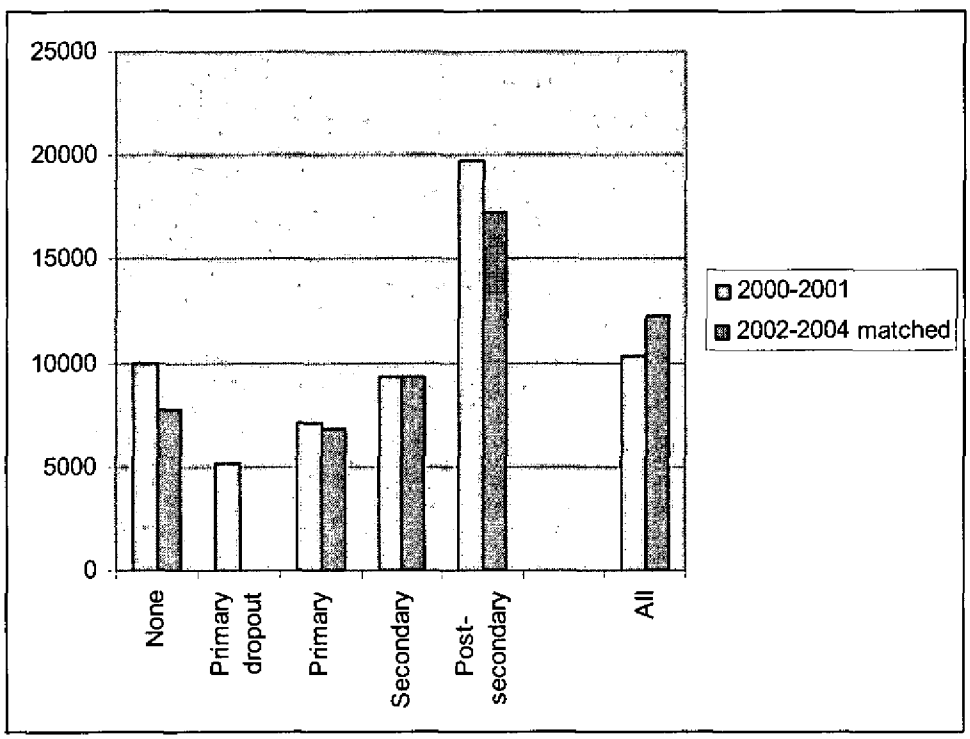
Notes: The primary dropout category was not calculated for the 2002-2004 sample, instead these were grouped with the None category. The matched sample is confined to those workers for which both individual and firm level data exists. The unmatched sample is those workers for which only individual, but no firm level, data exists.
Apprentices, who are unpaid, are excluded.

Figure 3.3 below contrasts earnings by educational level between the 2001 and 2004 surveys. In most cases the mean level is very similar across categories. However, earnings cannot be directly compared across the years as the sample used to calculate the mean levels is different. This is what explains the observed higher average level of earnings for the 2004 sample. The 2004 sample has a higher proportion of post-secondary educated people who have higher wages than the 2001 sample. This draws the average level of earnings up.

FIGURE 3.3

REAL MEAN MONTHLY EARNINGS BY EDUCATIONAL LEVEL, 2000–2004

(2000 PRICES IN NAIRA)



- ***Skilled workers earn (in real terms) almost twice as much as unskilled workers***

The occupation in which the individual works may provide another indication of the skills of the worker, which in turn may affect earnings. A skilled worker is defined as one belonging to one of the following occupations: managers; professionals (engineers, accountants, economists, technicians), skilled office workers, sales personnel, and supervisors. Unskilled labour includes unskilled office workers, service employees such as cleaners and guards, and production workers. The 2004 survey was designed to over-sample skilled workers. About 80 percent of the 2004 sample consists of skilled workers. This contrasts with the 2001 survey where skilled workers accounted for approximately 60 percent of the sample.

TABLE 3.2

EARNINGS AND SKILLS IN NIGERIAN MANUFACTURING, 2000–2004

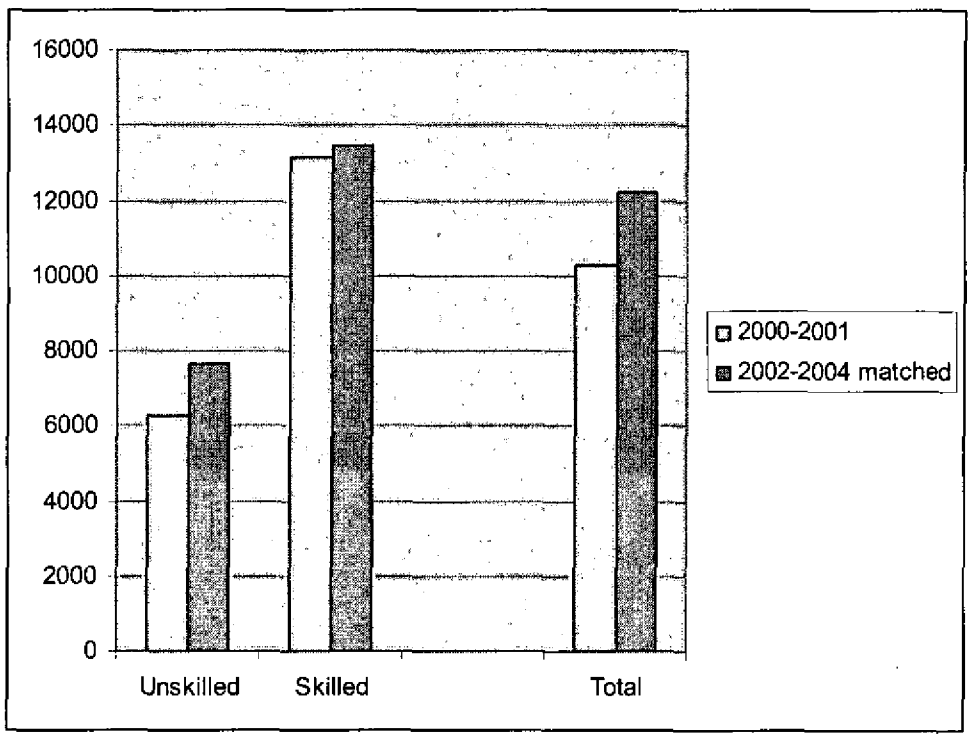
	2000-2001			2002-2004: matched sample			2002-2004: unmatched sample		
Skill Category	Sample proportion (%)	Earnings in Naira (2000 prices)	Earnings in US$ (2000 exchange rate)	Sample proportion (%)	Earnings in Naira (2000 prices)	Earnings in US$ (2000 exchange rate)	Sample proportion (%)	Earnings in Naira (2000 prices)	Earnings in US$ (2000 exchange rate)
		Mean	Mean		Mean	Mean		Mean	Mean
Unskilled	40.8	6,253	68	20.9	7,649	82	21.4	7,338	78
Skilled	59.2	13,124	140	79.1	13,439	144	78.6	15,346	164
All	100	10,317	111	100	12,228	131	100	13,632	146
N	1131			679			860		

Notes: The matched sample is confined to those workers for which both individual and firm level data exists. The unmatched sample is those workers for which only individual, but no firm level, data exists.
Apprentices, who are unpaid, are excluded.

As Figure 3.4 shows, mean real earnings for skilled workers are almost twice that of unskilled workers. There is some indication that the mean level of earnings for unskilled workers has risen since 2001. However, as discussed previously, this may be due to changes in the underlying sample.

FIGURE 3.4

REAL MEAN MONTHLY EARNINGS BY SKILL CATEGORY, 2000–04



4 Firm performance

In section 2 the information on the investment climate from the NMES for 2004 was set out. The results of the survey show clearly the role of infrastructure constraints and problems of demand and access to credit as perceived by the firms. In section 2 the problems both of earnings for jobs and the differences in earnings that exist

across firms of different size were documented. It was argued there that rapid growth of firms creating better paid jobs was vital for policy success in addressing the issues of poverty. In this section we show how firms have performed over the period for which we have data from the two surveys.

4.1 Firm Growth and Productivity

Two dimensions of firm performance that are important for long run job creation are rapid firm growth and enhanced productivity. Measuring both growth and productivity is difficult since capturing the changes in output for small firms can be problematic and inflation in the economy necessitates adjustment to measure real changes over time. It has not been possible to construct or use price deflators related to either the firm or the sector and we have had to rely simply on the overall price level as measured by the CPI. Where possible we check the survey findings for real output and input measures by dimensions of firm size that are less likely to be subject to these measurement issues.

The first and most basic question about firms in the survey that we need to answer is whether either output or productivity has been growing over time. Like the previous sections, we will document important differences across firms of differing size in Nigeria's manufacturing sector. In this section we have classified firms by their average size over the whole period into three classes: small firms which are firms employing les than twenty workers; medium firms which employ from 21 to 75 workers; and large ones which are those employing more than 75 workers. This procedure can mask firm growth if, as measured by employment, firm growth had varied across firms of different sizes. We have investigated whether this is the case and can find no evidence that either size or any of the time-invariant characteristics of the firms influence long run growth rates of the firms.

- ***There has been no marked increase in real output during 1998-2003***

Figure 4.1 uses the survey data to trace the evolution of real output over the period 1998-2003 for firms of different sizes. Irrespective of firm size, there has been no meaningful change in real output within our sample. This suggests that in the NMES sample firm growth has been very small—in fact negligible. This is true for all the

size categories and this result, of no rise in output, is confirmed by more formal estimations reported in the appendix.

It needs to be stressed that this is a result for our sample and that our sample is not representative of all firms in Nigeria's manufacturing sector. It is possible—indeed probable—that large numbers of firms have been both entering and leaving the sector. Evidence from other African countries suggests that this process of firm exit and entry is concentrated among smaller firms. So while we have no evidence that smaller firms in our sample have grown, it is very likely that the number of firms, particularly small ones has both increased and changed in composition. This is the main reason for focusing on differences across firms by size. While with the currently available data, it is difficult to make claims about the population of firms, we can draw interesting conclusions on how firm performance varies across size classifications.

However, it is possible to draw two important inferences from Figure 4.1. First, provided the NMES sample is representative of firms of particular sizes, we can argue that whatever firm growth has occurred would have been the result of net new entrants, and not due to expansion within existing firms. The second inference relates to another important measure of firm performance—the labour productivity, which measures output per unit of labour. Given that firm size has not grown whether this growth is measured by output or by employment, figure 4.1 suggests that labour productivity will also not have increased.

FIGURE 4.1

REAL OUTPUT BY AVERAGE FIRM SIZE, 1998–2003

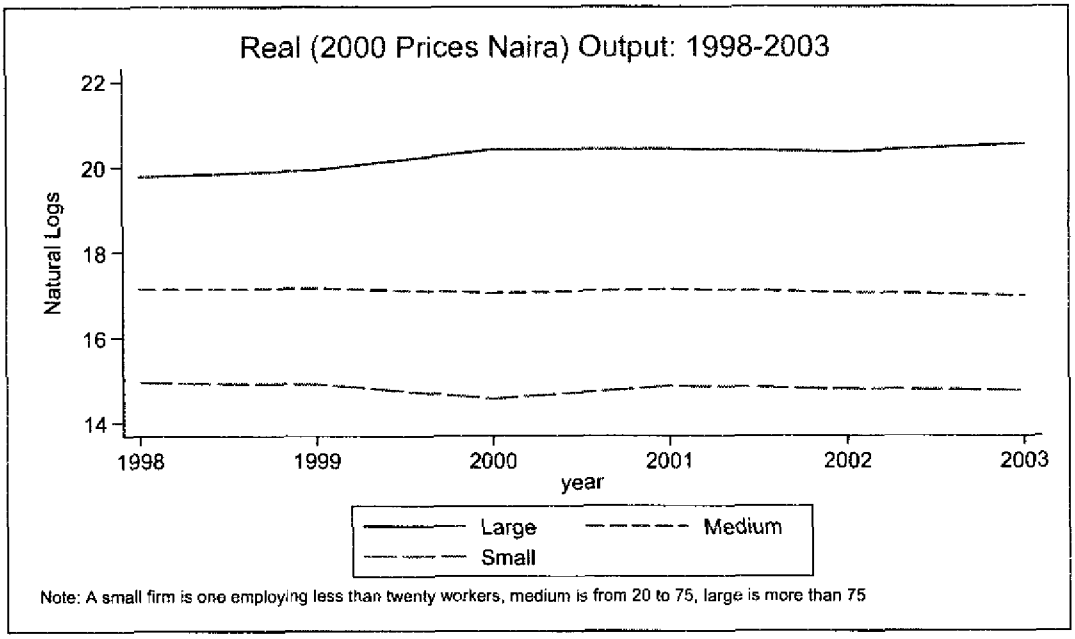
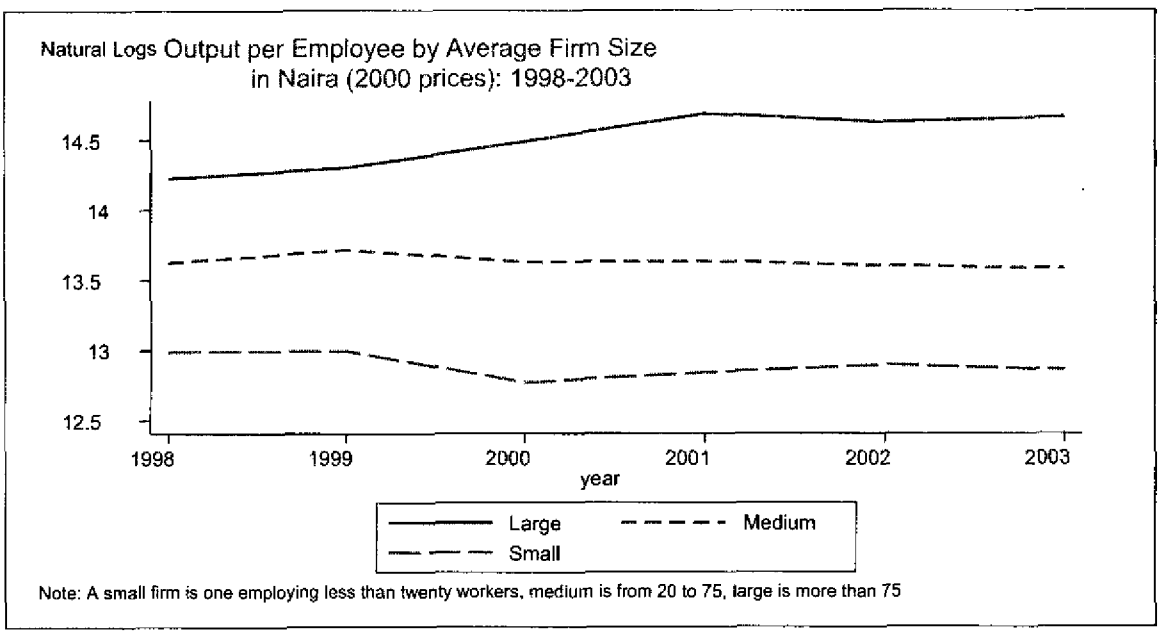


FIGURE 4.2

REAL OUTPUT PER EMPLOYEE, 1998–2003



- *There has been no discernable improvement in the efficiency of firms*

Figure 4.2 confirms this second inference by showing the pattern of labour productivity (measured by real output per employee) over the period from 1998 to 2003 for firms of different size. The broad pattern depicted in Figure 4.2 indicates no noticeable change in labour productivity over the sample period. At a first glance, Figure 4.2 does suggest a slight downward trend of real output per employee for small and medium firms and a similar upward trend for large firms, but this simply reflects changes in the underlying sample. Further analysis of the data, reported in the Appendix, also shows no change in the underlying productivity of the firms. How should this stagnation of labour productivity be interpreted? The patterns documented in Figure 4.2 suggest that Nigerian firms did not get better at changing inputs into outputs during the 1998-2003 period—or that there has been no discernible improvement in the efficiency with which firms have operated.

- *Labour productivity varies by firm size and across sectors*

Table 4.1 shows how a measure of labour productivity—that is output per employee—differs across firm size and industrial sectors in the sample. There are substantial differences in labour productivity both over size and across sectors. Aggregating over size groups, the chemicals/machines sector emerges as the one with the highest labour productivity, closely followed by metal, then food, textiles and wood/paper/furniture, with garments the least productive (see far right column of the table). The logarithmic difference between the highest and the lowest productivity sector (i.e. chemicals/machines and garments, respectively) is equal to 2, which corresponds to a very large difference in levels. The implication is that labour productivity in the chemicals/machines sector is about 640 per cent higher than that in the garments sector.

Aggregating across sectors, labour productivity increases monotonically with size (see bottom row of the table and Figure 4.3). There is a large difference between the two largest size groups. The log difference equal to 0.76 corresponds to a substantial differential of 115 per cent. However, the difference between small and

medium firms is even more pronounced, with medium-sized firms in this sample producing around 190 per cent more output per worker.

One of the advantages of firm level data of the kind generated by the NMES is that it is possible to analyse data at a low level of aggregation. It will be noted from the disaggregation presented in Table 4.3 that the pattern by which large firms have higher labour productivity than small firms is true for all the sectors. There is a near universal monotonic rise in labour productivity across size for all sectors, however there are some clear differences across sectors. Within the food sector, there is relatively little difference between small and medium firms, while large firms produce substantially more output per worker. In contrast, in the Wood/paper/furniture sector, the transition in size from small to medium appears more significant.

TABLE 4.1

LABOUR PRODUCTIVITY AND CAPITAL INTENSITY, BY SIZE AND SECTOR

OUTPUT PER EMPLOYEE

	Small	Medium	Large	All size groups
Food	13.23 [11]	13.61 [17]	16.13 [14]	14.35 [42]
Textiles	13.08 [5]	13.57 [17]	13.96 [37]	13.77 [59]
Garments	12.36 [104]	13.11 [21]	- [0]	12.49 [125]
Wood/Paper/ Furniture	12.69 [39]	13.83 [39]	13.92 [17]	13.38 [95]
Chemical/ Machines	14.01 [12]	13.78 [20]	14.89 [50]	14.49 [82]
Metal	13.99 [25]	14.65 [35]	14.71 [21]	14.46 [81]
All sectors	12.80 [196]	13.86 [149]	14.62 [139]	13.65 [484]

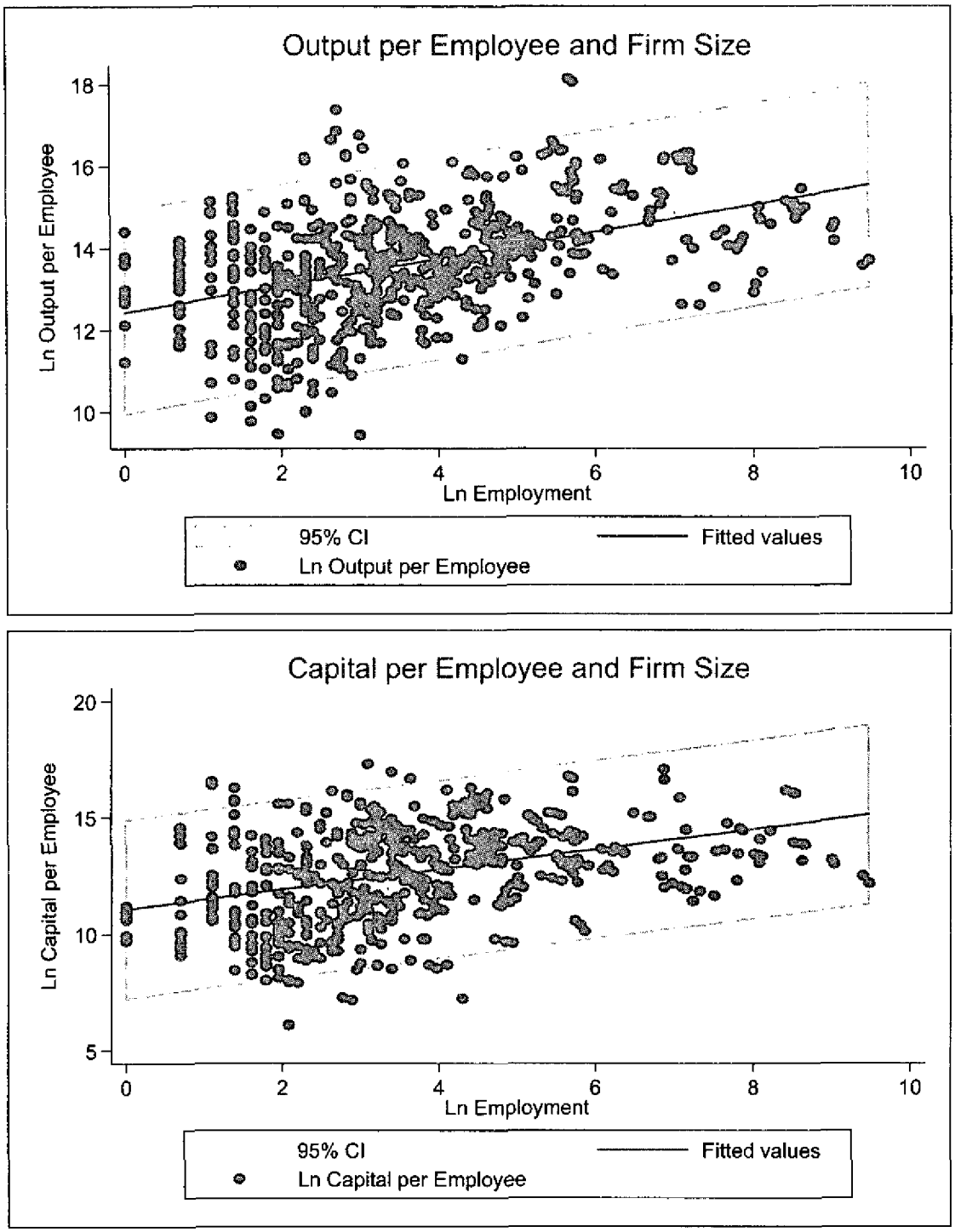
CAPITAL PER EMPLOYEE

	Small	Medium	Large	All size groups
Food	10.62 [11]	12.13 [17]	14.50 [14]	12.53 [42]
Textiles	13.41 [5]	13.97 [17]	13.39 [37]	13.56 [59]
Garments	10.52 [104]	12.36 [21]	- [0]	10.83 [125]
Wood/Paper/ Furniture	12.31 [39]	12.90 [39]	12.04 [17]	12.51 [95]
Chemicals / Machines	12.57 [12]	12.67 [20]	13.77 [50]	13.33 [82]
Metal	13.96 [25]	13.38 [35]	13.28 [21]	13.54 [81]
All sectors	11.52 [196]	12.94 [149]	13.46 [139]	12.51 [484]

Note: Both Value-added and Capital per employee are in natural logarithms of monetary values expressed in Naira. Numbers in [ ] are numbers of observations.

FIGURE 4.3

OUTPUT PER EMPLOYEE AND CAPITAL INTENSITY BY FIRM SIZE

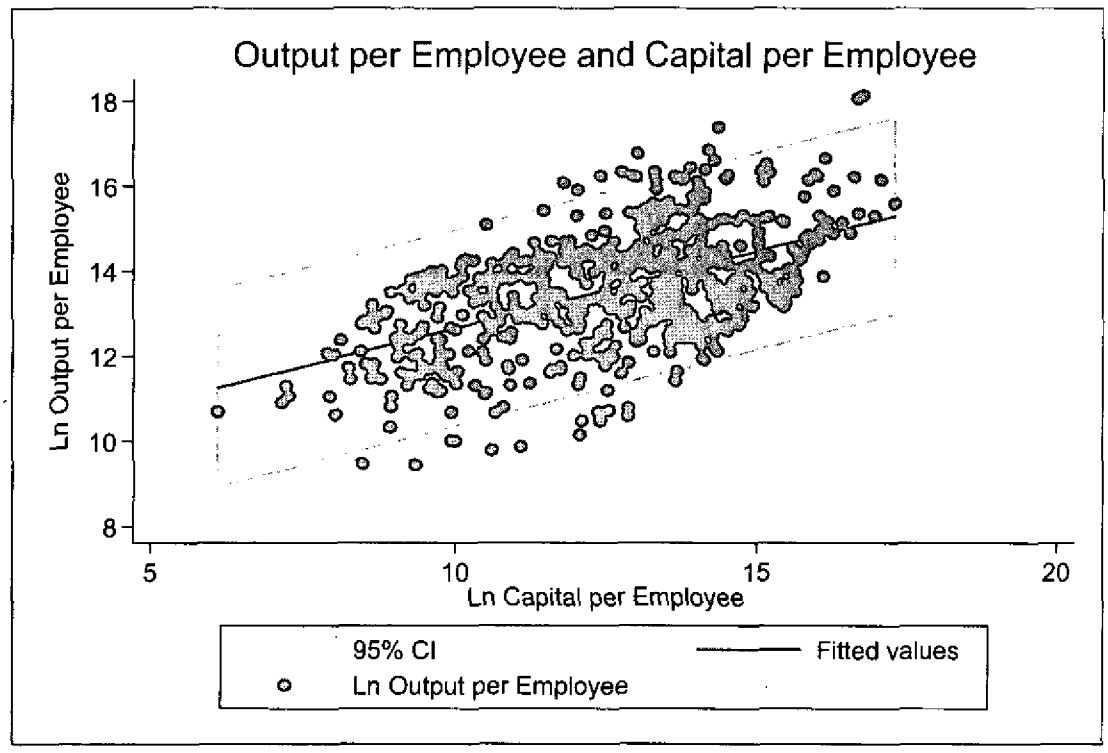


- *Capital intensity of firms can explain differences in labour productivity*

Labour productivity is determined in part by the capital intensity of the firm. Capital intensity measures the relative use of capital compared to other factors, such as labour, in the production process. The lower parts of Table 4.1 and Figure 4.3 show the differences in capital per employee by sector and size. Focusing first on the relationship between labour productivity, capital intensity and firm size it is apparent that much of the differences in labour productivity can be explained by differences in capital intensity. Both labour productivity and capital intensity increase monotonically with firm size. In Figure 4.4 the relationship between capital intensity and labour productivity is shown directly and it is clear how closely the two are related.

FIGURE 4.4

OUTPUT PER EMPLOYEE AND CAPITAL INTENSITY



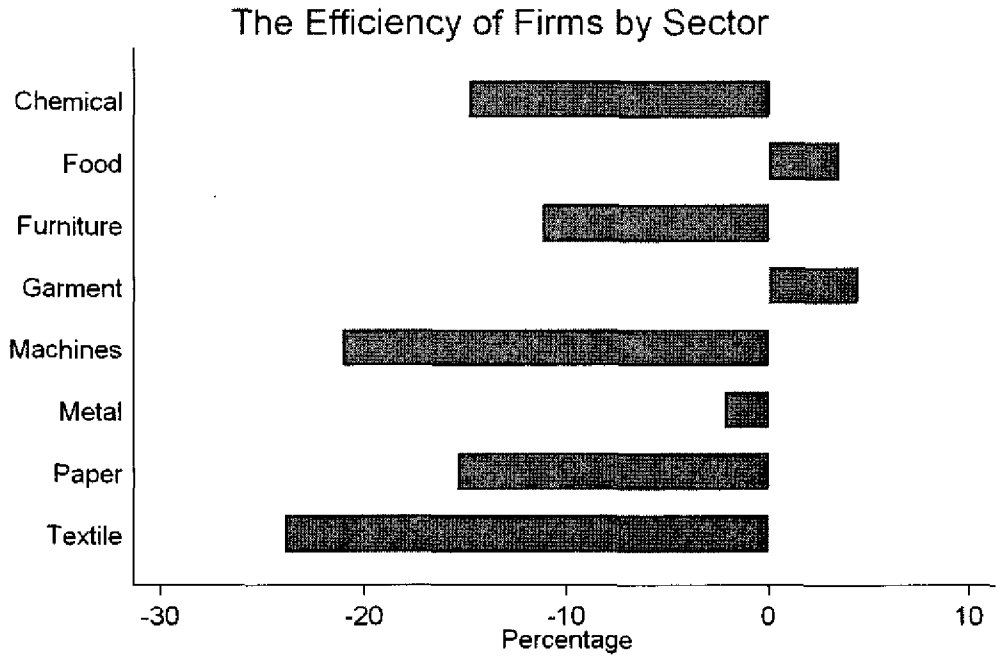
It was noted above that the garment sector had by far the lowest labour productivity. However, it also has by far the lowest capital intensity and the smallest size of

firms—in fact there are no large garment firms in our sample. In section 2 it was shown that small firms were much more efficient producers of jobs per unit of capital than larger firms (see Figure 3.1). The implication of these findings for the garment sector is that this is the sector where jobs could be produced most rapidly at the lowest cost in terms of investment expenditures.

While Figure 4.3 shows that in broad terms labour productivity moves with capital intensity it remains possible that there are important differences in underlying productivity across sectors. In particular, while both labour productivity and capital intensity might be lower for the garment sector it may be the case that its labour productivity is low relative to its capital intensity. In other words, it is necessary to asses the underlying efficiency of the sectors shown in Table 4.1—that is done in Figure 4.5 based on equations reported in the Appendix.

As can be seen from Figure 4.5 the garment sector is the most efficient sector in Nigerian manufacturing and the textile sector is the least. However, it needs to be noted that in statistical terms these observed differences across sectors are not statistically significant. The rather remarkable finding from the data is that while thee are small differences in productivity by sector by far the most important difference is due to differences in firm size.

FIGURE 4.5 - EFFICIENCY OF FIRMS, BY SECTOR



Note: Efficiency is measured relative to firms in the wood sector

- ***There is no evidence that larger firms are more efficient***

It is important to ask if larger firms are more efficient in the sense that there is evidence in the data for increasing returns to scale. In Figure 4.4 only capital and labour are included. More formal empirical analysis in the Appendix shows that other inputs—in particular raw materials—are also very important. If larger firms are to be more efficient in the sense of benefiting from returns to scale it would be true that for any given percentage increase in inputs there was a larger percentage increase in output. As is shown in the Appendix, there is very little evidence for any but the most modest returns to scale. In fact most of the evidence points to constant returns to scale. There is thus no evidence that larger firms are more efficient.

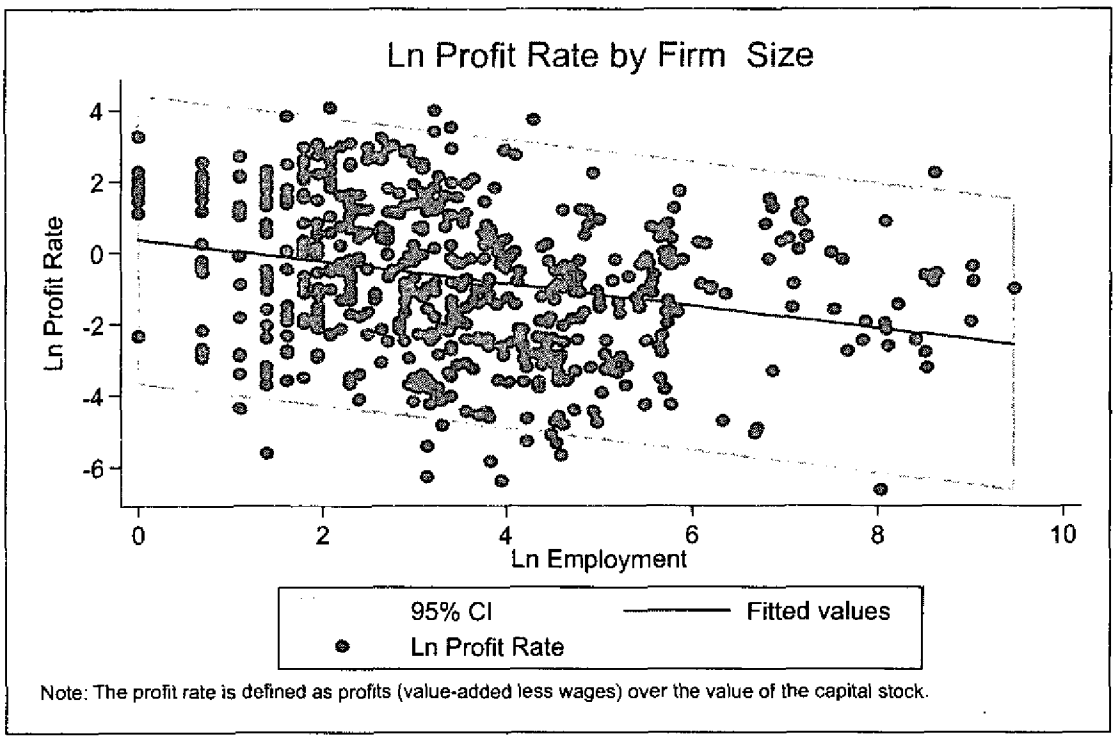
- ***Profitability falls by firm size***

What are the implications of the findings of the last two sections for the profitability of firms in Nigerian manufacturing? Figure 4.6 plots the log of the profit rate (defined as the ratio of profits to the value of capital) against the log of employment, a possible measure for firm size. The profit rate so defined is close to the return on

capital to the firm. As can be seen from Figure 4.6, the profit rate falls with firm size in the sense that larger firms have a lower profit rate. Does that imply that large firms are less profitable? Not necessarily. It implies that larger firms face a lower cost of capital and thus need to achieve a lower return on that capital to stay in business. In fact, the differing profitability of firms over the size range reflects differences in the use of capital per employee—clearly, larger firms use far more capital per employee than smaller firms.

FIGURE 4.6

FIRM PROFITABILITY



Note: The profit rate is defined as profits (value-added less wages) over the value of the capital stock.

- *More than half the firms report zero investment in a given year*

Investment is a key determinant of growth rates and living standards, as well as being highly volatile and so being responsible for significant short-run economic fluctuations. One of the difficulties encountered in the analysis of investment at the firm level is that investment is not a smooth process, with the majority of firms not investing in any given year. In this sample, only 48 per cent of the firms reported non-zero investments in any given year. For the remaining 52 per cent, the lack of investment implies that their capital stock is actually declining as they fail to replace value lost through depreciation.

- *The propensity to invest is markedly lower for smaller firms—and for some sectors*

There is some variation in the propensity to invest across sectors, with firms in the chemicals/machines and textiles sectors being more likely to invest than those in the garment sector. However, the greatest differences are between firms of differing sizes. Only 28 per cent of small firms invest, compared to 44 per cent of medium firms and 80 per cent of large firms. Once firm size is taken into account, the apparent relative investment in the garment sector improves markedly. Firms in the garment sector are more likely to invest than firms of the same size in any other sector (with the exception of medium metal firms). It is the absence of large firms, which typically investing with around double the frequency of other firms, in this sector that leads to the illusion of low levels of investment.

Amongst the food sector, there was no investment in small or medium firms, but universal investment amongst large firms. In the metals sector, there is a sharp distinction between large/medium and small firms. Note that this investment

TABLE 4.2

PROPENSITY TO INVEST 1998–03, BY SIZE AND SECTOR

	Small	Medium	Large	All size groups
Food	0.09	0.18	1.00	0.43
	[11]	[17]	[14]	[42]
Textiles	0.00	0.35	0.81	0.61
	[5]	[17]	[37]	[59]
Garments	0.33	0.48	-	0.35
	[104]	[21]	[0]	[125]
Wood / Paper /	0.28	0.44	0.82	0.44
Furniture	[39]	[39]	[17]	[95]
Chemicals /	0.25	0.35	0.78	0.60
Machines	[12]	[20]	[50]	[82]
Metals	0.24	0.63	0.67	0.52
	[25]	[35]	[21]	[81]
All sectors	0.28	0.44	0.80	0.48
	[196]	[149]	[139]	[484]

AVERAGE INVESTMENT RATES FOR INVESTING FIRMS 1998–03, BY SIZE AND SECTOR

	Small	Medium	Large	All size groups
Food	0.39	0.41	0.05	0.13
	[1]	[3]	[14]	[18]
Textiles	-	0.40	0.44	0.43
	[0]	[6]	[30]	[36]
Garments	0.48	0.10	-	0.39
	[34]	[10]	[0]	[44]
Wood / Paper /	0.34	0.36	0.32	0.34
Furniture	[11]	[17]	[14]	[42]
Chemicals /	2.70	0.26	0.41	0.53
Machines	[3]	[7]	[39]	[49]
Metals	0.27	0.59	0.47	0.50
	[6]	[22]	[14]	[42]
All sectors	0.55	0.39	0.37	0.42
	[55]	[65]	[111]	[231]

Note: The proportion of firms investing refers to the probability that a firm undertakes any investment. The Average Investment Rate is the Ratio of Investment to Capital conditional on any investment occurring. The number of observations are given in the [ ] parentheses.

- *There is a discrete nature of investments: larger firms invest more often, but relatively smaller amounts*

While small firms may be less likely to invest, when they do, the amount invested is larger as a proportion of their capital stock than that of either medium or large firms. This result holds even if the chemicals/machines sector is included. Once a small firm takes the decision to invest, the amount invested averages 55 per cent of the existing capital stock. The fact that there were only three observations of investments by small chemicals/machines firms means that the investment rate of 270 per cent should not be considered typical, however it does illustrate that small firms can invest substantially relative to their capital stocks. In aggregate the total amount invested by small firms would be less than that for the other size categories owing to their smaller capital stocks.

This finding is clear evidence for the discrete nature of investments, and suggests that there are significant fixed costs or returns to scale to investment. Larger firms invest relatively smaller (but absolutely bigger) amounts more often, while smaller firms are characterised by periods of zero investment followed by substantial discrete jumps. This trend is particularly apparent in the food sector, where all large firms invest but the amount invested is only on average 5 per cent the value of the capital stock, while 10 per cent of small food firms are investing and increasing the value of their capital stock by nearly 40 per cent. The average investment rates for investing firms in this sample show investment levels that are more than compensating for depreciation for the minority of firms that are choosing to invest.

- *There is a discrete nature of investments: larger firms invest more often, but relatively smaller amounts*

Table 4.2 shows data on the average rate of capacity utilisation across size and sectors, as well as for the whole sample. For the entire sample the average capacity utilisation rate is about 44 per cent, similar to the 1998-2000 period. By size groups, medium-sized firms have a slightly better rate of capacity utilization compared to both small and large firms (see Figure 4.7).

Aggregating over size groups, the paper/printing sector emerges as the sector with the highest average capacity utilisation, about 55 per cent (see Table 4.3). This is larger than in any of the other sectors where averages range between 35 and 51 per cent. The lowest average is recorded by the wood/furniture sector. Aggregated across all sectors, the medium-sized firms have slightly better rates of capacity utilization—about 5 percentage points higher than the larger firms. Overall, capacity utilization rates remain low by international standards, suggesting ample excess capacity.

FIGURE 4.7

CAPACITY UTILIZATION, BY FIRM SIZE (%)

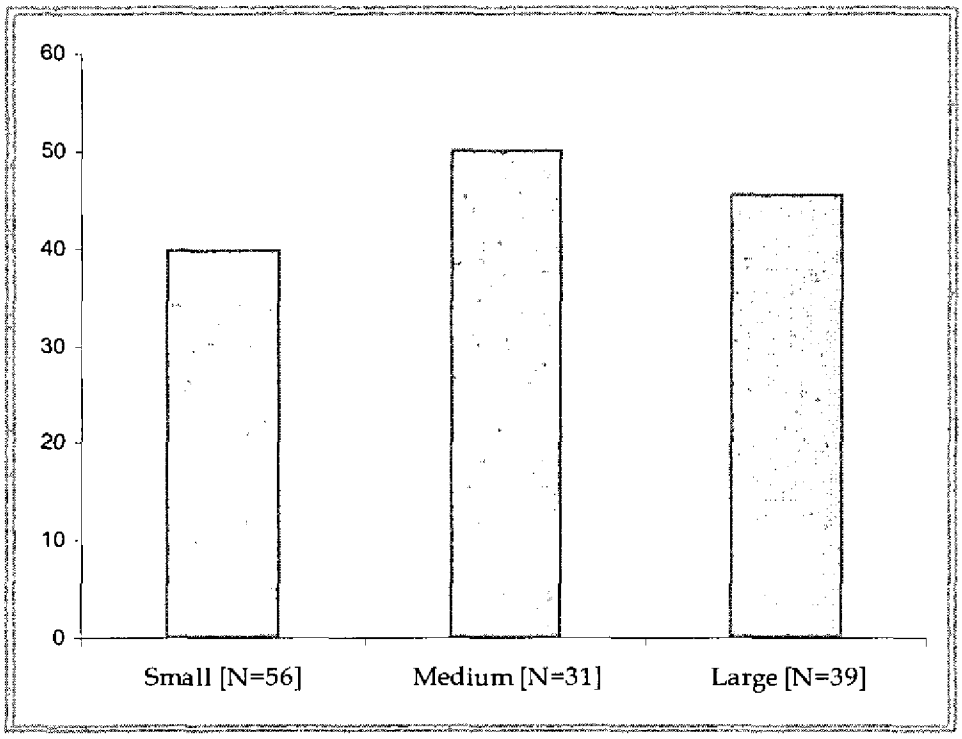


TABLE 4.3

CAPACITY UTILISATION IN PER CENT, BY SIZE AND SECTOR

	Small	Medium	Large	All size groups
Food	54.70 [5]	41.66 [3]	38.00 [6]	44.75 [14]
Textiles	36.00 [2]	26.00 [3]	52.61 [9]	44.53 [14]
Garments	42.27 [24]	45.00 [4]	20.00 [1]	41.88 [29]
Wood/ Furniture	31.47 [12]	50.50 [2]	37.40 [5]	35.04 [19]
Chemicals / Machines	20.00 [1]	42.00 [5]	43.09 [11]	41.41 [17]
Paper/Printing	40.00 [4]	61.50 [8]	58.00 [2]	54.86 [14]
Metal	40.50 [8]	61.16 [6]	56.40 [5]	51.21 [19]
All sectors	40.03 [56]	50.09 [31]	45.65 [39]	44.24 [126]

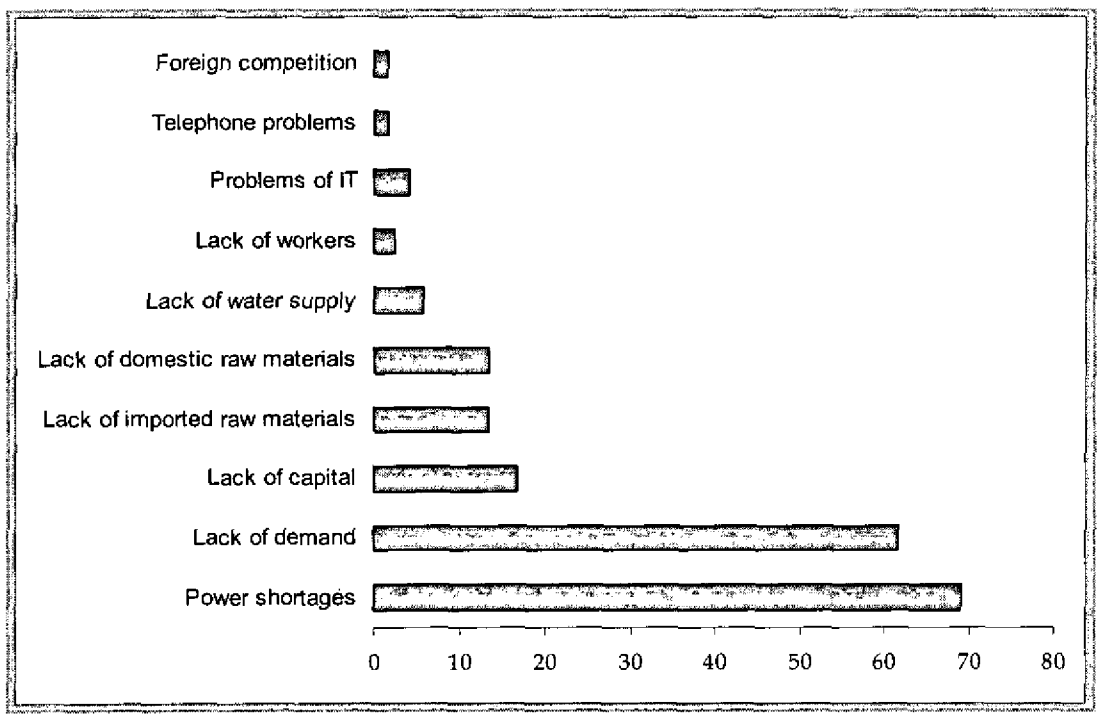
Note: Numbers in [ ] are numbers of observations.

- ***Infrastructural bottlenecks and lack of demand were reported to be the main reasons for idle capacity***

Firms were asked to report major reasons for idle capacity (multiple answers were allowed). The survey results are summarized in Figure 4.8. The large majority of firms – about 69 percent – regarded ineffective provision of power supply as one of the major reasons for idle capacity. 62 percent of the respondents also expressed a concern regarding the lack of demand for their products as a major reason for idle capacity. Lack of capital and raw materials – both domestic and imported – were also reported as important reasons for idle capacity.

FIGURE 4.8

REPORTED REASONS FOR IDLE CAPACITY (%)



Note: Each category on the Y-axis represents one of the multiple reasons cited for idle capacity (firms were allowed to indicate multiple reasons)

- *A tiny percentage of the sampled firms is engaged in exports*

Exports are widely seen as a key factor in economic growth at the macroeconomic level, and there are numerous studies finding a positive relationship between firm level productivity and exports at the microeconomic level. In contrast to the highly export-oriented economies of East Asia, firms in Nigeria, and indeed the whole of Sub-Sahran Africa, remain focussed on the domestic market. The pattern of export behaviour and its implications for productivity and growth are vital to gain an understanding of how to improve firm performance.

Table 4.4 shows the propensity of firms to engage in exporting. The overall picture is that Nigerian firms are highly unlikely to export, with only 10 per cent of firms involved in the export market. There is some variation by firm size, with 7 per cent of small and medium firms exporting compared to 17 per cent of large firms. Exporting was non-existent or negligible in the food, wood/paper/furniture and metals sectors. Even in the textile sector, the sector with the highest proportion of firms exporting, only one firm in every four exports some of its output. Interestingly, all of the garment firms involved in exporting export out of Africa, and garment and textile firms were the only ones in this sample to export out of Africa. Moreover, the only small firms that exported were in the garment sector.

Firms that do export sell, on average, 38 per cent of their output abroad. Given the low propensity to export, however, this is less than 4 per cent of total output. As was the case with investment, conditional upon exporting, small firms export a higher proportion of their output than do large firms.

TABLE 4.4 – PROPENSITY TO EXPORT 1998–2003, BY SIZE AND SECTOR

	Small	Medium	Large	All size groups
Food	0	0	0	0
	(0)	(0)	(0)	(0)
	[11]	[17]	[14]	[42]
Textiles	0	0	0.38	0.24
	(0)	(0)	(0.16)	(0.10)
	[5]	[17]	[37]	[59]
Garments	0.13	0.14	-	0.14
	(0.13)	(0.14)	-	(0.14)
	[104]	[21]	[0]	[125]
Wood / Paper /	0	0	0.18	0.03
Furniture	(0)	(0)	(0)	(0)
	[39]	[39]	[17]	[95]
Chemicals /	0	0.20	0.12	0.12
Machines	(0)	(0)	(0)	(0)
	[12]	[20]	[50]	[82]
Metals	0	0.09	0	0.04
	(0)	(0)	(0)	(0)
	[25]	[35]	[21]	[81]
All sectors	0.07	0.07	0.17	0.10
	(0.07)	(0.02)	(0.04)	(0.05)
	[196]	[149]	[139]	[484]

AVERAGE EXPORT RATES FOR EXPORTING FIRMS 1998–03, BY SIZE AND SECTOR

	Small	Medium	Large	All size groups
Food	-	-	-	-
	[0]	[0]	[0]	[0]
Textiles	-	-	30.64	30.64
	[0]	[0]	[14]	[14]
Garments	53.57	86.67	-	59.41
	[14]	[3]	[0]	[17]
Wood / Paper /	-	-	10	10
Furniture	[0]	[0]	[3]	[3]
Chemicals /	-	35	11.54	20.92
Machines	[0]	[4]	[6]	[10]
Metals	-	36.67	-	36.67
	[0]	[3]	[0]	[3]
All sectors	53.57	51	22.97	38.05
	[14]	[10]	[23]	[47]

Note: The numbers in [] are numbers of observations, where the unit is firm-year. The top number in each cell is the proportion of firms exporting, while the number in () is the proportion exporting out of Africa. The Average Export Rate is the percentage of output exported, conditional on any exporting.

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The following papers have used comparative firm level data on manufacturing in Africa to investigate a number of the issues raised in this Report in depth.

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APPENDICES

APPENDIX 1: PRODUCTION FUNCTIONS 1998–2003

	OLS	Fixed-effect
Ln Physical Capital	0.028	0.000
	(0.011)*	(0.032)
Ln Employment	0.199	0.107
	(0.022)**	(0.029)**
Ln Indirect Costs	0.148	0.039
	(0.015)**	(0.015)**
Ln Raw Materials	0.651	0.641
	(0.014)**	(0.018)**
Textile	-0.300	
	(0.072)**	
Garment	-0.108	
	(0.081)	
Wood/Paper/Furniture	-0.225	
	(0.069)**	
Chemical/Machines	-0.244	
	(0.070)**	
Metal	-0.115	
	(0.069)	
Lagos	-0.153	
	(0.050)**	
Ibadan	-0.192	
	(0.064)**	
Onitsha	-0.098	
	(0.094)	
Nnewi	-0.415	
	(0.185)*	
Aba	-0.031	
	(0.085)	
Enugu	-0.041	
	(0.077)	
Kano	-0.159	
	(0.067)*	
% Exports out of Africa	0.004	0.009
	(0.002)	(0.002)**
% Exports within Africa	-0.000	-0.004
	(0.002)	(0.002)*
Constant	3.402	5.708
	(0.209)**	(0.588)**
Observations	688	688
R-squared	0.98	0.77
Number of firms		178

Notes: * significant at 5%; ** significant at 1%; Standard errors in parentheses;
Time dummies were included but not reported; the Food sector and Kaduna are omitted.

APPENDIX 2: INVESTMENT AND EXPORT EQUATIONS

	Probit on investment decision	*OLS on investment rate if form invests*	*Probit on export decision*	*OLS on export rate if exporter*
Ln Employment	0.113	-0.021	0.018	0.661
	(0.026)**	(0.059)	(0.007)**	(0.287)*
Ln Output Growth	0.020	0.252		
	(0.057)	(0.140)		
Foreign Ownership	0.242	0.345	-0.007	-2.126
	(0.084)**	(0.192)	(0.020)	(0.509)**
Firm Age/100	-3.379	0.568	0.235	-19.145
	(0.981)**	(1.884)	(0.270)	(5.448)**
Firm Age^2/10000	6.468	-2.152	-0.497	30.463
	(1.853)**	(3.577)	(0.520)	(7.608)**
Export Status	-0.021	0.064		
	(0.102)	(0.218)		
Textile	0.140	0.011	0.071	1.647
	(0.125)	(0.276)	(0.070)	(0.494)**
Garment	0.233	-0.017	0.417	3.902
	(0.127)	(0.329)	(0.164)*	(1.218)**
Wood/Paper/Furniture	0.253	0.098	0.110	3.189
	(0.109)*	(0.282)	(0.084)	(1.231)*
Chemical/Machines	0.081	0.540	0.040	2.456
	(0.122)	(0.270)*	(0.055)	(0.493)**
Metal	0.176	0.353	0.068	1.627
	(0.113)	(0.263)	(0.068)	(0.381)**
Lagos	0.051	-0.436	0.155	0.691
	(0.077)	(0.172)*	(0.056)**	(0.415)
Ibadan	-0.161	-0.502	0.149	1.601
	(0.094)	(0.241)*	(0.116)	(0.518)**
Onitsha	-0.229	-0.657	0.444	0.080
	(0.138)	(0.451)	(0.214)*	(0.556)
Aba	0.045	-0.484	0.158	-0.147
	(0.127)	(0.323)	(0.158)	(0.529)
Enugu	-0.159	-0.376		0.000
	(0.119)	(0.373)		(0.000)
Kano	-0.329	-0.313	0.287	2.418
	(0.083)**	(0.283)	(0.146)*	(1.434)
Ln Materials per worker	-0.008	-0.049	-0.012	0.036
	(0.046)	(0.113)	(0.015)	(0.102)
Ln Capital per worker	-0.023	-0.073	0.013	0.113
	(0.018)	(0.042)	(0.005)**	(0.154)
Ln Output per worker	0.076	-0.065	0.029	0.190
	(0.058)	(0.143)	(0.018)	(0.158)
Constant		2.874		-7.344
		(1.048)**		(4.347)
Observations	465	230	590	46
R-squared	0.23	0.18	0.21	0.89

Notes: * significant at 5%; ** significant at 1%; Standard errors in parentheses;
Time dummies were included but not reported; the Food sector and Kaduna are omitted.

Selected Firm Characteristics

	Small	Medium	Large	All
Ln Real Output	14.81	17.27	20.24	17.27
	1.66	1.15	1.89	2.79
Ln Real Capital	13.46	16.59	19.51	16.32
	2.30	2.13	1.85	3.31
Ln Employment	1.94	3.50	5.75	3.62
	0.77	0.53	1.30	1.85
Ln Real Indirect Inputs	12.11	14.80	18.24	14.87
	1.83	1.57	1.99	3.15
Ln Real Materials	13.93	16.57	19.62	16.53
	1.89	1.50	1.98	3.00
Firm Age (years)	20.66	20.99	25.35	22.17
	10.52	10.43	11.44	10.96
Ln Output Growth	0.06	-0.07	-0.03	-0.00
	0.56	0.45	0.36	0.47
Any Foreign Ownership	0.01	0.03	0.56	0.19
	0.11	0.17	0.50	0.39

Notes: Means are shown above standard deviations. Monetary variables are expressed in 2000 Naira, the dummy variable takes the value 1 if there is any foreign ownership.

Number of firms by sector and year

	1998	1999	2000	2001	2002	2003	Total
Food	6	11	14	14	14	13	72
Textiles	19	21	22	11	11	11	95
Garments	18	25	37	27	27	27	161
Wood/Paper/Furniture	19	27	29	19	21	21	136
Chemical/Machines	14	17	23	17	17	17	105
Metal	18	23	29	18	18	16	122
Total	94	124	154	106	108	105	691