

The Business Environment and Manufacturing Performance in Nepal

Tyler Biggs, John Nasir,
Kiran Pandey and Lan Zhao

World Bank

Regional Program for Enterprise Development

Federation of

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Contents

Acknowledgments	iv
Executive Summary	1
I. The Sample Frame	6
1 The Sample	7
1.1 Sample Selection	7
1.2 Characteristics of the Selected Sample	11
1.3 The Entrepreneurs	14
II. Business Environment	18
2 Obstacles to Doing Business in Nepal	19
2.1 Biggest Obstacle to Doing Business in Nepal	19
2.2 Variations in Business Problems across Enterprise Size Classes and Location	23
2.3 Bureaucratic Burden of Government	27
2.4 Government Policy, Laws and Regulations	35
2.5 Demand	41
2.6 Other Business Problems	43
3 Infrastructure	45
3.1 Greatest Infrastructure Problem	45
3.2 Adequacy of Specific Infrastructure Services	48
3.3 Electricity	50
3.4 Transportation Services (Roads and Trucking Services)	52
3.5 Water	56
3.6 Security, Law and Order	58
3.7 Other Services	58
4 Business Support Services	63
5 Resolution of Disputes	65
5.1 Collecting from Customers	65
5.2 Disputes with Labor	65
III. Manufacturing Firm Performance	67
6 Firm Productivity and Determinants	68
6.1 Productivity in Nepalese Industry	68
7 The Dynamics of Enterprise Growth in Nepal	79
7.1 Growth Rates	79
7.2 Firm Mobility in Nepal	84
7.3 Theories of Firm Growth: What Determines Employment Changes?	87
IV. Finance and Investment	93

8	Finance and Investment.....	94
8.1	Access to Credit.....	94
8.2	Investment	108
8.3	Determinants of Investment.....	113
8.4	Investor Confidence.....	122
V.	Labor.....	126
9	Labor Market in the Nepalese Manufacturing Sector	127
9.1	Composition and Characteristics of the Labor Force	127
9.2	The Structure of Cash Remuneration	134
9.3	The Determinants of Remuneration.....	137
9.4	Estimation of an Earnings Function	146
9.5	Training	150
9.6	Summary	161
X.	CONCLUSIONS AND RECOMMENDATIONS	163
10	Conclusions and Recommendations	164
10.1	The Business Environment.....	164
10.2	Productivity	167
10.3	Finance	168
10.4	Infrastructure	169
10.5	Labor Market.....	169
11	Recommendations – Action Agenda	171

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Executive Summary

Introduction

This report on the survey of private manufacturing enterprises in Nepal presents the private sector's assessment of the prevailing business environment and other matters related to efficient business operation. As such, it is one-sided. It is a synthesis of the private sector's point of view and does not include the opinion of the government. The report is meant to provide important information to enhance the policy dialogue between the public and private sectors on critical matters dealing with private sector development. The survey was conducted by the World Bank, in collaboration with the Federation of Nepalese Chambers of Commerce and Industry, from October to December 1999.

The survey was designed to examine a number of basic issues, including constraints in the policy environment, the structure of the manufacturing sector, sources of growth, major impediments to growth, factors determining enterprise productivity, composition of the labor force and accessibility to finance, among others. A team of World Bank staff and Nepalese consultants conducted interviews with 223 firms, covering all regions of the country. The survey also included interviews with a sample of 10 workers from each firm, spanning all the existing job categories. Across the country, firms were cooperative, and provided detailed accounting data, as well as qualitative information about their structure and performance. Statistical and econometric analyses of these data provide a unique insight into the industrial sector of Nepal. Some highlights of the key findings from the survey and resulting policy implications are discussed below.

The Business Environment

Beginning in the early 1990s, Nepal's new democratic government initiated a series of market-oriented policy reforms intended to prepare Nepal for the globalization of the world economy and to spur economic growth. The comprehensiveness of the reforms clearly demonstrated the government's desire to radically change the prevailing business environment. Reforms included full convertibility of the rupee, elimination of quantitative restrictions and import licenses, rationalization of the tariff structure, simplification of the tax structure and expansion of investment incentives. Changes were also made in industrial licensing procedures and the Foreign Investment and Technology Act was passed to encourage foreign participation in the economy by easing the restrictions on direct investment and by making foreign firms eligible for all of the facilities and incentives open to national investors. In addition, financial sector reforms were undertaken. The Nepal Rastra Bank lifted restrictions and permitted the establishment of private commercial banks. It also eliminated the requirements that banks invest a portion of deposits in government T-bills, thereby freeing up additional resources for lending.

On top of these reforms, a boost was given to the economy by the signing of a trade and transit agreement with India. Renewed in 1996, this treaty opened the large Indian market to Nepalese products by removing the domestic content requirements. Under the treaty terms, either country can export goods to the other, without respect to the origin of the raw material inputs in the product process, as long as there is some local value added in manufacturing.

The initial private sector response to these positive changes in the business environment was dramatic. The average annual growth rate of GDP increased from 4.8 percent in the pre-reform period 1985-1991 to 5.2 percent in the post-reform period 1992-1996. This was matched by an increase in real private investment. The 4.7 percent average annual growth rate of real fixed private investment in 1985-1991 jumped to 13.2 percent in the post-reform period 1992-1996. Employment and value-added in manufacturing grew rapidly too. Manufacturing employment rose 36 percent in the first few years after the reforms, and the growth rate of manufacturing value-added increased from 5.3 percent in the pre-reform period 1985-1991 to more than 13 percent in the 1992-1996 period. Unhappily, these post-reform growth trends did not prove sustainable after the mid-1990s, however.

Since 1996, trend growth in real GDP has declined back to the pre-reform rate of just over 4 percent, real private fixed investment has stagnated, manufacturing employment has declined about 19 percent, and trend growth in manufacturing value-added (with the exception of a pick up in garments and carpets exports) fell back to 4.3 percent. Why?

Part of the blame can be placed on such factors as weather problems, the Asian crisis, and problems with foreign trade policies in key export markets. However, firms point out that poor implementation of reforms, bureaucratic burden, and continued political and policy uncertainty are more important contributors. A key finding of this report is that government policy and its implementation are currently the greatest obstacles to doing business in Nepal. In second place are obstacles presented by inadequate demand for products (our study was conducted during the Asian crisis), poor access to finance, and inadequate infrastructure services. While government policies can be well designed, they are often changed and implemented so inconsistently that they contribute to an unpredictable and risky business environment. In addition, firms suffer considerably from excessive government red tape, long delays in provision of government services, and corruption of government officials. These problems are often facilitated by lack of clarity in laws and regulations, and unpredictability and inconsistency in government policies. The implementation of the tax regime, imports regime and labor laws are specific areas that affect firms the most, and need to be urgently addressed by the government. It is clear from discussions with the business community that government needs to reassess its role in the economy, and specifically its relationship with business. Government needs to begin to shift its focus from policing and controlling business to playing more of a role of facilitator and supporter of business activity.

Infrastructure: Firms are primarily concerned with access, availability and quality of service more than with the cost of service. Poor availability and quality of electricity service is the greatest infrastructure problem affecting firms in all industries nationwide. Inadequate roads and trucking services are a nationwide problem for the larger firms. Poor access to and availability of water supply and telecom services are major problems in selected regions. Greater investment in infrastructure, through private and foreign participation where necessary, is required to increase industrial growth.

Business Support Services: Business support services are not readily available. Most of the available services are too general and not tailored to specific firm needs. The most desired

support services are information on foreign markets, assistance in finding new technologies, advice on productivity improvements, quality control testing and employee training.

Manufacturing Firm Performance

Productivity: We find overall manufacturing productivity to be low in Nepal compared with international standards. Within the country, there is also a large variance in productivity between enterprises – a few very efficient firms flourish alongside many less efficient firms in what appears to be segmented markets. Average efficiency is the highest in the pharmaceuticals industry (partly due to the effect of protection on output price), followed by the carpets and garments sectors. Metal and textiles (excluding garments) have the lowest overall efficiency. Productivity increases linearly with firm size. The largest firms (>500 employees) have almost 25 percent greater efficiency than micro and small firms (<50 employees). In addition to low capacity utilization, lack of scale economics, and inadequate infrastructure, the most important determinants of enterprise productivity are various “learning mechanisms,” such as worker training, foreign ownership, foreign licensing and technical assistance agreements, as well as exporting, which are highly correlated with inflows of foreign know-how. An extremely large increase in efficiency comes from training workers. Entrepreneur characteristics such as education, experience, owning multiple businesses, or being part of a business group were not found to be significant in determining firm efficiency.

Firm Growth: Liberalization has had a positive impact on employment growth in tradable, export-oriented sectors such as garments, carpets and pharmaceuticals. Since these sectors also have the highest technical efficiency, it indicates that economic resources are being reallocated in the “right” direction. Firms located in Kathmandu were generally growing faster than firms from other regions of the country in the 1990s. Younger firms were also growing faster than older firms – firms entering after 1990 have grown most rapidly. These newly entering firms are not merely “survival” enterprises, created by unemployed workers. They appear to be vibrant new start-ups that are contributing much to employment growth. Older firms, i.e., firms founded before 1990 and still in operation in 1999, appear to have successfully weathered the transition to a more liberal business environment – there appears to be no major downsizing in this group over the last few years. The data indicate only limited mobility of the smallest firms into the larger size categories – most micro firms remain micro or grow only one step up the ladder into the small size class. The main characteristics driving firm growth are exports, worker training and foreign ownership. Entrepreneur characteristics such as education, prior experience, ownership of other businesses and ethnicity are all unimportant.

Results from our analysis of firm performance indicate the critical importance of government policy towards building up domestic and international “learning” channels to foster the inflow of superior foreign technology. We also found assistance in this area to be the most desired business support service by firms. Increasing information on foreign markets, increasing foreign participation through ownership, licensing and technical agreements all positively impact the performance of industry. These types of business support services are not readily available in Nepal and those which are available are often too general or of low quality and not tailored to the specific needs of firms. The Government also needs to provide incentives for firm-level training

of workers. There are very few training centers, and those that exist are not very useful as the training is of low quality.

Finance and Investment

Investment: Our survey indicates that overall investment is flat. Very few firms over the ten years covered in the survey questionnaire actually made major new investments. Most investment made was for increasing output using existing technology. Few resources were devoted to improving production techniques or introducing new products. Investment was financed mainly by retained earnings. Most external funds in Nepal were provided in the form of short-term loans and overdrafts from commercial banks and were mainly used for working capital purposes. Long-term credit from the banking sector was in short supply, with smaller firms being rationed out due to high interest rates or collateral requirements. Lack of demand was another factor influencing investment. Most firms in Nepal were operating at well below full capacity and did not need to invest in new equipment to increase output. Investment was also low due to uncertainty in the business environment. Entrepreneurs believe that the new policies introduced during the liberalization period are good theoretically, but they are poorly implemented and enforced in an arbitrary manner. To encourage investment, the government needs to reduce business risk by providing stable economic policies and reducing corruption.

Banking Sector: Compared to some other developing countries, banking services are widely available in Nepal. Almost 75 percent of firms in our sample had either a bank loan or an overdraft, and all firms, even the smallest, said they had a main bank. Very few firms complained of bureaucracy and red-tape in the banking sector. However, access to sufficient credit is still a major problem and almost 40 percent of firms said that they would like to borrow more than they were currently able to. Long term credit is particularly in short supply, due to information and enforcement problems faced by banks. Small firms are rationed by banks due to lack of information and by way of collateral requirements, while the largest firms receive less credit from banks than they would like due to lending limits of each bank. Reducing the information and enforcement costs in lending would greatly facilitate the provision of bank credit and help to expand supplier credit. Assistance is needed to encourage firms to raise accounting standards. Bankers need assistance in assessing loan risks. The court system needs improvement so that seeking legal recourse is an option to recover debts. In addition, alternative sources of long-term credit, which are beginning to be developed, need to be expanded to help fill the gap. Alternative banking sources of long-term credit, which the government has introduced recently, needs to be expanded to help fill the void.

Labor

Labor Laws encourage the use of casual labor in Nepal – almost 50 percent of the manufacturing labor force is made up of casual workers, who make similar monthly cash earnings as permanent workers but have much less job security and access to non-pecuniary benefits such as health, clothing and transportation. We find that women are highly disadvantaged in the manufacturing labor market, evidenced by their less than 14 percent share in total employment and significantly lower wages and allowances received as compared to male employees for similar jobs. Labor Unions are effective in promoting their members' non-pecuniary benefits, but they seem to have very little influence on cash earnings. There is a positive return to training – a formally trained production worker earns about two dollars more per month than non-trained worker who has the same earning potential otherwise. However, on average, firms in Nepal invest little in worker training.

Key changes in government labor laws, particularly laws relating to retrenchment of workers, would increase incentives for firms to hire permanent workers, invest in their training, increasing worker productivity and wages. Easier hiring and firing laws would increase overall industrial employment.

I. The Sample Frame

1 The Sample

The objective of the study was to understand the business environment faced by manufacturing industries in Nepal and to determine how it affects the performance of private sector business enterprises. The study was specifically designed to examine the composition of the manufacturing sector, sources of growth, major impediments to growth, factors determining productivity, the composition of the labor force and accessibility to finance. A team of World Bank staff and local consultants conducted a sample survey of operational manufacturing enterprises between October and December 1999. The survey asked firm managers and proprietors about a broad range of topics including business startup and history, current firm accounts and performance, expectations about the future, major impediments to business, and the adequacy of financial, infrastructure and business support services. A sample of workers was interviewed to obtain insights about the labor market.

1.1 Sample Selection

The objective of the sampling procedure was to obtain a representative sample of private sector manufacturing industries, which reflects the regional, sectoral and size class distribution of firms within the budgetary constraints of the project. The sampling unit consisted of manufacturing enterprises that produced one or more products at a contiguous physical location in Nepal. A firm or enterprise with multiple geographically distinct production locations was treated as a separate production unit and was sampled multiple times.

Population of Sampling Units

The Census of Manufacturers 1996/1997 published by the Central Bureau of Statistics, HMG Nepal provides the most up to date comprehensive list of manufacturing establishments in Nepal. It lists all manufacturing enterprises that were in operation in the 1996/97 fiscal year and employed 10 or more persons in January 1997.¹ During the 1996/1997 fiscal year, 3,557 enterprises in the manufacturing industries employed 196,708 people and accounted for 21.9 billion Rupees value-added. Table 1.1 shows the distribution of firms across geographic regions, by industrial sector and by the size of the enterprise. It also shows the corresponding shares for employment and value-added in the manufacturing industries. These data exclude 38 tobacco firms which accounts for 2 percent of manufacturing employment and 12 percent of manufacturing value-added.

The classification of firms by geographic region is based on the 5 development regions and the Kathmandu valley. The three districts in the Kathmandu valley, Kathmandu, Lalitpur and

¹ The Census does not cover enterprises that employ less than 10 employees. The most up to date information on these enterprises are contained in the 1991 Sample survey of Small Scale Manufacturing Firms conducted by the Central Bureau of Statistics, HMG Nepal. These firms are more evenly distributed across the development regions suggesting that their exclusion skews the census based sample towards the east and center of the country.

Bhaktapur are shown as a separate region because they account for more than half of the manufacturing employment and value-added. The data reported for the Central Region in Table 1.1 is for the Central Development region excluding the Kathmandu valley. Industrial activity is concentrated in Kathmandu and in the Eastern and Central regions. There is progressively less industrial activity the further west we go. Industrial enterprises are also smaller and relatively more labor intensive in the west compared to the east and Kathmandu.

Table 1.1
Characteristics of Manufacturing firms in 1996/1997 Census,
Share Accounted for by Each Group

	Percent of No of firms	Percent of Employment	Percent of Value added*
Region			
East	20	16	16
Central exc. Kathmandu	19	18	22
West	15	9	9
Midwest	5	3	2
Far West	4	2	2
Kathmandu	38	51	48
Industry			
Food & Beverages	19	12	26
Wood & Wood Products	19	8	6
Chemicals/Paints/Plastics	6	3	7
Carpets	15	28	20
Textile excluding Carpets	8	11	9
Garments/Leather/Footwear	6	9	9
Metal & Metal Products	7	4	10
Pharmaceuticals	1	2	3
Non-Metal Fabrication	18	23	8
Size of Firm (based on employment)			
Micro: less than 20	49	11	7
Small 20-49	24	13	11
Medium 50-99	14	18	20
Large 100-199	8	20	22
Conglomerate: More than 200	5	38	40

* The value added by firm is imputed from the firm level employment data provided by the Census and the mean value-added per employee for each industry-size class. The latter is computed from the total employment and total value-added by all firms within each size class for each 4-digit industry group reported in the Census. The Census classifies firms into 5 size classes based on the number of employees: 10 to 19 employees, 20-49 employees, 50-99 employees, 100-199 employees, 200 or more employees. More aggregate industry data were used for industries where the value added per employee data was not available.

Food and beverage, carpets and non-metal fabrication firms are the major sources of employment. Food and beverage and carpet industries also account for nearly half of the value-added in manufacturing. Metal and metal products, and chemicals/paints/plastics industries add more value per employee than the other remaining industries. The largest five percent of firms account for over nearly half of the value-added while the smallest fifty percent of the firms account for less than 10 percent of the value-added in the manufacturing industries.

Sampling Frame, Gap and Bias

The sampling frame used for the survey came from the 1996/1997 Census of Manufacturers. The population of interest was limited to the nine major industry groups identified by the Census. Cost considerations were used to determine the scope of the sampling frame. The cost of the survey depended on the sample size and the travel time between the sampled firms. The travel cost was minimized by selecting geographic areas with the largest concentration of industrial activity in each of the regions in addition to the Kathmandu valley.

The selected areas consist of Biratnagar/Dharan corridor in the East, Birgunj/Hetauda corridor in the Center, Butwal and Pokhara in the West, Nepalgunj/Gularia in the Midwest and Dhangadhi/Mahendranagar in the Farwest. For each geographic region firms located within one-and-a-half hour's travel time from the "city center" was included in the sampling frame. In addition all firms located in the Kathmandu valley were included in the sampling frame. Firms in the selected areas accounted for 75 percent of total manufacturing employment and 75 percent of total value-added in the manufacturing sectors in 1996/1997.

The sampling frame also excluded all of the firms that were wholly government owned. They represented one percent of the manufacturing firms accounting for seven percent of employment and ten percent of value added.

The sampling gap is the difference between the sampling frame and the population of interest. It is used to identify sources of bias in the sample and to determine adjustments to remove them. The sampling gap in the sample frame used in the study arises from the following sources: the selection bias arising from the chosen sampling areas, changes in the composition of the manufacturing sector because of firm closings and entry of new firms in the last three years. While it is difficult to adjust for bias arising from the exit or entry of firms, the bias arising from the chosen sampling area was eliminated by drawing a stratified sample.

Sample Size and Sampling Method

The target sample size for the survey was 225 firms based on time and cost considerations and the need to adequately represent each region and sector. The sample was drawn by stratifying the sampling frame by region. Firms were classified based on location into one of 6 regions: Kathmandu valley, East, Central, West, Midwest, and Farwest corresponding to the existing development regions of the country. The sample size for each of the strata was chosen based on the total value-added by all firms in the manufacturing sector in each of the strata as

reported in Table 1.1 eliminating the sample bias arising from the selection of geographic areas in the sampling frame.

Within each stratum, firms were randomly selected based on the value-added of the firm. The probability of selecting each firm was proportional to the value-added by it. This weighting scheme increases the power of the sample by disproportionately representing larger firms that have larger variations in their operational characteristics. It also had the advantage of increasing the value-added and employment coverage of the selected sample.

The random sample was adjusted further for a number of reasons.

Seasonal Producers (Brick Industry)

Most of the 475 firms that produced bricks and tiles operate on a seasonal basis. They account for 23 percent of manufacturing employment but only 8 percent of the manufacturing value-added. The workers and possibly the owners/managers of these firms would not be locatable within the survey time frame and hence could not be surveyed. As a result these firms were excluded from the sampling frame. To leave the sectoral balance intact, the probability of selecting the non-seasonal brick firms and other non-metal firms were increased proportionately.

Carpet Industry

The carpet industry, which is located primarily in Kathmandu, accounts for a large part of the manufacturing value-added in Kathmandu. In order to provide adequate representation of the other industries, the sample frame for Kathmandu was further stratified based on whether firms belonged to the carpet industry or not. The sample size for firms in the carpet industry was reduced by a third while that for the remaining industries were increased to leave the total sample size for Kathmandu unaltered.

Other Adjustments

Two firms identified as leaders in their respective industries that were not selected based on the sampling process were added to the sample. Four newly privatized industries that were not selected based on the sampling process were added to the sample process because of special interest in the status of these enterprises. Four joint venture companies that were not selected based on the sampling process were added to the sample process because of special interest in the status of these enterprises.

Joint Ventures and Multinationals

Two additional joint venture firms were added to the sample to broaden the coverage of these firms in light of their under representation in the sample.

Tea Industry

The sampling frame also has the effect of under representing industries that are disproportionately located in areas that are not included in the sample frame. The most important and probably the only example of this is the tea industry. Most of the major firms in the tea industry are located in the areas to the east of Biratnagar and are not adequately represented. The sampling frame was expanded to include a tea manufacturer in Ilam. The sampling frame used in the study includes 65 percent of the firms in the nine major industries accounting for three-quarters of employment and three-quarters of value-added in these industries.

Replacement for Non-Responsive Firms

There were a total of 55 firms that were either non-responsive to the survey or could not be located. These firms were replaced with other firms in the same region and sector through a random selection process among the non-selected firms with the probability of selection based on the value-added of the firm.

1.2 Characteristics of the Selected Sample

Table 1.2 shows the distribution of the sampled firms by region, industry and size class. The stratified sampling process has removed the bias resulting from the selection of geographic areas in the sample frame. The distribution of value-added in the sample regionally and sectorally resembles the distribution of for the population of nine major industries. The selected sample contains about 7 percent of the firms in the nine major industries accounts for about a fifth of the total employment in these industries and about three-tenth of the value-added in these industries.

We present some additional characteristics of sampled firms in Table 1.3 through Table 1.8. Most firms operate a single plant (Table 1.3) and are owned by Nepalese individuals (Table 1.4) as a private limited liability company or as a sole Proprietor (Table 1.5). Less than 4 percent of firms are listed on the Nepalese stock market while nearly 42 percent of firms are part of an industrial group indicating weakness in the formal financial market. There are very few firms that are owned by foreign individuals or corporations.

As in most developing countries, owner savings provide most of the startup financing for firms (Table 1.6). Nearly 60 percent of firms have a title deed to their business site while 24 percent lease their premises. Most of the remaining 15 percent of firms are located in industrial districts. Firms own the buildings that they construct in these districts but lease the land on which they are built from the district.

The market structure of firms reflects, in aggregate, a competitive environment, with 60.8 percent of the firms reporting market shares of less than 10 percent. However, this pattern differs across industries and firm size classes. 21.5 percent of the firms were producing products from the national priority list.

Table 1.2
Characteristics of 1999 Sample Survey,
Share Accounted for by Each Group

	Percent of No of firms	Percent of Employment	Percent of Value added	
Region				
East	17	19	14	
Central exc. Kathmandu	14	15	32	
West	16	9	16	
Midwest	7	4	4	
Far West	5	3	0	
Kathmandu	41	50	34	
Industry				
Food & Beverages	25	16	26	
Wood & Wood Products	9	3	2	
Chemicals/Paints/Plastics	6	4	10	
Carpets	9	20	9	
Textile excluding Carpets	8	19	14	
Garments/Leather/Footwear	15	21	17	
Metal & Metal Products	17	10	13	
Pharmaceuticals	5	3	9	
Non-Metal Fabrication	5	4	1	
Size of Firm (based on employment)				
Micro	Less than 20	15	1	2
Small	20-49	21	5	6
Medium	50-99	20	10	6
Large	100-199	23	20	22
Conglomerate	more than 200	22	64	65

Table 1.3
Number of Plants A Firm Owns

Number of plants	No. of firms	Percentage
1	189	85.1
2	14	6.3
3	9	4.1
4	6	2.7
5	4	1.8

Table 1.4
Ownership Structure of the firm

Ownership Type	Average Percentage
Government	0.74
Nepalese Individuals	84.46
Domestic Company	7.65
Local Bank/Financial Institutions	0.07
Foreign Individual	1.42
Foreign Company	2.86
Diffuse (general public)	0.49
Other	1.82

Table 1.5
Legal Status of Firms

Form	Number	Percentage
Sole Proprietorship	52	23.6
Partnership	18	8.2
Private Company	133	60.5
Public Company	12	5.5
Subsid. of Nep. Public Co.	1	0.5
Subsidiary of Multinational	4	1.8

Table 1.6
Startup Financing

Source	Percentage (Means)
Owner Savings	71.07
Borrowing from friends	6.30
Loan from foreign Bank/Donor Agency	0.32
Loan from Public Nepalese Bank	9.64
Loan from Private Nepalese Bank	3.48
Loan from a finance Company	0
Loan from a Money Lender	0
Loan from supplier	0.04
NIDC loan	3.39
NIDC equity	0.56
Other	5.19

Table 1.7
Legal Rights to Business Site

Legal Right	Number	Percentage
Title Deed	135	60.8
Lease	53	23.9
None	0	0.0
Other	34	15.3

Table 1.8
Market Share Distribution

Market Share	Percentage
Less than 5 percent	47.2%
5-10 percent	13.6%
11-25 percent	18.1%
26-50 percent	11.6%
51-99 percent	7.5%
100 percent	2.0%

1.3 The Entrepreneurs

Of the 223 firms surveyed, 177 firms were entrepreneur owned, i.e. where an owner was responsible for making key financial and operating decisions, even though a firm could be jointly owned. We interviewed the entrepreneurs to obtain details on their family, academic background and industry experience. Of this total, women owned only 6 firms. The mean firm age was 12.6 years, while the mean entrepreneur age was 46 years. This average is similar to that found in India (42 and 12 years, respectively) and Korea (avg. entrepreneur age=46 years).

Most entrepreneurs had worked outside Nepal – 51.4 percent. These were evenly distributed across industries – most industries had about between 45-60 percent of then entrepreneurs who had worked outside. The exception was the chemicals industry, where all but one of the entrepreneur had worked outside Nepal. The educational background of entrepreneurs is presented below. It is surprising to see that majority of entrepreneurs have a bachelors degree or higher. This number is far greater than what has been observed in other developing countries. To test the hypothesis that human capital matters in which size class you start, we examine education by firm size at start. We find that educational qualifications do increase up to the size class of medium employees quite sharply, and then fall somewhat. Further examination revealed that most of the lesser educated entrepreneurs starting large firms had worked in another firm in the same industry before starting their own firm.

Table 1.9
Educational Background of Entrepreneurs, by Firm Size at Startup

Firm Size at Startup	N	Primary and below	Middle and secondary	Intermediate	Bachelors degree	Masters and higher
Overall	174	7.9%	15.8%	14.7%	46.9%	14.7%
Micro	50	12.0%	28.0%	14.0%	32.0%	14.0%
Small	75	6.7%	12.0%	18.7%	45.3%	17.3%
Medium	20	0.0%	0.0%	5.0%	85.0%	10.0%
Large	21	14.3%	19.1%	9.5%	42.9%	14.3%
Very Large	8	0.0%	12.5%	25.0%	50.0%	12.5%

By sector, the education of entrepreneurs is as follows:

Table 1.10
Educational Background of Entrepreneurs, by Firm Sector

	N	Primary and below	Middle and secondary	Intermediate	Bachelors degree	Masters and higher
Food	44	6.8%	22.7%	9.1%	45.5%	15.9%
Woodfurn	18	11.1%	22.2%	16.7%	44.4%	5.6%
Chemicals	7	0.0%	0.0%	28.6%	71.4%	0.0%
Carpets	18	11.1%	11.1%	11.1%	38.9%	27.8%
Textiles	16	6.3%	18.8%	6.3%	62.5%	6.3%
Garments	27	0.0%	14.8%	22.2%	48.2%	14.8%
Metal	24	12.5%	4.2%	33.3%	37.5%	12.5%
Pharmac.	10	0.0%	0.0%	0.0%	50.0%	50.0%
Non-Metal	10	30.0%	40.0%	0.0%	30.0%	0.0%

Only 29 of the 177 entrepreneurs surveyed had received other vocational training. Most entrepreneurs (85.1 percent) started the firm as their own business. Most of the others inherited it, with only 6 entrepreneurs buying the business from someone else.

Entrepreneurs were also asked about their jobs prior to starting this business. Over 40 percent of them were either working in this firm or in another firm. Of the others, the majority were self-employed or trading/running a store. There was no clear pattern observed across firm size or sector categories.

**Table 1.11
Entrepreneur's Job Prior to Starting Business**

	Number	Percentage
Unemployed	3	1.7
Working in this firm	5	2.8
Working in another firm – same industry	37	20.9
Working in another firm– other industry	31	17.5
Self employment	20	11.3
Apprenticeship	13	7.3
Civil Servant	21	11.9
Military Service	1	0.6
Trading / running a store	30	16.9
Other	16	9.0

Most entrepreneurs came from a commercial background. Only 18.1 percent of entrepreneurs had a technical background, as seen in the table below. When asked about the form of their general business experience, where multiple answers were permitted, we see that most entrepreneurs had parents who were also in business – most were in business in another industry –47 percent. The other most prevalent response was working for another firm – 42.9 percent responded yes to that question. The majority also learned from self-employment, but this possibly includes those responding yes based on the experience gained from running their own enterprise.

**Table 1.12
Type of Business Experience**

	Number	Percentage
Financial	7	4.1
Technical	31	18.1
Commercial	114	66.7
Other	19	11.1

Total firms responding=171

Table 1.13
Form of General Business Experience

	Percentage Responding Yes	Total responses
Work for this firm	24.4	164
Work – another firm, same industry	24.3	169
Work another firm- other industry	42.9	168
Parents in this industry	27.1	170
Parents in business- other industry	45.6	169
Work and learn at home	19.2	167
Self-employed	55.2	172
Other	70.0	10

To examine the sources of financial and other learning channels, entrepreneurs were asked if they had ever worked for a foreign firm. Only 9.2 percent responded yes, indicating that most entrepreneurs are trained at home. However, there is considerable risk-spreading amongst businesses — 65.1 percent of all entrepreneurs also owned other businesses. This figure is much larger than that observed for other developing countries.

II. Business Environment

2 Obstacles to Doing Business in Nepal

What types of problems do manufacturing firms have dealing with the business environment in Nepal? The survey asked firms to identify the biggest obstacles in running their businesses and to gauge the approximate level of costs attached to dealing with each of these problems. The responses were used to develop a relative ranking among business problems and to identify the types of firms most affected by each. The results are valuable for formulating and prioritizing future government programs to support private sector development.

The principal finding is that inappropriate government policy and poor policy implementation are the biggest problems facing business in Nepal. Depressed economic activity and low aggregate demand for products, poor access to finance, and inadequate infrastructure services were the second most often cited problems of the business community. The major problems with government policy and its implementation cited by firms were excessive government red tape, long delays in provision of government services and corruption of government officials. Implementation of the income tax, VAT, import regime and labor laws are specific areas where firms had the most complaints.

2.1 Biggest Obstacle to Doing Business in Nepal

As noted above, the survey asked firms to identify the three biggest obstacles they face in doing business in Nepal and to elaborate on the nature of these obstacles. Firm responses were not limited to a set of choices, pre-specified in the survey instrument. They were purposely left to be open-ended, so not to be suggestive. The responses of firms were then grouped into eight major categories as shown in Table 2.1. The broad problem categories of 'government', 'lack of demand' and 'finance' were disaggregated further into subcategories to provide a more detailed examination of each of these areas. A detailed analysis of each subcategory of business problem is presented in Section 2.3. It should be noted that the obstacles to doing business identified in this survey are reinforced in many ways by the findings of a study carried out by the National Planning Commission in 1999.² In addition, the survey uncovers some major business problems that were not in the NPC study, and ranks problems based on their relative importance to firms.

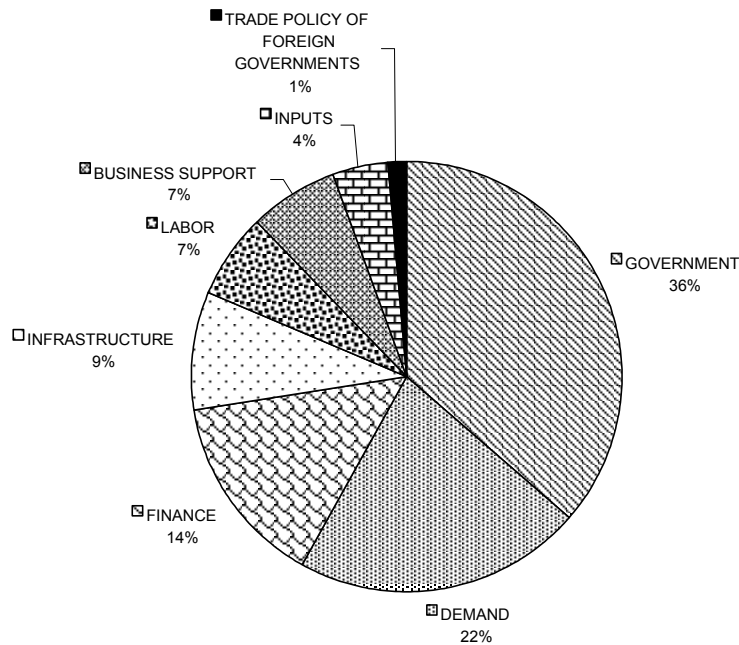
The simplest method for ranking the obstacles to doing business is to calculate the proportion of sample firms that identified each problem category as the number one obstacle to doing business in Nepal. Government in all its forms – its policies and regulations and the bureaucratic burden imposed on firms in complying with them – turns out to be the number one obstacle for almost 40 percent of firms (see Figure 2.1). It is much more often cited as the number one problem than lack of demand for their products, difficulty of financing their operations, or inadequacy of infrastructure services. Less than a tenth of the firms reported their number one problem to be labor, lack of business support services, shortages of inputs, or trade regimes of foreign governments.

² National Planning Commission, July 1999, “Strengthening the Industrial Sector in Nepal”.

Table 2.1
Major Business Problem Categories Identified in the Survey

-
- | | |
|---|---|
| <p>1. Government</p> <p>a) Bureaucratic Burden</p> <ul style="list-style-type: none"> • Red Tape, Corruption and time delays • Administration of Income tax regulations • Administration of VAT regulations • Administration of Customs and import regime • Administration of Other Laws • Enforcement of laws <p>b) Government Regulation and Policy</p> <ul style="list-style-type: none"> • Labor Regulations • Regulations to start a new business • Regulation of Prices • Ownership Regulations • Bias in regulations against manufacturers • Lack of Clarity, unpredictability and inconsistency of government policy <p>2. Demand</p> <p>a) Aggregate Demand</p> <ul style="list-style-type: none"> • Insufficient demand • Fluctuations in demand <p>b) Competition</p> <ul style="list-style-type: none"> • Competition from other firms • Inadequate protection from imports • Low quality competition <p>3. Finance</p> <p>a) Access to finance / High Collateral Requirements</p> <p>b) High Interest Rates</p> | <p>4. Infrastructure</p> <ul style="list-style-type: none"> • Supply of Electricity • Supply of Water • Inadequate Roads • Inadequate Air Freight Services • Cost of Transportation in time and/or money • Cost of electricity <p>5. Labor</p> <ul style="list-style-type: none"> • Shortage of Skilled Labor • Low Labor productivity / High wages and benefits • Attitude of workers, work ethics of workers • Labor strikes / Unions • Labor turnover <p>6. Business Support</p> <ul style="list-style-type: none"> • Lack of Business Support Services • Market uncertainty / lack of long term vision • Insufficient information on foreign markets • Lack of technology / technical support • Inadequate training facility • Lack of marketing support <p>7. Shortage of Inputs</p> <ul style="list-style-type: none"> • Unavailability of parts • Shortage of Raw Materials • Quality of available raw materials <p>8. Trade Policy of Foreign Governments</p> <ul style="list-style-type: none"> • Quota |
|---|---|
-

Figure 2.1
Biggest Obstacle to Doing Business by Category



When we include the second and third biggest business problems reported by firms the overall ranking of obstacles to doing business does not change much. An index of business problems constructed by weighting the three major business problems identified by firms is shown in Table 2.2.³ The index is independent of sample size and rises in proportion to the percent of firms that report problems within a category. It can be interpreted as the intensity-weighted percent of firms that reported problems within each category.⁴

$$^3 \text{ index} = \frac{100}{\text{Sample size}} * \left[\frac{3}{6} * \frac{\# \text{ firms}}{\text{greatest problem}} + \frac{2}{6} * \frac{\# \text{ firms}}{\text{second problem}} + \frac{1}{6} * \frac{\# \text{ firms}}{\text{third problem}} \right]$$

The overall rankings do not change when firm responses are not weighted.

⁴ An index of 31.4 for government can arise if 31.4 percent of the sampled firms identified government as their biggest problem, 31.4 percent firms identified government as their second biggest problem and 31.4 percent identified government as their third biggest problem. The same index could also result if 35 percent (an additional 3.6 percent) of firms indicated that government is the biggest problem and 3.6 percent fewer firms indicated that government is their second and third biggest problems.

Table 2.2
Ranking of Business Problem Categories

	Frequency of Firms Reporting as			Weighted Index
	First Problem	Second Problem	Third Problem	
Government	78	62	62	33.9
Demand	47	32	26	18.6
Finance	31	31	29	14.8
Infrastructure	19	26	26	10.9
Labor	14	27	15	9.0
Business Support	14	23	17	8.5
Inputs	9	5	5	3.4
Trade Policy of Other Government	3	1	1	1.0

Disaggregating broad problem categories such as “government” provides a more precise indication of the specific complaints noted by firms. “Government,” for example, encompasses everything from customs delays and official corruption, to labor regulations and high taxes. Hence, complaints about government were separated into two groups: complaints about inappropriate government policies and complaints about bureaucratic burden imposed by the agencies of government. In categorizing firm responses, the “policy” category includes problems related to the government policies themselves, such as complaints about inappropriate tax laws, import duties, labor regulations, and many forms of restrictions on economic activity as prescribed by law or regulation. The category of “bureaucratic burden” includes complaints about the day-to-day administration and implementation of policy and regulation. For example, complaints about a high tariff on imports would be coded under “policy,” while firm complaints about administration of tariff valuation and corruption by customs at the international border would fall under bureaucratic burden. Similarly, firm complaints about lack of demand generally revolve around the issues of market competition and aggregate demand in the economy. The former included the inability of firms to sell their products, given their current price and quality in comparison with domestic or foreign competitors. In contrast, aggregate demand complaints resulted from decreased demand for a firm’s products due to changes in general economic conditions, caused by shocks like the Asian economic crisis, the effects of poor harvests, and concerns about child labor. Complaints about finance were also divided into two groups: access problems and cost problems. Access problems included difficulties in obtaining financing because of high collateral requirements, need for personal guarantees, and lack of financial institution confidence in the firm’s operations. Complaints about cost (mostly high interest rates) were included under the interest rate subcategory.

The ranking of business problems using these more detailed subcategories is shown in Table 2.3. The business problem cited most often in the top three problems of doing business in Nepal is the bureaucratic burden of government. Bureaucratic burden includes complaints about excessive government red tape, extended delays in provision of government services, corruption of government officials, and the administration of the tax laws, including income tax, VAT, and customs. The second most often cited business problems center on government policy and low

aggregate demand. In third place, firms report that poor infrastructure services are a bigger problem than access to finance, although access to finance was cited more frequently as the number one problem by some firms, which indicates that finance is especially constraining in some enterprise groups.

Table 2.3
Ranking of Business Problems across Subcategories

	Frequency of Firms Reporting as			Weighted Index
	First Problem	Second Problem	Third Problem	
Bureaucratic Burden	41	35	41	18.9
Government Policy	37	27	21	15.0
Aggregate Demand	34	19	14	12.4
Infrastructure	19	26	26	10.9
Access To Finance	22	16	14	9.0
Labor	14	27	15	9.0
Business Support	14	23	17	8.5
Competition	13	13	12	6.2
High Interest Rate	9	15	15	5.8
Inputs	9	5	5	3.4
Trade Policy of Other Government	3	1	1	1.0

2.2 Variations in Business Problems across Enterprise Size Classes and Location

Firm behavior is driven by both the business environment and the specific characteristics and business needs of firms. Therefore, even under the same business environment, the major obstacles to doing business reported by firms will vary based on firm and industry characteristics. In this section, we examine these variations based on characteristics such as firm size, sector, location and extent of export orientation. Table 2.4 through Table 2.6 summarize these results using the ranking methodology described in the last section.

Firm size is often a proxy for the resources available to a firm, for the access and need a firm has for government and business support services, and for the type of markets a firm serves. Smaller firms primarily work in local markets, have little market power, interact with government in a very limited way, and often do not have the standing in the community to easily obtain financing. Moreover, small firms are generally unable to substitute for poor infrastructure and business support services through their own resources. In contrast, larger firms generally have better access to the financial community, and can often afford to provide some of their own infrastructure and business support services in the absence of effective public provision. Such differences are reflected in the business problems reported by various size classes of firm as indicated in Table 2.4. Clearly, the cost structure of larger firms is more affected by bureaucratic burden and inappropriate government policy than the cost structure of small firms. Many more firms in the medium, large and conglomerate size classes complained about the costs of these

types of problems than did firms in the micro and small size classes. On the other hand, micro and small firms were more affected by lack of access to finance and business support services.

Table 2.4
Variations in Business Problems by Firm Size

	Index by Firm Size				
	Micro	Small	Medium	Large	Conglomerate
Bureaucratic Burden	11.4	14.0	26.1	24.8	16.8
Government Policy	4.5	13.6	13.9	19.1	18.6
Aggregate Demand	16.5	12.8	14.3	10.6	9.7
Infrastructure	10.2	14.3	9.0	7.4	13.3
Access To Finance	17.0	12.8	6.1	4.6	7.5
Labor	13.6	4.7	5.7	10.3	11.5
Business Support	11.4	8.5	9.4	6.7	7.5
Competition	4.0	8.2	6.1	5.3	6.1
High Interest Rate	5.7	3.1	6.9	7.4	5.7
Inputs	5.7	7.4	2.4	1.4	1.1
Trade Policy of Other Government	0.0	0.0	0.0	2.1	2.2

Labor market problems appear to hamper microenterprises and large enterprises, but not others. The limited resources of small firms make it difficult for them to maintain a diverse set of employees and specialists. Finding specialist labor, such as skilled technicians and mechanics, is a substantial problem for small firms. On the other hand, larger firms have their own labor problems in terms of dealing with unions and managing a large diversified workforce.

Turning now to the business problems reported by firms in different locations around the country (Table 2.5). As the data indicate, government (bureaucratic burden and policy) is a relatively larger problem for firms in Birgunj and Butwal compared to the rest of the country. Firms in Birgunj use more permanent workers than in other parts of the country, due to the city's longer history of manufacturing activities, and consequently have greater problems with government labor regulations which concern the dismissal of workers. Firms in Butwal, on the other hand, are more concerned with the implementation of the government policies because of the lack of full services in Butwal and the less knowledgeable and trained government officials in the area compared to neighboring Birgunj. In contrast, firms in Biratnagar are less concerned about government, but are concerned about the availability of raw materials and parts and business support services, such as training and technology transfer. Competition is a bigger problem in the border towns of Birgunj, Butwal, and Nepalgunj where cheap Indian manufactured substitutes are readily available. Firms in Biratnagar do not seem to consider the Indian competition as big a problem as the other border towns and this is partly related to the sectoral composition of firms. It should be noted that firm size considerations drive some of the business problem responses found in Table 2.5. The larger firms found in Hetauda and Birgunj are more affected by government bureaucracy and policy than the smaller firms located in Pokhara and Dhangadhi. In these cities, with a preponderance of smaller firms, aggregate demand, infrastructure, and obtaining skilled labor are the biggest reported business problems.

Table 2.5
Variations in Business Problems across Firm Locations

	Index by Location							
	Biratnagar	Kathmandu	Hetauda	Birgunj	Pokhara	Butwal	Nepalgunj	Dhangadhi
Bureaucratic Burden	11.3	21.3	20.8	18.4	7.4	32.5	22.1	7.7
Government Policy	7.1	17.2	16.9	33.3	8.6	16.2	15.8	1.5
Aggregate Demand	14.6	10.5	19.5	11.5	16.0	7.7	11.6	18.5
Infrastructure	11.3	7.7	11.7	16.1	19.8	17.1	1.1	18.5
Access To Finance	11.3	11.3	5.2	0.0	9.9	0.9	16.8	3.1
Labor	7.1	8.3	7.8	4.6	21.0	5.1	6.3	23.1
Business Support	13.7	9.9	16.9	1.1	3.7	3.4	3.2	3.1
Competition	5.2	5.3	1.3	9.2	1.2	10.3	12.6	7.7
High Interest Rate	4.7	7.3	0.0	5.7	7.4	5.1	5.3	4.6
Inputs	9.4	0.6	0.0	0.0	4.9	1.7	5.3	12.3
Trade Policy of Other Government	4.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0

Firms in different sectors also have different priorities across business problem categories (see Table 2.6). Government policies and bureaucratic burden affect pharmaceutical firms more than firms in other sectors. Their major concerns are bias in import and safety regulations favoring imported medicines, ineffective regulation of drug quality standards, and difficulties in obtaining duty and VAT refunds. In contrast, industries dominated by small firms such as non-metal and wood and wood products exhibit the typical small firm priorities.

Infrastructure is of greater concern in industries that incur heavier losses when electricity supply is irregular or transportation facilities are inadequate. The limited shelf life of most food products, and the consequent need to quickly process, transport and distribute food products, makes infrastructure a bigger problem for firms in the food industry. Firms in the beverage industry were concerned about the poor condition of the roads, which can cause high breakage of bottles. Metal firms producing goods for major construction projects were concerned about transporting their goods to their customers and increased costs caused by the poor supply of electricity. Similarly, the reliability of the transportation system in terms of timely delivery and theft of consignments en route to Indian ports were a major concern for firms in the garments and carpets businesses.

Industries dominated by small firms (non-metal and wood) have difficulty finding skilled workers while the garment industry is more concerned about availability of workers during periods of peak demand season. Competition from imports is also a major problem for the metal and textile industries. Textile firms are most concerned about duties imposed on both raw material imports and exported outputs in India. Garments firms are concerned about the availability of quotas in the near term and the ability to compete in world markets in the long term.

Table 2.6
Variations in Business Problems across Industrial Sectors

	Index by Sector								
	Food & Beverage	Wood & Wood Products	Chemical & Paints	Carpet	Textile Excl. Carpet	Garment & Leather	Metals	Pharmaceutical	Non-Metals
Bureaucratic Burden	16.7	19.8	21.4	11.7	23.5	19.4	23.6	23.8	8.1
Government Policy	18.0	8.6	14.3	15.0	21.6	18.9	3.8	31.7	11.3
Aggregate Demand	9.5	12.9	17.9	18.3	14.7	8.3	13.9	3.2	19.4
Infrastructure	16.7	6.9	9.5	12.5	2.0	5.6	14.4	7.9	9.7
Access To Finance	6.2	12.9	6.0	7.5	7.8	13.3	7.2	6.3	21.0
Labor	8.2	10.3	4.8	7.5	8.8	10.6	10.1	9.5	9.7
Business Support	10.8	9.5	13.1	13.3	0.0	8.3	6.3	4.8	4.8
Competition	6.2	0.9	8.3	4.2	9.8	3.9	11.5	4.8	1.6
High Interest Rate	4.3	9.5	4.8	10.0	8.8	4.4	2.4	3.2	12.9
Inputs	3.3	8.6	0.0	0.0	0.0	2.2	6.7	4.8	1.6
Trade Policy of Other Government	0.0	0.0	0.0	0.0	2.9	5.0	0.0	0.0	0.0

Lastly, Table 2.7 examines the business problems of exporters relative to non-exporters. Exporters, as the data indicate, typically have the problems of larger firms, as they are generally larger than non-exporters. They are more concerned with government policy and bureaucracy. Competition does not appear to be a major concern for firms in garments and carpets focused on the American and European markets, but is a major concern for firms in the textiles and chemicals industries focused primarily on the Indian market.

Table 2.7
Variations in Business Problems: Exporters versus Non-exporters

	Index		
	Exporter	Non-Exporter	All Firms
Bureaucratic Burden	21.5	17.6	18.9
Government Policy	19.3	13.0	15.0
Aggregate Demand	11.0	13.1	12.4
Infrastructure	8.8	11.9	10.9
Access To Finance	8.5	9.3	9.0
Labor	7.8	9.5	9.0
Business Support	8.3	8.6	8.5
Competition	3.3	7.6	6.2
High Interest Rate	6.0	5.7	5.8
Inputs	2.8	3.7	3.4
Trade Policy of Other Government	3.0	0.0	1.0

2.3 Bureaucratic Burden of Government

Firms reported that excessive red tape, extensive delay in provision of government services, corruption of government officials and poor administration of the tax laws are the major ways in which the bureaucracy imposes a burden on them. The frequency of firms reporting each problem is summarized in Table 2.8. More than 30 percent of firms indicated that too much official red tape, time delays in obtaining government services, and corruption are one of their three greatest business problems. Administration of specific laws such as tax regulations, import regime and customs come next with nearly twenty percent of firms reporting problems. Government enforcement of laws, in terms of general crime and theft prevention and providing security at the work place, does not appear to be much of a problem.

A large chemical manufacturer articulated the view of many firms regarding the relationship between government and business when it complained that “At the policy level government is a friend, but at the level of implementation it is an opponent.” This view of the relationship between government and business is reflected in the interview responses about the efficiency of government service provision. More than 90 percent of firms believe that government does not deliver services efficiently and delivery of these services has gotten worse compared to a decade ago. On the other hand, when asked directly about the attitude of government toward the business community, less than 25 percent of firms indicated that government actively opposes business, rather than providing a helping hand or remaining neutral towards business.

**Table 2.8
Bureaucratic Burden of Government**

	Frequency of Firms			Percent of Firms Reporting as Top Three Problem
	First Problem	Second Problem	Third Problem	
Red Tape, Time Delay, Corruption	22	26	21	30.9%
Administration of Tax Regulations	13	6	13	12.1%
Administration of Import Regime/Customs	5	3	4	5.4%
Enforcement of Laws: Crime/Security	1	0	3	1.8%
Total Bureaucratic Burden	41	35	41	42.6%

Red Tape, Time Delay and Corruption

Red tape and time delays are somewhat nebulous concepts and are difficult to quantify without reference to a specific set of services. The actual length of the delay is meaningful only when viewed with reference to the time it should take under a reasonably efficient system. Because of these inherent difficulties, we asked firms to describe specific problems with the efficiency of government services. Broadly, firm responses suggested that lack of clarity, consistency, and simplicity in laws and regulations, poor delegation of authority and dissemination of information, overly rigid application of rules, opportunities for arbitrary

decisions, and the absence of a system of accountability all created an environment conducive to red tape, time delays, and corruption. Some specific examples of this are discussed below.

Corruption

Firms report that corruption is pervasive and exists throughout the government. According to the manager of a small firm in the metal industry, civil servants “are not public servants, they are little kings. They think we are here for them, not them for us. You have to bribe each public servant for each task they do for you.” Corruption is rampant in places where public officials have discretion to interpret unclear laws. Firms noted that the introduction of new laws, such as VAT and environmental laws, have created new opportunities for corruption. Several firms blamed the World Bank and donors for promoting these new measures, which then lead to more corruption and worsened the climate for doing business.

Most of the firms surveyed across the country believe that corruption has increased with the advent of democracy. A large manufacturer in the chemical industry linked the perceived increase in corruption to the number of new stakeholders and the lack of checks and balances resulting from the democratization of the economy. Many firm managers noted that prior to the advent of democracy, there was only one party and a single chain of command that needed to be satisfied. “This made corruption less costly and more efficient. A payoff at the top levels of the bureaucracy was sufficient to obtain the necessary services.” In addition to payoffs for specific services, firms feel obligated to payoff each potential decision maker or potential “trouble maker” in a wide array of organizations including all the political parties, all the unions, all the student groups, and all the politically-affiliated organizations.

Most firms report that for many services, the “corruption mechanism” operates smoothly. The level of the bribe is fixed; red tape and delays are minimal. As a result, firms often consider the cost of corruption in a similar manner to a user fee imposed by the government. The only difference is that corrupt officials pocket the revenues instead of the government. Firms report that they periodically experience problems with the “smooth corruption mechanism” after the rotation of government officials. Such uncertainties are reported to affect the ability of firms to plan their current operations and make future investments.

One Window Service

The government introduced a One Window Service in 1992 to streamline the provisions of government services to industrial firms. Many of the firms interviewed were not aware of the existence of the One Window Service. Firms that had used the service invariably describe it as “simply one more window of government bureaucracy to deal with. Government has a lot of windows, and some doors too.” The one stop service envisioned in the 1992 policy seems never to have materialized. As it exists today, the service appears to be limited to an entry point for providing tax and duty drawback refunds only. Once through the window, firms have to chase their files through the Department of Industry, the Department of Customs, FNCCI, and the Department of Finance, which finally releases the tax refunds after receiving approvals from each agency. Firms do not see much change in any of this.

Centralization

Moreover, the one window service does not appear to benefit firms located outside Kathmandu because the regional offices cannot handle all of the scheme's services. For example, if an upcountry firm wishes to import materials and pay for them in US dollars, the request has to be handled in Kathmandu. In addition to tax and duty refunds, firms located outside Kathmandu also cannot get many other services and often have to travel to Kathmandu to get various government permissions and obtain licenses. Firms that do not have an office in Kathmandu are at a distinct disadvantage because of the need to send senior managers to Kathmandu for such purposes. This can be especially costly for firms if the service provided in Kathmandu is not efficient. A number of firms also had problems with the recent introduction of the five-day workweek in Kathmandu, which they reported has effectively extended the amount of time they need to spend in Kathmandu when seeking government services.

Enforcement of Extinct Taxes

A metal products manufacturer reports that because of poorly drafted laws and regulations that allow variations in interpretations and poor dissemination of information, extinct tax laws continue to be enforced. For example, when VAT was introduced, the Contracts Tax ended. However, the executing agencies for the firm's projects continue to impose it. Once contracts are completed, the firm has to visit the VAT office to ask it to issue a letter to the project-executing agency. The firm has been waiting six months and has visited the VAT officers in Kathmandu several times to attempt to collect the refund.

Rigid Procedural Rules Regarding L/Cs

A number of firms reported that customs and VAT officials do not haggle over the value goods if they are paid for by Letters of Credit (L/C). A joint-venture company with good relationships with its suppliers and buyers uses demand drafts and telegraphic money transfers. The firm reported that customs authorities do not easily accept a certificate from the bank as proof of payment for duty drawback purposes.

Similarly, a major exporter notes that it is difficult for firms to send samples of new products to buyers because potential customers do not want to create L/Cs for a small amount especially when they are testing the products of the manufacturer. The firm notes provisions for cash against documents (CAD) as in Bangladesh and India would significantly improve the competitiveness of exporters. Firms in the tea industry reported similar problems in marketing their products.

Complexity of Rules

The rules governing business practices in some industries are complex, contradictory and costly to firms. For example, a firm in the wood and wood products industry described the intricate set of rules that it must follow. The Forestry Department prohibits the location of a wood processing business within five kilometers of a forest; so the firm had to locate elsewhere. However, it was allowed to locate within an Industrial District even though it was within five kilometers of a forest. Even though the firm obtained permission from the Forestry Department to remove logs from the forest, it had to wait two years before it could secure permission to cut the wood. The difficulties arose because the environment section of the Department was unable to decide what type of Environmental Impact Assessment the firm needed to conduct. The most

irritating regulation for the firm is the mandatory requirement to get approval from the forestry department to sell furniture outside the district. There is no charge for this service, but it takes up to two days to secure the permission.

Administration of Tax Laws

Nearly 20 percent of firms reported that the administration of tax laws is one of their biggest business problems. The survey asked firms about their perception of the individual tax laws, and the difficulty of complying with these laws. Table 2.9 shows firm responses to these questions. Less than 20 percent of firms find that taxes are fair and more than 75 percent find that tax authorities have too much discretion in determining their income taxes. With the exception of excise taxes, the majority of firms find it difficult to comply with the tax regulations. Despite recent changes in the tax laws the majority of firms also see no improvement in the administration of major taxes from a decade ago.

**Table 2.9
Perceptions of Taxes and Tax Administration**

	Fully Agree	Somewhat Agree	Fully Disagree
Perception of taxes:			
Taxes are fair	16%	18%	66%
Tax Authority has No Discretion In determining income tax	7%	17%	76%
Import duties are Predictable	57%	23%	20%
Tax Compliance is Difficult			
Income taxes	21%	34%	45%
VAT	38%	29%	32%
Import Duties	45%	34%	21%
Excise Tax	71%	7%	21%

Administration of Income Tax Regulations

Nearly 80 percent of firms find it difficult to comply with the income tax regulations. Even though statutorily the tax is based on income, firms commonly perceive it as a tax on turnover. Many small firms do not keep a full set of accounts using modern accounting principles and typically their taxes are based on a turnover amount agreed upon by the firm and the tax officer. Large firms report that the self-assessment of income taxes, based on the audited books, are not accepted and that they are required to adjust their financial accounts until “tax targets” specified by the tax authorities are achieved. One reason for this is that few tax officers are trained in modern accounting practices. Virtually none of the firms interviewed indicated that they paid taxes based on actual audited books. Most firms accommodate the tax officer’s demands because of the need to obtain the Income Tax Clearance Certificate, a document that is essential for receiving other government services. Firms report that the tax authorities have a reference figure on the profit margin of each sector. These margins are lowest in the food industry at 1 to 3 percent and are highest for alcoholic beverages at 12 to 19 percent. The tax officer uses these profit margins in conjunction with the reported turnover of the firm to

determine the firm's tax for the year. If the firm's actual profits are less than this "target" figure, the tax officers typically dispute the firm's accounts and disallow expenses or increase turnover claiming that it has been underreported.

Firms also report that the tax authorities have reference figures for specific cost items such as advertising, administration, and raw materials as a percentage of turnover. For example a firm in the Pharmaceutical industry reported that it sponsors medical conferences at a cost of RS 300,000 to RS 500,000 each to market its products. The tax authorities only allow the firm to write off for promotional expenses, donations, and miscellaneous expenses the lesser of RS 100,000 or 5 percent of sales.

Even firms exempt from taxes, for instance exporters or cottage industry, often end up paying fees and bribes to obtain the Income Tax Clearance Certificate. For example, a carpet manufacturer, which is exempt from all income taxes, reported that it has to pay RS 500 to renew its Income Tax Certificate and bribe the relevant officers RS 5,000 to obtain its Certificate every year.

An even more troublesome aspect of the tax administration is that the tax authorities expect turnover to rise every year for each and every firm resulting in an increase in the presumptive income tax every year. Firms operating at a loss were troubled not only about paying taxes when they were operating at a loss, but also about the prospect of rising tax assessments.

Many firms claimed to have underreported their initial year turnover. Doing so not only reduces the tax bill for the current year, but also reduces the chances that the actual turnover in subsequent years will be higher than the presumptive turnover of the firm. A number of firms reported that the tax officer suggested that they follow this strategy and split the resulting "tax savings" with them. While it is difficult to assess the extent of the difference between actual and reported amounts, a number of firms indicated that they underreport both turnover and profits by up to five times the actual figures. These distortions make it difficult to rely on these data to determine the financial health of a specific firm or of an entire industry. As a result, banks and other financial institutions are compelled to demand adequate supplementary collateral for providing loans.

Administration of VAT

While not all firms agree that VAT is good policy, a majority of firms think it is. However, many of these same firms find room for improvement in its administration. The most troublesome aspects of VAT administration are the difficulty and uncertainty in obtaining refunds, inadequate enforcement that allows many firms to escape VAT, difficulty in getting VAT receipts from other firms, inadequate training of tax officers and limited dissemination of information to firms and the public. According to a textile manufacturer, problems with VAT exist because authorities are under pressure to achieve revenue targets - made difficult, as many firms do not register.

The key problem that many VAT registered firms complain about is the inability to get refunds from the VAT office. This is especially true of exporters or other VAT exempt

industries such as pharmaceuticals, which have typically paid VAT either when they imported goods or purchased goods in the domestic market. One firm in the food industry noted that his firm has been owed US 51,000 dollars continuously for over six months. The regulations stipulate that the VAT office provide him a refund after an audit. The firm has not been able to get an audit despite numerous requests during the past six months. Similarly, a pharmaceutical firm that was charged VAT when it imported packing materials tried to obtain its refund on the VAT but has been unable to do so. The firm reports that the authorities have not formally replied to its requests but verbally told the company that it would not get a refund. In contrast, a large manufacturer in Birgunj, who pays "speed money", reports getting its VAT refunds in a timely manner. One reason for the delay of VAT refunds arises from the need for local VAT offices to submit all documentation to the Kathmandu office. This makes it more difficult to keep track of VAT files.

A number of firms complain about the difficulty of competing with firms that are not paying the VAT because of lax enforcement. Many firms note that many goods coming through India avoid paying both customs duties and VAT by bribing the tax officers. Firms also note that because few traders are registered for VAT, they find it difficult to obtain a VAT receipt when they purchase goods. Firms are disadvantaged because they cannot claim some of their expenses and because competitors have lower costs through tax avoidance.

A number of firms also complain about the lack of information dissemination regarding the provisions of VAT and its interactions with other laws. The contract tax was replaced when the VAT was introduced. However, firms continue to pay these taxes because the firms' primary customers, local governments, do not understand this and withhold the contract tax from its payments. Another firm reports being penalized for not paying the VAT on advances the firm receives on its contracts.

Administration of Customs and Import Regime

Firms report five types of problems in the administration of customs and the import regime – procedural delays and red tape, inaccurate classification of goods, inaccurate valuation of goods, difficulties with the duty drawback scheme, lack of enforcement and smuggling.

Procedural Delays and Red Tape

Many firms report that clearing customs is a time consuming process. A large chemical manufacturer reports that customs clearance of normal consignments that do not require special customs inspections takes around ten days after the goods have been offloaded at the Calcutta port. A number of firms in the pharmaceuticals industry report that even though they are exempt from duties, it takes about a week to sample and analyze a drum of each type of product it imports. A distillery notes that customs can hold up consignments for three weeks because the officer-in-charge is unsure of the regulations and needs to analyze the consignment in a laboratory. An additional week is often required to match the values of the L/C and the consignment. A firm in the metal industry observes that it can take up to two and half months to value and determine tariff rates on some of its electric and electronics components because the customs officers are not adequately trained.

Clearing customs can also be delayed for firms located outside of Kathmandu when the firms' banks are unable to send the L/C for imports directly to Calcutta. In this case the L/C is sent from the local issuing bank to Nepal Rastra Bank, to the Ministry of Commerce, to Nepal Consulate Office in Calcutta and finally to the Calcutta customs. A firm in the leather and footwear industry reports that the whole process takes a few months when it follows the paper trail to its final destination.

Classification of Goods for Determining Tariffs

The tariff rates on some imported goods can vary based on how the good is classified under the different headings of the harmonized codes. These provide opportunities for arbitrary decisions, delays and corruption. For example, when importing equipment the duty varies based on whether it is "main manufacturing machinery" or not. The same equipment can be "main manufacturing machinery" for one firm while not for a firm in another industry creating an opportunity for making arbitrary decisions. Similarly, equipment imported for the first time receives an 80 percent duty exemption; however, new equipment imported to replace existing equipment is not eligible for the exemption. A number of firms report that because the customs officer cannot possibly have information on these differences, the policy sets up another opportunity for arbitrary decisions. A hydroelectric equipment manufacturer provides another example. It has difficulty obtaining the preferential rate applicable to hydroelectric equipment because customs officers are unable to conclusively determine that the equipment will be used for its stated purpose.

Valuation

The valuation of imported goods at customs for purposes of determining the import duties is a major source of consternation for many firms. Customs officials fear that firms are under-invoicing their imports to reduce their duties. As a result, instead of using the actual invoice value of the goods, they use "reference value" which are the values that commodities are believed to have. These reference values are often based on the highest import price historically declared on an invoice, and may overvalue goods substantially when the price of the goods has declined over time. This is especially problematic because the reference values are not revised very often. The use of reference values also results in higher duties for large firms that are able to reduce their purchase prices through global sourcing.

Even though a recent policy change allows customs officers to accept the CIF value, a number of firms report that the customs officers do not apply this policy if the CIF value is less than the reference value. To encourage firms to be more transparent in the invoicing of goods, a provision in the Finance Act allows the customs office to buy imported goods at the invoiced CIF value, or get another buyer to purchase the goods at the invoice value. It is unclear how much of an impact this provision has had on firms.

A textile firm also notes that it faces problems with valuation that occur both when it imports raw materials and when it exports to India. Indian customs officials require the firm to present a detailed cost structure for the product to prove that it is not underinvoicing, and pay a mandatory bribe of 10 percent and a countervailing duty of 18 percent.

Duty Drawback

Most exporters have problems with the duty drawback scheme, which is designed to encourage exports by exempting firms from import duties on raw materials used for exported goods. At the time of import, exporters with L/Cs are required to pay a fraction of the potential duties and provide a bank guarantee for 150 percent of the unpaid import duties in lieu of paying the remainder. The exporter is eligible for a refund if it exports the goods produced from the imported raw materials within six months and files a claim within three months after exporting the good.

The major problems that firms cite regarding this scheme are (a) delay in obtaining refunds, (b) sequential processing of refunds in both the duty drawback and VAT, (c) rigid deadlines for eligibility, and (d) reduction in the share of imports that can be brought through the bank guarantee to 50 percent.

Most firms report substantial delays in receiving the duty drawback refunds, which is obtained by applying to the One Window Service. A number of firms report being owed between USD 80,000 to 300,000 for duties paid one to five years ago. Firms report paying 1 to 10 percent of the refund to corrupt government officials to receive refunds. Many firms report that government officials frequently cite the lack of a budget to pay the claims even after they have been approved. Further, a large manufacturer in Birgunj points out that refunds are sometimes provided in savings certificates instead of cash.

The rigid schedule imposed by the duty drawback scheme and the need to present original documents for VAT refunds and for duty drawback is a concern for a number of exporters. A large chemical manufacturer was concerned about the substantial amount of working capital that is tied up and the possibility that it may not meet the overall time limit for the refund given the many steps which have to be undertaken to get both refunds. A textile manufacturer reported that it has difficulty meeting the six-month requirement because of lower than expected demand for its products and potentially faces a penalty of 150 percent on the duties.

A number of firms were also concerned about the increase in working capital requirements because of a recent policy change that reduced the maximum amount duties that could be covered using a bank guarantee to 50 percent.

Lack of Enforcement and Smuggling

Firms in a number of industries reported that lax enforcement at customs and the widespread smuggling of goods with the connivance of customs officials makes it difficult for them to compete with cheap imports. A large textile manufacturer claimed that four out of every five trucks of fabric brought into Nepal from India by-pass customs. Similarly, a large manufacturer of vegetable ghee reported that it has lost half of its market due to the smuggling and tax avoidance of imports from India and has been forced to diversify into edible oils. Even though tariff rates have been reduced substantially as part of the economic liberalization programs, the long open border with India makes it difficult to prevent smuggling when price differentials exist in neighboring towns along the border.

Other Problems with Government Administration

Work Permits

Weak application of laws is not a problem for business in all cases. A case in point is the implementation of laws regarding work permits. A firm that seeks to hire non-nationals, including Indians has to present evidence of recruitment efforts showing that suitable candidates could not be found locally, recruit non-nationals, obtain permission to hire from the Department of Labor which typically issues a renewable permit that is initially valid for two years. To hire an Indian technician typically takes about six months and a bribe of around RS 45000. Because these laws are rarely enforced, many firms report that they have been hiring Indian workers, some of them for over 25 years, without obtaining work permits.

Enforcement of Laws and Security

Despite headline-catching violent actions by the far-left Maoists, only two firms, one in Kathmandu and the other in Birgunj, reported that lack of security is one of their top three problems. More importantly none of the firms in the Maoists active areas were concerned about security. Theft and crime, enforcement of laws and security are not considered major problems by most firms. Firms do not normally use the court system or go to the police to solve their disputes. Almost every firm has its own security personnel. Firms resolve conflicts by threatening to cut off relations with their customers or suppliers. Most of the smaller firms are unable to collect from their clients when they have a conflict and have to bear the losses themselves.

2.4 Government Policy, Laws and Regulations

The greatest concerns of firms regarding government policy is not with any specific regulation but with the way policies are formulated and the lack of clarity, predictability and consistency in regulations across time and with other existing regulations. The most important concern with a specific regulation relates to the retrenchment provisions of labor laws. In addition, selected groups of firms are also concerned with price controls, trade policy, regulations applicable to starting a business and environmental regulations. The frequency of firms reporting each problem is summarized in Table 2.10

Unpredictability, Inconsistency and Lack of Clarity of Government Policy

Firms complained that they have no foundation on which to plan business operations because of the lack of a consistency, clarity, and stability in the policy making process. More than 85 percent of firms indicated that they were unable to predict changes in laws due to lack of transparency in the decision making process. Also firms complain that the drafting of laws is poor; laws may be satisfactory in their intent, but are poorly implemented; that the frequent changes of government results in changes in direction whereas firms require long-term stability. The trade association representing edible oil manufacturing firms summarized the sentiment reported by many other firms: "We can never understand the government's policy."

Table 2.10
Problems Related to Government Policy

	Frequency of Firms Reporting as			Percent of Firms Reporting as Top Three Problem
	First Problem	Second Problem	Third Problem	
Lack of Clarity, Consistency and Predictability in Policy	13	7	5	11.2%
Specific Government Policy				
Labor Regulations	7	12	8	12.1%
Regulations on starting Business	4	2	1	3.1%
Price controls	3	1	1	2.2%
Other government policy	10	5	6	9.4%
All Government Policy	37	27	21	38.1%

Stability of Policy

Many firms complain that the government frequently changes policies and regulations without consulting the private sector. For example, every year the tariffs applicable to many products are changed during the annual budget exercise. Since firms are unable to predict the direction of change they are unable to implement long term business plans. A large firm in the food and beverage industry reported that because of policy instability, in recent years it has only been able to plan ahead two years, instead of the ten years it needs to. Political instability contributes to the policy instability. There have been three elections in the last five years and each new government has been accompanied by a change in the direction of government policy.

One firm in the metal fabrication industry noted that government is "torturing industry" by the lack of stability in tariff rates. Much of its work involves major, long-term infrastructure projects. Because of the lengthy delays in the bidding process, firms often bid on contracts that are not carried out until a year or two after the submission of the bid. The firm complained that changes in the tariffs could turn a potentially profitable contract bid placed in one year into one that bankrupts the firm in the next. Similarly, a footwear manufacturer notes that, of the 29 different inputs he imports, duties have increased on ten of them in the past year.

Unpredictability in government policy also arises because firms are unsure of the government's commitment to its policies. For instance, the government introduced a five-year income tax holiday for new industries in 1992 and removed this provision in 1997 without significant discourse. Firms operating before 1992 complained about the difficulty of competing with firms under the holiday scheme.⁵

Firms in the liquor business provide an example of credibility of government policy affecting their investment plans. Current government regulations require firms in the liquor

⁵ Most firms have a positive perception of the economic liberalisation policies introduced in the last ten years and over 90 percent of them expect these policies to remain in place.

business, which have foreign partners, to export 50 percent of their production after five years of operation. Several liquor firms want to enter into joint ventures, but question the government's commitment to this policy. They indicate that they are waiting until the end of the five-year period for an existing foreign joint venture firm to test the government's commitment.

Non-tariff regulatory changes also affect the ability of firms to plan their operations. A firm in the food industry had been cultivating the export market for its products into Tibet with steady export growth between 1996 and 1998. The government then introduced a regulation requiring the company to barter with the Tibetans. This has created significant difficulties for the firm because it has no idea how to market the goods received in exchange from the Tibetans.

Clarity of Regulations

Many firms believe that most politicians lack the knowledge, and are inexperienced in law making, hence, many laws and regulations are unclear and open to interpretation. An example is the minimum wage law, which specifies the minimum wages and allowances for workers. The government periodically resets the minimum wages and allowances for industrial workers to account for inflation. Because the law is not clearly written, the government with the support of the unions has interpreted the law as providing for minimum increase in worker compensation. As a result, firms are required to increase the worker wages by the increase in the minimum wage whenever they are adjusted. A metal firm complained that it was forced to increase its wages by RS 300 when the government increased the minimum wage from RS 1500 to RS 1800 despite the periodic wage adjustments it provides its workers. As a result this firm has much higher wages than other firms do in the industry. Similarly, an old firm in the food industry reports that it has difficulty competing with new firms who are paying the current minimum wage while the firm is forced to pay almost one-and-half times that amount because of the cumulative effect of government wage hikes.

A major concern for foreign investors and joint ventures has been the lack of official versions of laws and regulations in English. One of the oldest joint venture companies complained that the labor laws are unclear regarding the need for work permits for Indians and the right of managerial staff to go on strikes. However, the lack of an official English language version of the laws makes it even more difficult to interpret the rules.

Consistency of Regulations

Government laws and regulations are often inconsistent with other regulations creating the opportunity for arbitrary decisions and delays. For instance, a firm in the metal industry notes that there are inconsistencies in Nepal Rastra Bank's list of items which can be imported in US dollars from India and the classifications in the customs tariff book. The provisions of one set of regulations refers to hot rolled coils of more than 12 mm diameter, but plates rather than coils are obtainable in this size. The firm notes that resolution of such ambiguities comes about through the payment of bribes.

Another example of inconsistency is the requirement to set aside 5 percent of profits for a government-housing fund and to pay gratuities to workers with more than three years' of service under the labor law, but the inability to expense these costs under the income tax. Similarly,

wood firms complain about the need to obtain separate permissions to remove logs from the forest and to cut the logs.

Labor Regulations

The most problematic regulation for firms is the retrenchment provisions of the permanent labor. Twelve percent of firms identified it as the one of their top three business problems. Labor regulations require firms to make all employees permanent after working 240 days. After they become permanent, workers cannot be laid off or fired without the consent of the labor department of HMG, a process that can take months or sometimes years. Market needs are not considered sufficient grounds for such consent. Firms are required to retain all employees on the payroll and pay gratuity until the firm is granted permission to reduce its workforce. Firms have to go through this same arduous process even in cases of gross worker misconduct.

A direct consequence of such restrictive laws is that many older firms are often overstaffed and unable to reorganize by hiring people with skills that better match their current needs. For instance, a large manufacturer in Birgunj reported keeping seven times more employees than it needs. The firm would need to get permission and then pay redundancy wages to lay-off the extra workers. A number of firms in the textile industry also report that high worker retrenchment costs prevent them from shutting down their operations despite significant losses.

Firms have devised many ways to overcome these restrictions including adopting capital-intensive production methods, using casual labor, subcontracting their production, or splitting their production between various sites (to reduce the risk of labor disputes spreading). Firms indicated that the other labor regulation provisions were not a significant problem for them (see Table 2.11).

Table 2.11
Percent of Firms that have Problems with Labor Regulations

	Percent of Firms with Problem	Percent of Firms with Severe Problems
Layoff procedures	41	28
Hiring foreign Workers	11	7
Temporary hiring	8	4
Overtime restrictions	4	1
Minimum wage	3	1
Hiring local Workers	2	0

Price Regulation

Price controls are a problem for two specific sectors only — carpet and food. The government fixed the minimum valuation of carpet exports at \$54 per square meter in 1992 as a measure to control foreign currency leakage. Carpet exporters argue that this is well above the

current market price of their lowest quality carpet (60 knot carpets), which sells for around \$45 per square meter in international markets forcing them to over-invoice the value of their exports and replenish the foreign exchange difference through secondary transactions in the unofficial foreign exchange markets. Hence, this regulation increases the transaction cost of exporters, adversely affecting their competitiveness in foreign markets.

While the government does not fix the price of agricultural products such as rice and edible oils, a government owned enterprise, Nepal Food Corporation, is a major purchaser of such basic food products and influences the market price. The NFC purchases these food products to stabilize prices for farmers and consumers. The prices set by NFC act as the support or floor price for unprocessed rice and the ceiling price for processed rice. Grain mills are affected by both prices. A number of them complained about the difficulty of determining what the prices will be, how they are set and when they will be set. Late declaration of “arbitrary” prices by NFC poses significant price risks for these firms and prevents them from purchasing inputs for processing in a timely manner.

Trade Policy

Even though most industries are affected by trade policy, firms in the pharmaceuticals, metal, textile, and food and beverage industries were most concerned about it. The most frequent complaint was about the bias of the trade regime against manufacturers and in favor of traders. While some firms were concerned about the negative effective rates of protection embedded in official policy, many were more concerned about the lax enforcement of customs that encourages smuggling operations by traders. A common complaint from metal products manufacturers was that in big infrastructure projects, duties favor the import of finished products from donor countries, which are exempted from all duties and VAT, rather than local manufacture, which have to pay both. Similarly, a medium-sized food manufacturer reported that its ability to compete with other products depended on the degree of enforcement at customs and that both its production and the demand for its products fluctuated during the year based on enforcement at customs.

Numerous pharmaceutical firms complained the regulatory bias against them and in favor to traders. They complained about the need to obtain import recommendation certificates for *every item* they import, such as chemicals, which cost RS 100 per certificate each year. In contrast, a foreign company exporting to Nepal only needs one certificate whether it is exporting to Nepal one or one thousand medicines. In addition, they were also concerned about paying import duty of up to 40 percent on packaging materials. Several firms noted that while they pay duty and VAT on imported packaging, importers of finished medicines pay only 2.5 percent duty and no VAT (as imported medicines are exempt from VAT).

A number of firms in the textile industry complained about recent changes in the foreign currency regulations that excludes them from purchasing yarn from India using US dollars. The number of items eligible for this provision has been small and has been arbitrarily changed over the years. The policy has a direct impact on firms because goods imported from India using

foreign currency are exempt from Indian excise taxes of 18 percent while those purchased using Indian Rupees are considered domestic sales and hence are not exempted.

Other Policies and Regulations

The survey also asked firms to indicate whether they had problems with specific regulations. Table 2.12 summarizes these responses which indicate that most government policies are not obstacles to firms. Especially important to note are the positive perceptions of firms regarding the economic liberalization policies. The areas of firm concern are permission when starting a business and two environment related regulations.

Table 2.12
Percent of Firms that have Problems with Specific Government Regulations

Regulation	Percent of Firms with Problems
Government Regulations: General	
Location of firm	16
Foreign Exchange for Business Travel	12
Obtaining Foreign Loans	11
Price Controls	10
Payments to non-residents	9
Joint Venture Restriction	8
Access to Domestic Finance	7
Foreign Capital	7
Obtaining Foreign Exchange	7
Restriction on Activities	7
Obtaining Technology License/Making Royalty Payments	5
Repatriation of Profits	0
Regulations Applicable to Business Startup	
Environmental Impact Statement	28
Business license	16
Permission for Foreign Direct Invest / Foreign Technology	8
Title to Land	4

About a quarter of the firms are concerned with the potential difficulties that they would face from new environmental laws that require firms to prepare an environmental impact assessment when expanding their business or starting up new ones. Most firms did not have any direct experience with having to comply with this but were merely expressing their fear of potential obstacles that might arise from it.

Firms were also concerned about recent restrictions regarding the location of industrial plants. Some firms in Kathmandu were concerned about regulations that prohibit expansions of

their operations or prohibit starting new operations within the densely populated areas inside the Kathmandu valley Ring Road. Similarly, the wood and wood products industry was concerned about regulations that require them to locate at least 5 kilometers away from forested areas.

2.5 Demand

Nearly 40 percent of firms indicate that demand is one of the three greatest obstacles that they currently face. Nearly two thirds of the firms report that lack of demand has a direct impact on their operations and is a major cause for low capacity utilization. Low demand for a firm's products can arise either because the firm cannot compete with other firms that are selling the same products at lower costs or from low aggregate demand in the country. About 10 percent of the firms with demand problems reported problems with aggregate demand and competition. Similarly, 60 percent of firms reported problems with aggregate demand only and 30 percent with competition only. Table 2.13 shows the percent of firms in each location, industry and size that indicated that they had problems with demand. The percent of firms with aggregate demand and competition problems are also shown in the table.

Nepal had experienced a significant slowdown in overall economic activity and in the manufacturing sectors in particular in 1997 and 1998. The three major contributory factors to the slowdown were: ripple effect of the Asian economic crisis, reductions in the demand for carpet exports due to concerns about child labor, and poor harvests resulting from inadequate rainfall. Total demand for manufactured goods had picked up by the time of the survey in 1999 and as the recovery continues, problems with aggregate demand should continue to decrease.

Low aggregate demand affects firms in Dhangadhi, Birgunj and Biratnagar more than firms in Kathmandu. Similarly, inadequate demand is a larger problem for firms in the textile, chemicals and paints and metal products industry and is a smaller problem for the pharmaceuticals industry. Larger firms appear to have fewer problems with low aggregate demand because they were probably the first ones to recover from the slowdown.

A larger share of firms in Butwal and Dhangadhi reported problems with competition from other firms and from low cost imports from India. Competition from low cost imports is also a major problem for firms in the textiles, and metal products industry. Neither of these industries export their output but face significant competition from India. The smallest firms (micro) are more concerned with obtaining finances for their operations than competition from other firms. However once a firm is established it and grows to small size (20 to 49 employees), competition intensifies and growth beyond this point does not appear to give the firm an additional competitive edge. The importance of problems related to competition underscores the need for firms to improve their productivity.

Table 2.13
Percent of Firms with Demand Problems by Location, Industry and Size

	Percent of Firms with Demand Problems	Percent of Firms with Aggregate Demand Problems	Percent of Firms with Competition Problems
Total Sample	41	28	17
Location:			
Kathmandu	33	21	15
Biratnagar	49	38	11
Pokhara	47	40	7
Butwal	45	15	30
Birgunj	50	29	21
Nepalgunj	41	29	24
Hetauda	43	36	14
Dhangadhi	55	55	27
Industry:			
Food & Beverage	36	25	13
Wood & Wood Products	30	25	5
Chemicals & Paints	50	43	14
Carpets	43	33	19
Textile excluding carpet	61	39	28
Garments & Leather	26	15	12
Metal & Metal Products	54	38	27
Pharmaceuticals	27	9	18
Non-Metal Fabricate	50	33	17
Size of Firm:			
Micro	40	34	9
Small	52	33	26
Medium	39	31	12
Large	36	26	15
Conglomerate	35	19	19
Super	40	20	20

2.6 Other Business Problems

The list and ranking of business problems picked up by the survey reflect the business environment in Nepal at the time of the survey. They do change over time as the business environment and the firms' most immediate binding constraints change. As the government takes steps to reduce the costs of inappropriate policies and regulations, and reduces red tape and corruption, the lower-ranked obstacles should become more prominent obstacles to the business community.

Finance

Nearly 40 percent of firms reported that finance is a major obstacle for their operations. Slightly more than half of these firms indicated that they had difficulties with obtaining financing because of high collateral requirements, the need to provide personal guarantees and the inability of the banking system to use profitability of the firm as a basis for providing financing. The remaining firms complained that high interest rates eroded their profitability and competitiveness and made them more vulnerable to random economic shocks that could force them to close their operations. A more detailed analysis of the problems related to financing business operations in Nepal is presented in Chapter 8.

Infrastructure

Over 30 percent of firms reported that inadequate infrastructure services are a major obstacle for their business. Most of the problems concern the unreliable and unpredictable supply of electricity and difficulties related to transporting goods. Smaller firms have greater concerns regarding electricity. They do not have the resources to install their own generators to supplement the public power supply like the larger firms. Larger firms are more concerned with the poor condition of the roads; the closure of major highways for extended periods of time due to accidents, and the loss of goods during shipments through India. A more detailed analysis of problems related to infrastructure is presented in Chapter 3.

Labor

About 25 percent of firms indicated that labor is one of their three biggest business problems. This category does not include problems related to labor regulations, which are included under government policy. Approximately 70 percent of the reported labor problems concern the unavailability of skilled labor, while the remaining 30 percent relate to poor productivity of the work force. A quarter of the firms indicated that shortage of skilled labor is an important factor in low capacity utilization while a fifth of the firms indicate the same about strikes. Surprisingly, unions and strikes account for less than 5 percent of labor related problems. A more detailed analysis of problems related to labor is presented in Chapter 9.

Business Support Services

Over 20 percent of firms reported that the lack of business support services was a major obstacle for their business. Most of these firms are concentrated in specific locations or industries. Firms located in Kathmandu, Biratnagar and Hetauda or operating in the food and beverage and carpet industries were more likely to complain about business services than other firms were. While approximately the same proportion of small and large firms complain about inadequate business support services, limited support services are a more severe problem for the smallest firms, those employing fewer than 20 employees. These firms have greater difficulty accessing existing services and do not have sufficient resources to provide the sources on their own.

The type of service firms desire also varies based on firm characteristics. Availability of better information about output markets and marketing support is a major constraint for carpet manufacturers and exporters. In contrast, firms in the food and beverage industry and non-exporters indicated the need for technology transfer, and technical support. Worker training was a major obstacle for a few firms in Kathmandu and Biratnagar.

Quotas

Quotas is an important issue for firms in the garments industry. The US government imposes quotas under the Multi-Fiber Agreement (MFA) on the quantity of garments that each MFA country is allowed to export to the US for each category of garment. These are administered in Nepal by FNCCI on a first come first serve basis. The quotas for the most popular category of garments, men's shirts and cotton trousers/shorts have been fully utilized in the last few years despite an annual increase of 6 percent. A number of firms expressed concerns about the future competitiveness of the industry when quotas are removed in response to WTO beginning in the year 2001.

In addition, a number of the smaller firms report major difficulties related to obtaining quotas because of their inability to directly market to customers in the US. While the larger well-established manufacturers have their own customer base, the smaller firms in the industry obtain orders through local middlemen. Many of these orders originate in India once manufacturers in India have exhausted the Indian quotas and can no longer produce to meet their clients needs. Since the smaller firms have to wait for orders from the middlemen before they can actually produce, they often find that the quotas available for Nepal on the most popular items have been exhausted by the time they get these orders.

3 Infrastructure

Firms in the sample indicated that infrastructure is the fourth biggest problem of doing business in Nepal, ranked after government, inadequate demand and finance. In this chapter, we characterize the firms that are most affected by poor infrastructure service in terms of region, industry and firm size. We also identify the nature of the problem in terms of access, availability, quality or cost of service. We begin, in the next section, with a discussion of the relative importance of different infrastructure services for firms. This is followed by a detailed discussion of the adequacy of each infrastructure service.

Our basic findings are that: (a) poor availability and quality of electricity service is the greatest infrastructure problem affecting firms in all industries nationwide, (b) inadequate roads and transportation services is another nationwide problem affecting about 20 percent of the firms, (c) water supply is a major problem in Kathmandu and Pokhara while telecom is a problem in Hetauda, Birgunj and Nepalgunj, (d) air freight services are a major problem for garments exporters (e) most firms dump their wastes that are not saleable as scrap in their backyard or into a nearby river.

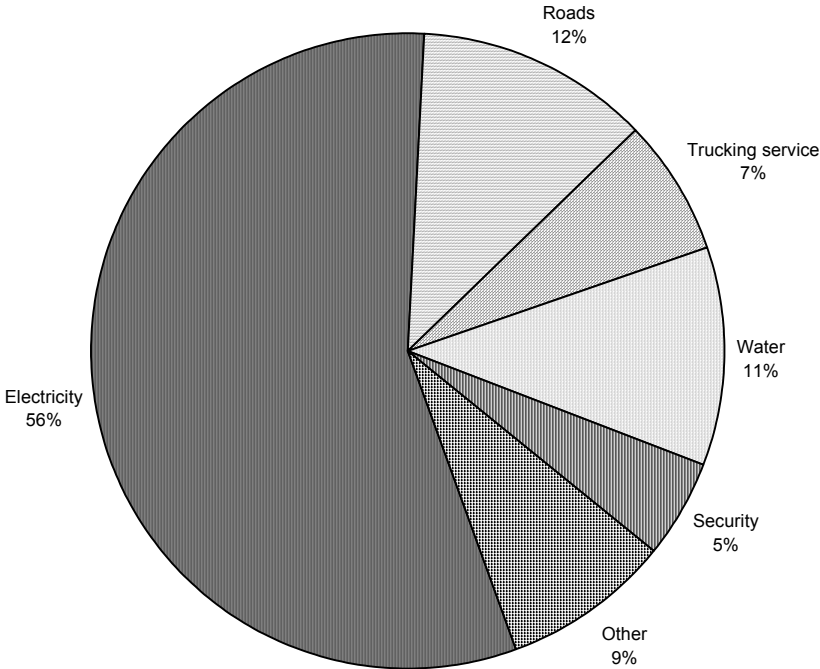
3.1 Greatest Infrastructure Problem

The provision of basic infrastructure started very late in Nepal. Until the mid-50s, there were no roads and electricity, and no one, apart from the elite in Kathmandu, had access to piped water and sanitation services. Significant strides have been made in recent years in the public provision of basic infrastructure services. While access to specific infrastructure services remains the primary concern for some firms, most firms are concerned with the quality, reliability and availability of service. As access and quality of service improves, the cost of service may become a larger problem than it currently is.

The survey asked firms to identify their greatest infrastructure problem and to characterize the nature of the problem. All firms were also asked to rate the adequacy of each type of infrastructure service and to provide additional comments that reflected the basis of their ratings. Finally, firms were also asked whether they provided any of these services themselves to substitute for inadequate public provision.

Figure 3.1 shows the percent of firms in the sample that listed each of the services as their biggest infrastructure problem. More than half of the firms indicated that electricity was their greatest infrastructure problem. Approximately 12 percent of the firms reported that roads were a significant problem, and 11 percent reported problems with water. Trucking services and security are the only two other problems identified by more than 5 percent of the firms. A few firms also reported waste disposal, telecom, postal service, and airfreight services as their most significant infrastructure problem.

Figure 3.1
Percent of Firms Reporting Greatest Infrastructure Problem



The relative importance of inadequate infrastructure services for a firm depends on the availability, reliability and cost of each service and on the firm's need for the services. The location of the firm is the primary determinant of supply characteristics such as availability and quality of service. In contrast, demand for these services depend on the production technology used by the firm and the characteristics of the input and output markets. Industry group and firm size are closely related to the demand for these services.

Table 3.1 shows the percent of firms that reported each of the infrastructure services as their greatest infrastructure problem by location. Electricity, roads, and trucking service are a significant problem in most locations. In contrast, problems with most of the remaining services such as water, waste disposal, and telecommunications is limited to a few locations.

Table 3.1
Greatest Infrastructure Problem by Location

	Percent of Firms Reporting							
	Biratnagar	Kathmandu	Hetauda	Birgunj	Pokhara	Butwal	Nepalgunj	Dhangadhi
Electricity	65	39	50	87	71	90	53	55
Roads	15	13	17	7	0	0	24	18
Trucking Service	12	5	25	0	0	0	6	18
Water	0	23	0	0	14	5	0	9
Waste Disposal	6	7	0	0	0	0	0	0
Security	0	10	8	0	7	0	0	0
Other	3	4	0	7	0	5	18	0

Without exception, electricity is the greatest infrastructure problem in every location. However, it is not as large a relative problem in all locations. About 40 percent of firms in Kathmandu reported that electricity was their biggest problem compared to nearly 90 percent in Butwal and Birgunj. Part of this difference arises because of the significant water supply problems in Kathmandu. Most firms in the terai either have their own supply of water or are able to get adequate supplies from the public water supply. Many firms in Kathmandu, on the other hand, have to purchase water brought in by tankers.

Transportation services, consisting of roads and trucking services, are another problem affecting firms in most locations. None of the firms in Pokhara and Butwal considered roads or trucking service their greatest infrastructure problem. However, this just reflects the significance of the even larger problem with electricity in these areas. Problems with most of the other infrastructure services are localized to a few areas. For example, poor telephone service is a major problem in Nepalgunj while waste disposal is a problem in the more crowded areas of Kathmandu and Biratnagar.

Table 3.2 shows the percent of firms that reported each of the infrastructure services as their greatest problem for each of the industrial sectors. Electricity is again the greatest infrastructure problem for every industrial sector. However, it is not as large a relative problem for all sectors. The fraction of firms that reported electricity as their biggest problem ranges from over three-fourths for chemicals and metals to around a third for non-metals and carpets. This difference reflects the technologies used in these industries. Roads and trucking services are more important for industries that export (carpets and garment firms), and are less important for industries that cater primarily to the domestic market (wood and non-metal fabrication). Difficulties in transporting goods through India are a partial explanation for the higher incidence of roads and trucking services problems in the exporting industries. Problems with most of the other infrastructure services are limited to a few industries. For example, airfreight services is the largest problem for some firms in the garment industry.

Table 3.2
Greatest Infrastructure Problem by Industrial Sector

	Percent of Firms Reporting								
	Food & beverage	Wood Products	Chemical & Paints	Carpet	Textile Excluding Carpet	Garment & Leather	Basic & Fabricate	Pharmaceuticals	Non Metal Fabricate
Electricity	64	61	77	32	39	44	80	45	30
Roads	14	11	15	26		19		18	10
Trucking Service	8				17	9	9		10
Water	4	17		16	22	19	6	9	20
Waste Disposal	2	11		11	6	3		9	
Security	4		8	11	11			9	20
Other	4			5	5	6	5	9	10

The ability of firms to provide their own services when public services are inadequate depends on the cost of private provision and the resources available to the firm. Firm size is an important determinant of the latter. Larger firms have the resources to install their own generators to get around problems with electricity. As a result, the percent of firms that report electricity as their biggest problem declines with the size of the firm as can be seen in Figure 3.2. Roads are much a bigger problem for larger size firms both because they tend to be exporters that have more demanding clients and because the private provision of roads is very expensive.

3.2 Adequacy of Specific Infrastructure Services

The relative ranking of infrastructure services can mask deficiencies in specific services when firms have multiple major problems. For instance, poor availability of water in Kathmandu can easily be masked by an even poorer quality of electric power services. To get a better understanding of the adequacy of each service, we asked firms to characterize whether they had problems with each service and to indicate whether the problems were severe. Firms were also asked whether they provided any of these services themselves. The percent of firms that had problems with each service are shown in the leftmost column of Table 3.3. Consistent with the relative rankings, more firms have problems with electricity than with roads, water, and trucking services. Between 40 and 70 percent of firms consider their problem severe (second column). The majority of firms generate some of electricity themselves, provide some water themselves, have their own security and have their own waste disposal. In contrast, most firms do not have their own roads and trucking service. We discuss each of these services in more detail next.

Figure 3.2
Greatest Infrastructure Problem by Size of Firm

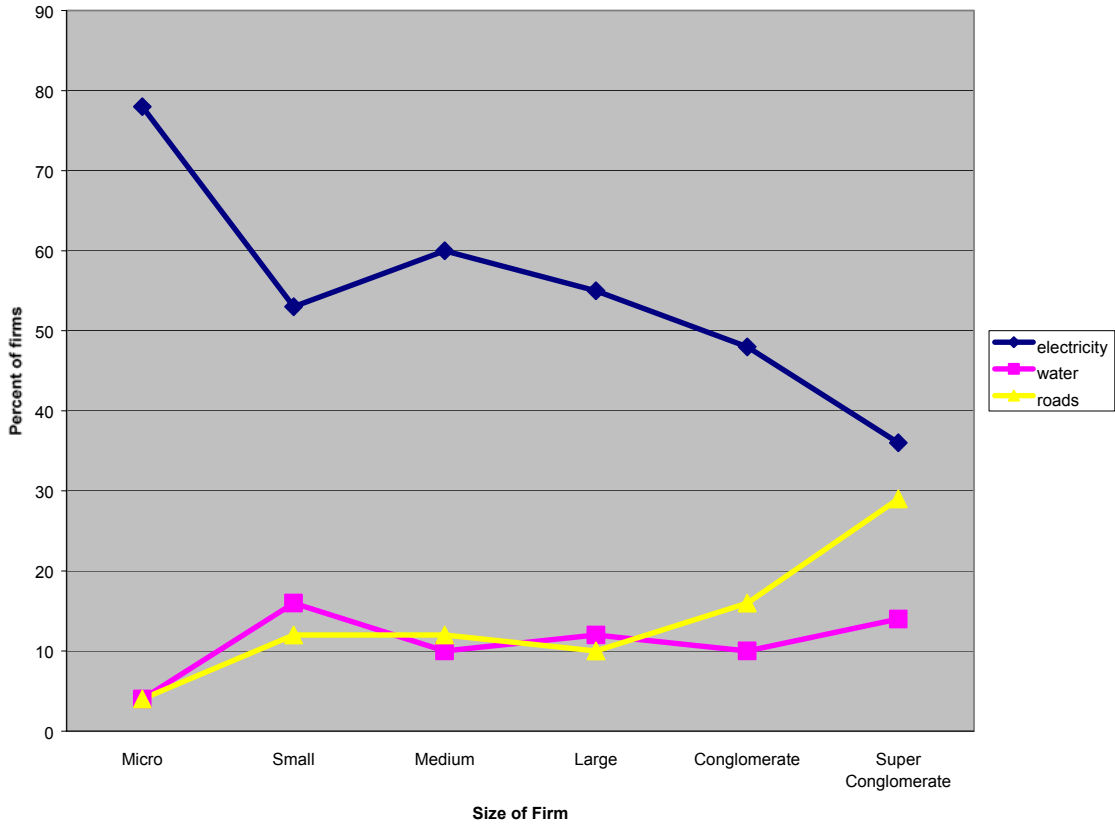


Table 3.3
Adequacy of Infrastructure Service

	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Electricity	71	42	57
Roads	35	20	12
Water	31	19	71
Trucking Service	24	10	32
Security	22	11	85
Postal Service	22	11	NA
Air Freight Service	19	14	NA
Telecom	17	8	NA
Waste Disposal	15	6	59

3.3 Electricity

Firms reported that electricity is the most significant infrastructure problem they face. It is also the second largest obstacle to increasing capacity utilization. Over 70 percent of firms indicated that they have problems with electricity and nearly three-fifths of these firms characterized their problem as severe. While a few firms complained about access to service and the cost of service, most of the reported problems were related to the unavailability of power and voltage fluctuations. The quality of service is a more acute problem during the dry season when the water flow in many of the rivers used to produce power decreases.

Tables 3.4 through 3.6 show the extent of the electricity problem by location, industry and size of firm. The share of firms that have their own generators is also shown in the last column. All firms in Butwal and about 87 percent of firms in Birgunj reported problems with electricity. The problems in these areas are also more severe compared to the other areas. Similarly firms in the chemicals and paints and metal industries have greater and more intense problems with electricity. Firms in these industries often require electricity supply at a higher voltage and are more sensitive to voltage fluctuations. A large firm in the metal industry, which is considering making new investments of seven million US dollars, noted that about four percent of that investment would be on generators and other equipment necessary for ensuring a reliable supply of power. In contrast, firms in the non-metal fabrication industries report the fewest problems. Firms in this industry include brick manufacturers that use wood and coal and concrete manufacturers that are more mobile and use oil.

Nearly three-fifths of the firms indicated that they had their own generators. Firms were more likely to install their own generators in poor supply areas such as Birgunj. However, despite the same degree of severity, fewer firms in Butwal and Dhangadhi have installed their own generators. Firms in these areas are smaller on average and less able to afford their own generators.

Table 3.4
Adequacy of Electric Service by Location

	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Kathmandu	71	42	62
Biratnagar	79	35	72
Pokhara	64	43	40
Butwal	100	80	30
Birgunj	87	60	80
Nepalgunj	56	24	63
Hetauda	67	33	64
Dhangadhi	75	18	25

Table 3.5
Adequacy of Electric Service by Industry

	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Food & Beverage	69	42	57
Wood & Wood Products	72	33	25
Chemicals & Paints	85	54	93
Carpets	68	47	71
Textile	65	39	65
Garments	71	38	61
Metal & Metal Prod	97	54	46
Pharmaceuticals	80	36	70
Non-Metal Fabrication	50	30	55

Table 3.6
Adequacy of Electric Service by Firm Size

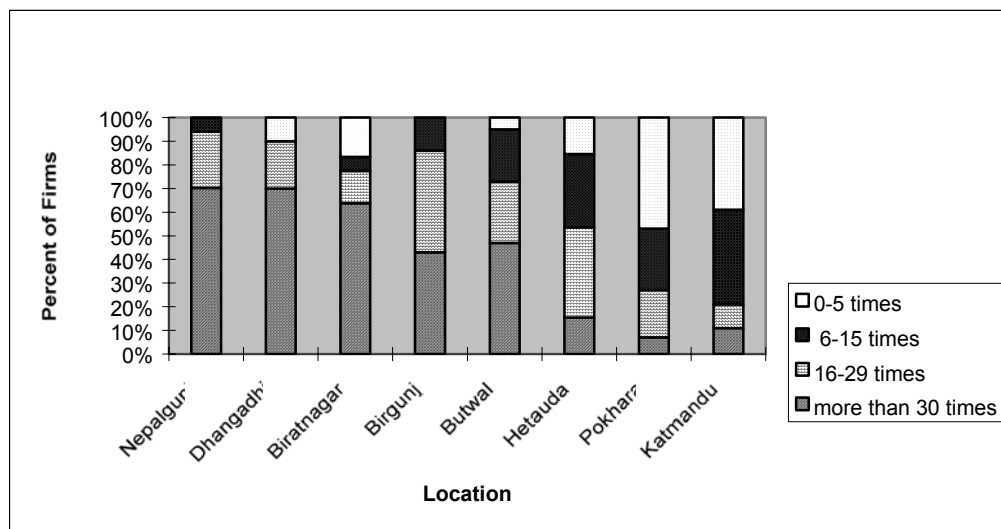
	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Micro	65	37	9
Small	77	28	42
Medium	79	52	56
Large	72	41	78
Conglomerate	74	52	82
Super	83	57	92

The frequency of power outages provides a more objective measure of the supply problems in different locations (see Figure 3.3). Over two thirds of firms in Dhangadhi, Nepalgunj and Biratnagar reported power outages of more than 30 times per month. Firms in all three places indicate that part of their electricity supply comes from Northern India, which has an even less reliable electricity supply than Nepal. In contrast firms in Kathmandu reported the lowest frequency of outages. During the course of the survey mission, power outages were scheduled once a week for two hours in the evening on a rotating basis throughout the Kathmandu valley. In contrast, power supply in Nepalgunj was erratic with unscheduled power outages almost every day for periods ranging from 1 minute to 1 hour.

Access to the national power supply grid has improved significantly over the last two decades according to older firms (those established in the early 80s). However, a number of more recent startups indicated that it is still often difficult to obtain the desired capacity of power. Making payoffs to employees of the electric authority is generally required to get adequate services installed.

A few firms were concerned about the cost of electricity service. During the survey period the National Electric Authority (NEA) with the concurrence of the government increased electricity tariffs for industrial customers by 25 percent to around 8 cents Kwh during the day and around 5.6 cents per kwh at night, one of the highest in the world. There was no public discussion of the increase prior to its enactment. Despite this significant and surprise increase, firms were not as concerned about the cost as they were of its availability. A number of firms reported that the cost of private generation is still about twice as high as the rates charged by NEA. If these costs are typical, we should expect few complaints about prices specifically because the alternative costs even more.

Figure 3.3
Power Outages per Month by Location



3.4 Transportation Services (Roads and Trucking Services)

Ground transportation services consisting of roads and trucking services is the second largest infrastructure problem for firms. About a third of the firms report problems with roads; a quarter report problems with trucking services. With the exception of short access roads built by a handful of firms, there are no privately built roads. Instead, most firms have located in areas accessible by road, for instance along the East-West Highway or along one of the North-South corridors. In contrast, about a third of firms have their own trucks for transporting their goods. Larger firms ship their output to more cities and more customers within each city and consequently depend on the road network and trucking services more than smaller firms. They also complain about the services more than smaller firms.

3.4.1 Roads

The percent of firms that indicating that they had problems with roads in each location and within each industry and group size are summarized in Tables 3.7 through 3.9. Roads are a greater problem for firms located in Kathmandu, Birgunj, Nepalgunj, and Dhangadhi compared to other survey locations. While firms in Kathmandu reported concerns about local roads and highways, firms located elsewhere were primarily concerned about the closure of major highways.

While firms in Kathmandu were concerned about the major highways, they also expressed broader concerns regarding the poor state of the local roads in Kathmandu and the road network in India. Firms in Kathmandu that do no export were concerned primarily with the local road network. In contrast, exporters were also concerned about the condition of roads in India.

The quality of the roads affects firms in the food and beverage, carpet and pharmaceuticals industries the most. A firm in the beverage industry indicates that the firm incurs losses of 2 to 3 percent due to breakage in bottles when they are transported to and from retail outlets. Similarly, a carpet manufacturer in Kathmandu reports that, because of the poor quality of the local roads, the firm has to repair one of its vehicles every week and spends RS. 100,000 per year on maintenance. Firms also have major concerns with the related problem of poor management of traffic, or conversely the lack of roads to fit all of the existing traffic.

Larger firms (greater than 100 employees) are more likely to have problems with roads than smaller firms mostly because they produce more goods and ship their outputs to more cities and more customers within cities. Larger firms also tend to be exporters who rely even more on the road network.

Firms in the western parts of the country (Nepalgunj and Dhangadhi) were primarily concerned with the inaccessibility of the major highways especially during the monsoon season. With the completion of the Karnali Chisapani Bridge in the early 90s, direct travel to Dhangadhi from points east during the dry season became possible. Travel during the monsoon season still requires taking an arduous detour into India. Hence, firms in Dhangadhi continue to face difficulties and delays in shipping outputs and obtaining raw materials or critical parts during these months. Firms anticipate that completion of the last two bridges on the East West Highway during the coming year will make unhindered year-round access to the east possible. Firms in Nepalgunj reported significant loss in sales during the summer months when major roads to the west and to the north are not accessible.

One of the major concerns of firms in Birgunj is the frequent closure of highways going into Kathmandu due to accidents. Kathmandu is the major market for most goods produced for domestic consumption and is also the only gateway for international air shipments. Firms reported that the major highway between Kathmandu and Birgunj is shutdown about 3 days every month due to accidents creating delays and scheduling problems for the firms.

Table 3.7
Adequacy of Roads by Location

	Percent of Firms with Problems	Percent of Firms with Severe Problems
Kathmandu	46	27
Biratnagar	24	15
Pokhara	29	29
Butwal	15	5
Birgunj	47	7
Nepalgunj	47	35
Hetauda	18	0
Dhangadhi	36	27

Table 3.8
Adequacy of Roads by Industry

	Percent of Firms with Problems	Percent of Firms with Severe Problems
Food & Beverage	44	30
Wood & Wood Products	28	11
Chemicals & Paints	15	0
Carpets	53	47
Textile excluding carpet	28	17
Garments & Leather	41	16
Metal & Metal Product	26	9
Pharmaceuticals	55	27
Non-Metal Fabricate	22	20

Table 3.9
Adequacy of Roads by Firm Size

	Percent of Firms with Problems	Percent of Firms with Severe Problems
Micro	22	15
Small	28	14
Medium	22	12
Large	43	22
Conglomerate	52	29
Super	71	50

3.4.2 Trucking Services

About a quarter of firms reported problems with obtaining trucking services. Larger firms (greater than 50 employees) have a greater demand for trucks because of their larger local and national markets. Many are also exporters who need to ship goods expeditiously. The availability of trucks is a bigger problem for these firms than for smaller firms.

Table 3.10 shows the percent of firms that indicated that they had problems with trucking services in each location. In addition, the percent of firms with their own trucks is shown in the last columns of these tables. Trucking services were a greater problem in Hetauda and Dhangadhi than in other parts of the country. Hetauda has a syndicate of truck operators that has significant market power. Further a major cement factory that has a huge demand for trucks often crowds out the demand of other firms especially during construction season. Firms are also unhappy that they are not able to choose their own trucking operator and instead have to use the truck that is first in queue. In addition, firms complain that the syndicate charges 25 to 50 percent more than operators in nearby Birgunj.

Limited supply of trucks and higher cost of service are the key problems for firms in Dhangadhi. Because it is a small market, the supply of trucks is limited and is not sufficient to meet peak demand. Firms are more likely to own their own trucks in Dhangadhi due to the thin market in these services. Firms also noted that trucking service is more expensive because trucks return empty after delivering goods to markets in the east.

Table 3.10
Adequacy of Trucking Service by Location

	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Kathmandu	22	10	24
Biratnagar	26	18	36
Pokhara	14	0	38
Butwal	10	0	37
Birgunj	27	7	7
Nepalgunj	24	12	53
Hetauda	58	33	33
Dhangadhi	40	9	64

Table 3.11
Adequacy of Trucking Services by Firm Size

	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Micro	12	4	21
Small	19	7	36
Medium	29	17	38
Large	27	8	36
Conglomerate	32	17	21
Super	29	15	33

3.5 Water

Nearly a third of the firms indicated that they have problems with the supply of water.

Table 3.12 through Table 3.14 shows the percentage of firms that indicating that they had problems with water in each location and within each industry and size group. Water is a major problem in Kathmandu and to a limited extent in Pokhara and Butwal. Because the public water supply system in Nepalgunj and Dhangadhi is limited, all firms in these locations have their own well. Most firms in the other cities of the terai also have their own wells. The relatively high water table in the terai provides an abundant supply of water at a very low cost.

The water supply in Kathmandu is very poor with some firms receiving service for only one hour per day, that too at an unscheduled time during the day. Many firms noted that they use pumps on their main lines to gain an extra bit of water despite regulations prohibiting such extraction. The situation is expected to worsen as the nearest planned water project, Melamchi, has yet to be funded. Many firms in Kathmandu have either invested in wells or purchase water brought in by private tankers because of the acute shortage.

Table 3.12
Adequacy of Water Supply Services by Location

	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Kathmandu	58	41	75
Biratnagar	3	0	80
Pokhara	57	21	7
Butwal	25	10	52
Birgunj	0	0	93
Nepalgunj	12	6	100
Hetauda	17	0	36
Dhangadhi	10	0	100

Table 3.13
Adequacy of Water Supply Services by Industry

	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Food & Beverage	26	16	78
Wood & Wood Products	39	6	40
Chemicals & Paints	0	0	71
Carpets	56	44	76
Textile excluding carpets	22	22	94
Garments & Leather	47	26	68
Metal & Metal Products	23	15	65
Pharmaceuticals	36	18	80
Non-Metal Fabricate	40	20	64

Table 3.14
Adequacy of Water Supply Services by Firm Size

	Percent of Firms with Problems	Percent of Firms with Severe Problems	Percent of Firms Providing Own Service
Micro	23	7	42
Small	31	14	67
Medium	27	17	76
Large	32	20	76
Conglomerate	48	29	79
Super	42	36	93

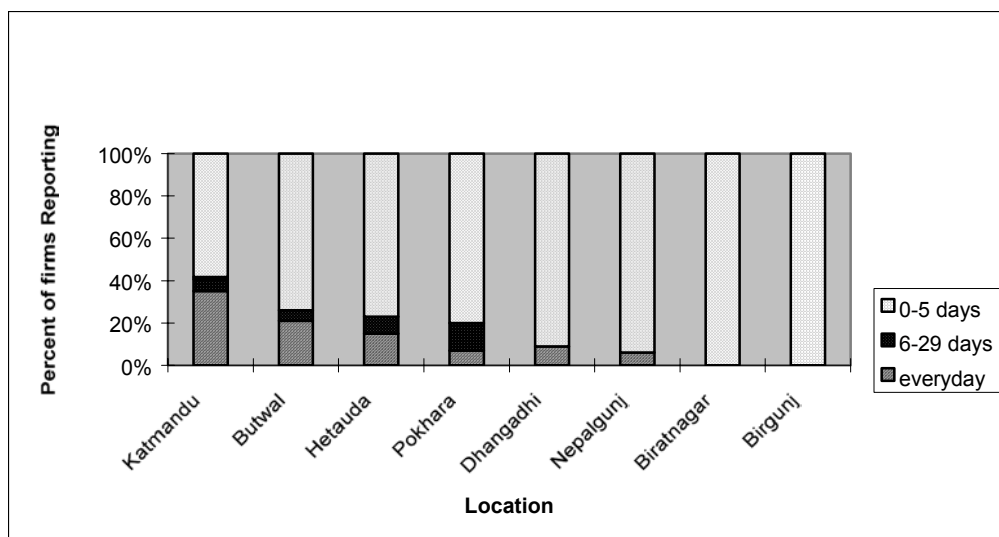
The industries most affected by the unavailability of water are carpets, garments and textiles. All three of these industries require water in their washing and dyeing processes. Most firms in the carpet and garment industries are located in Kathmandu despite the water shortages because of the need to access export-related facilities. The water situation is expected to worsen with the growth in these major exporting sectors.

The percentage of firms that invest in their own wells increases with the size of the firm. Larger firms have a greater need for water and are unlikely to be able to obtain adequate supplies from the public system. They also have more resources available enabling them to set up their own well.

To separate out problems related to access and cost of water service from problems related to the availability of supply, the survey asked firms to report the number of days per month that they received an inadequate supply of water. Figure 3.4 shows the percent of firms that reported receiving an inadequate supply of water for different duration of time. Nearly two-fifths of firms in Kathmandu reported that they do not receive an adequate supply of water every day. In contrast firms in Biratnagar and Birgunj reported receiving enough water everyday. A small fraction in the other cities reported not receiving an adequate supply regularly. Most of these

firms are located in areas somewhat further than the boundary of the local municipal water supply system, hence, they do not have access to it.

Figure 3.4
Inadequate Water Supply (Days Per Month) by Location



3.6 Security, Law and Order

Despite headline catching violent actions by the far-left Maoists, only two firms reported that lack of security is one of their top three problems. Theft and crime, enforcement of laws and security are not considered major problems by most firms. Firms do not normally use the court system or go to the police to solve their disputes. Almost every firm employs security personnel. Firms resolve conflicts by threatening to cut off relations with their customers either in the same business or in other businesses through quid-pro-quo deals made with other firms. Most of the smaller firms are unable to collect from their clients when they have a conflict and have to bear the losses themselves.

3.7 Other Services

3.7.1 Air Freight

The use of airfreight services by manufacturing firms varies based on industry and is concentrated in five industry groups. Table 3.15 shows the fraction of firms in each industry that use air freight services and the percent of users that reported problems with the service. About 85 percent of firms in the garments, carpets and pharmaceuticals industries and 60 percent of the firms in the textile and metal industries use airfreight services. In contrast less than one-third of the firms in the remaining sectors use this service. The primary motivation for using airfreight also varies with industry as discussed below. With the notable exception of garment

manufacturers, most firms using airfreight were happy with the services that they received (see bottom of Table 3.15).

Table 3.15
Usage and Adequacy of Air Freight Services by Industry

	Percent of Firms								
	Food & Bev.	Wood & Wood Products	Chemical & Paints	Carpet	Textile Excluding Carpet	Garment & Leather	Metal Basic & Fabricate	Pharmac euticals	Non Metal Fabricate
Users of service	45	29	21	90	63	87	60	82	10
Users with Problems	4	20	0	18	10	47	19	0	0

Garment and carpet exporters ship their products by land when feasible and resort to air shipments only when they need to meet imminent customer deadlines. Garment manufacturers were most unhappy about the limited number of international cargo flights, the cost of the service and the lack of capacity in the crucial October-December peak season, the RNAC premium for shipments made through another airline, the mandatory 24 hour cooling period at the airport before shipments can be loaded onto planes, and the need to transfer cargo to a second airline in Europe. Carpet firms also reported similar concerns with this service.

Pharmaceutical firms primarily import climate sensitive raw materials such as antibiotics by air. The lack of adequate cooling facilities for ground shipments and the higher risk of spoilage due to the longer ground journey has led most of these firms to ship these materials by air. Because they can ship raw materials on frequent passenger aircraft from India, none of the pharmaceutical firms reported problems with this service.

The high cost of service precludes most firms from using airfreight to transport goods within the country. It is primarily limited to reaching the remotest parts of the country that either are not yet connected to the exiting road network or do not have all-weather roads. Because of the difficult terrain and the limited infrastructure, helicopters provide most of this service. Firms in the metal and metals products industries use this service more than any other group of firms. Most of these are shipments of cables, pipes and other metal-based products that are used in construction projects. The primary problem on domestic airfreight is the unavailability of helicopters and the cost of the service.

3.7.2 Telecom

Around one fifth of the firms indicated that they have problems with the telecommunications service. As can be seen from Table 3.16, the problem is highly localized. Except for a few firms in Bhaktapur, none of the firms in Kathmandu report any problems. In contrast, about a quarter of the firms in Hetauda, Birgunj, and Nepalgunj reported severe problems with telecommunication and 27 percent of firms in Dhangadhi and Pokhara reported

problems with their service. The major problems are accessing telephone lines and the quality of service.

Nepal Telecommunications Corporation, the government owned monopoly, has 230,000 telephone lines in service and has 260,000 applicants waiting for telephone connections. Firms outside of Kathmandu complained about the unavailability of phone lines more than the firms located in Kathmandu. For instance, firms in Hetauda, Birgunj and Nepalgunj reported waiting one to five years to obtain a new phone line. They also reported that they can get around these delays by purchasing a phone line in the secondary market for \$500-600, around 20 times the current connection charge for new phone lines.

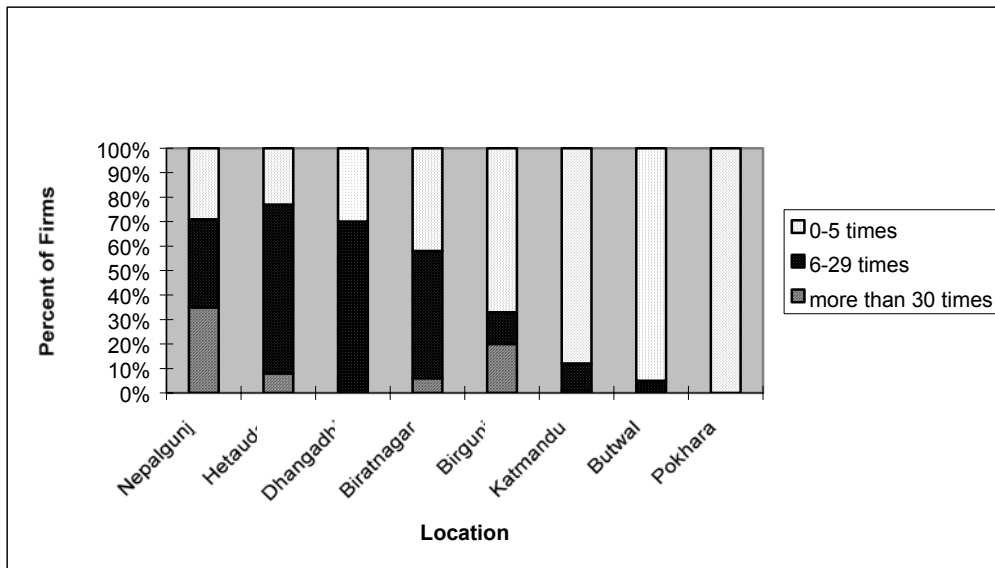
Table 3.16
Adequacy of Telecom Services by Location

	Percent of Firms with Problems	Percent of Firms with Severe Problems
Kathmandu	8	3
Biratnagar	8	6
Pokhara	27	7
Butwal	5	0
Birgunj	47	27
Nepalgunj	35	29
Hetauda	42	14
Dhangadhi	27	0

Problems with the reliability and quality of service also vary based on firm location. Firms in Nepalgunj reported that telephone service is limited in some areas because of type of connection they have. As a result, phone lines do not work most of the time in areas outside the municipality core. Firms in Dhangadhi complained that the telephone service often gets cut off for an assortment of reasons and that it often takes one to two weeks to restore service. Firms in Hetauda reported that STD and ISTD service is not available for about 1 hours on most days and the quality of service is poor when it is available.

To separate out issues related to access and cost of service from the quality of service, the survey asked firms to report the number of times that their telephone service was disrupted during a typical month. Figure 3.5 shows the percent of firms that reported disruptions for different frequencies of time by location. Nearly two-thirds of firms in Nepalgunj, Dhangadhi and Hetauda report problems with their service more than 5 times a month. Of these, over a third of firms in Nepalgunj say that they have problems with their service everyday. Most of these firms are located outside the core municipal area and are connected to the national telephone network through the use of VHF technology which is inherently sensitive to interference.

Figure 3.5
Disruptions in Telephone Service (Number of Times per Month) by Location



3.7.3 Waste Disposal and Environmental Services

Despite the lack of public waste treatment and disposal facilities, over 85 percent of firms report that they do not have problems with waste disposal. Further, almost all of the reported waste disposal problems are related to wastewater disposal. However, a number of firms also report inadequate public drainage system that imposes costs on them.

Firms located in Kathmandu and Birgunj are two and half times more likely to report waste disposal problems than firms located elsewhere. Similarly, firms in the carpet industry report waste disposal problems at twice the rate as other industries.

Environmental laws did not exist in Nepal until the mid 1990s. Because many of the provisions of the law are weak and the bureaucracy has yet to learn how to implement them, environmental regulations have not provided the impetus for setting up waste treatment or disposal facilities. Because of the infancy of environmental laws and the lack of clarity about the rights of polluters and victims in the traditional system, the distance between the polluter and the victim of the pollution is an important determinant of the extent of the firm's waste disposal problem.

Disposal of wastewater is a major problem for many firms because of its visibility and its proximity to a large number of parties. Almost every firm that generates wastewater discharges its effluent directly into a nearby river with minimal or no treatment. Carpet firms located in Kathmandu provide an excellent example. They wash and dye their products and discharge the wastewater directly into a nearby stream. They are often located in dense residential areas, and

their effluent is quite visible to its numerous neighbors. As a result, carpet firms come under pressure to stop polluting.

A number of firms are also the victims of pollution by others. They report that an inadequate public drainage system results in significant losses as the waste backs up.

Very few firms report problems with disposal of solid wastes. Most solid wastes such as bottles, plastics, metal scrap, and agricultural product residue have resale value. Firms report that they recycle many of these products through a network of Kabadi vendors that earn their livelihood by collecting such waste products and reselling them. Most firms say that they dispose of their non-recyclable wastes including toxic and hazardous materials such as batteries, metals, and chemicals at a nearby site. This can be a major problem for firms in the future as environmental laws become more stringent and better enforced in response to increased health risks associated with these wastes.

3.7.4 Postal Service

Less than a quarter of firms indicated that they have problems with postal service. However, the comments that firms made suggest that the ratings do not reflect the adequacy of the public postal service. The quality of the public postal service is so poor that most firms do not use it. The availability of a fairly efficient network of privately provided courier service to major cities around the country has reduced the need for the public postal service. As a result, most firms do not view the public postal service as a problem for their communications to major cities around the country. In contrast, it is a major problem for firms that need to communicate with parties that are in areas where courier service is not available.

The key problems with the public postal system are the high incidence of non-delivered mail and uncertainty about the delivery schedule. Firms ship close to 90 percent of their communications by courier, which typically cost RS 15 per item for delivery the following day. In contrast, delivery by the public postal system typically costs RS 2 per item and typically takes about one month before it arrives. Improvements in the postal service can result in significant cost savings to firms. For instance, if firms were to ship 75 percent of their communication through the public system and 25 percent through couriers, their total communications cost would be less than half of their current costs.

4 Business Support Services

Many firms perceive a lack of adequate business support services but do not consider this a priority problem area compared to other more pressing problems such as government policy and its implementation or lack of demand. The survey asked firms to identify services that they had received and to characterize them in terms of content and usefulness. In addition, firms were also asked to rate the usefulness of specific services if they were made available.

Less than a quarter of the firms reported that they had used some form of business support service in the past. Firm use of these services depends on both their availability and on firm needs. For instance, none of the firms in Dhangadhi and only a few firms in Pokhara and Biratnagar have used business support services in the past because these services generally have not been available in these areas. In contrast, around a third of the firms in Kathmandu and almost 40 percent of the firms in Butwal reported using some support service. Over 90 percent of firms found the services that they received useful. However, most firms also expressed the need for additional services that are currently not being provided and the need for services that are more tailored to the requirements of the firm.

Firm decisions to use available support services depend on the specificity of these programs, the ability of firms to provide similar services within the firm, and value of the services to the firm. Firms are more likely to use services that are tailored for their needs or match their needs sufficiently. Firms also have a different propensity to use the services depending on the resources available within the firm. The smallest firms, those employing less than 20 employees, use these services less often than the larger firms because of their simpler operation and potentially high opportunity cost of some of the services such as training do. The largest firms, those employing more than 500 employees, firms owned by multinationals and those owned by marwaris are also less likely to use these services because of greater resources available and better access to Indian and foreign network of customers.

There is no single major provider of business support services in Nepal. Out of the 76 services reported by firms in the survey, 16 percent was provided by FNCCI, and 5 percent each by GTZ and Trade Promotion center. The remaining services were provided by 48 different entities. Trade associations, NGO/INGOs, donor governments, agencies of HMG, and multilateral agencies each provided about one-fifth of the services. Only three firms reported using the services of training institutes. Firms reported that most available services are general and are not as useful as programs that are more tailored to their needs.

Firms were also asked to indicate the usefulness of each support service to help prioritize among types of services. The percent of firms that wanted to receive each specific business support service is shown in Table 4.1. Firms perceive support services as a means to improve their competitiveness through changes in productivity. Over 75 percent of firms indicated the need for better information on foreign markets, assistance in finding new technologies and obtaining advice on productivity improvements. A majority of firms also expressed the desire

for quality control testing and employee training. In contrast, firms do not value maintenance, packaging design, instrument calibration, accounting and legal services very highly.

Table 4.1
Percent of Firms Desiring Business Support Services

Service	Percent of Firms Desiring
Information on Foreign Markets	79
Assistance Finding New Technologies	77
Advice on Productivity Improvements	76
Quality Control Testing	69
Employee Training	62
Product Design Assistance	53
Maintenance of tools and fixtures	46
Instrument Calibration	45
Maintenance of Other Equipment	40
Accounting Service	40
Packaging Design Assistance	36
Legal Service	33

5 Resolution of Disputes

The survey asked firms about difficulties in collecting from customers and resolving disputes with workers. Our major findings are that

5.1 *Collecting from Customers*

About half of the surveyed firms reported problems collecting from their customers. About a third of the firms report that they have difficulty collecting from other firms while most of the remaining firms reported problems collecting from individuals. Bankruptcy of customers, relocation and disappearance of customers with no follow-up address, and deteriorating financial position of customers are the most common reasons for collection problems.

Firms selling directly to individuals reported collection problems with 19 clients on average. Most of these firms are small and have a limited capacity to collect from their clients and report that a portion of their receivables goes uncollected. Most firms attempt to collect from customers through personal communication, with the amount of effort increasing in proportion to the amount of money in question. The majority of firms report collecting some of their receivables in this way. Firms rarely go to court to resolve collection related issues. A small number of firms either threaten to go to the police or do go to the police. However, most firms perceive the police as ineffective and non-responsive and rely solely on personal communication.

Less than 5 percent of the firms reported difficulties collecting from the government or foreign clients. This reflects low penetration rates into these markets rather than lack of collection problems. Firms report that collecting from the government is slow in the best of circumstances and takes 4 months to three years. Rotation of government officials often extends this time even further. The most common reason for delayed payments is lack of budget, disbursement authority, or spending authority. Some firms also report that collections from the government can be expedited by making side payments to government disbursement officers for releasing the funds.

5.2 *Disputes with Labor*

Over 85 percent of firms reported that there had not been a labor dispute during the past year. About a tenth of the firms had one dispute while most of the remaining firms had two disputes. About half of the reported disputes were about worker wages and compensation. The remaining disputes were about an assortment of issues that included worker misconduct, manager misconduct, support of political parties, labor unions, plant shutdown, firing workers, and permanent status for workers.

Many firms report resolving compensation issues through negotiations that have often led to middle ground. However, there were a number of extreme instances where the firm has either threatened to shut down or actually shut down the plant or where the firm agreed to all of the employees' demands. Firms also report that most non-wage issues except for permanent status of workers had been negotiated amicably. In contrast, firms generally resist efforts to convert temporary workers to permanent. When pushed to convert large numbers of workers, firms either renegotiated terms of the labor agreement, threatened to shut down or take the unions and workers to court for violating the terms of their existing contracts.

III. Manufacturing Firm Performance

6 Firm Productivity and Determinants

6.1 Productivity in Nepalese Industry

This section examines firm productivity in Nepal, beginning with the simplest measure of productivity of individual factors of production and moving on to examine the joint contribution of all factors to firm performance. Section 6.1.1 looks at partial factor productivities of labor and capital, comparing them across sectors and size classes. In Section 6.1.2, total factor productivity is investigated using the production frontier approach, and the determinants of productivity.

Overall, the results for Nepal are very similar to those found in other developing countries. The mean level of efficiency of manufacturing firms is low by international standards. A significant reason for low average efficiency is the large heterogeneity in efficiency among Nepalese firms. The partial productivity of labor and capital follows the path of capital intensity. Capital intensity rises and then falls across size classes. Capital productivity falls and then rises, as it is inversely correlated with capital intensity, while labor productivity exhibits an inverted U shape, rising and then falling. Firms that have access to technology transfer or “learning mechanisms,” such as training, foreign ownership, foreign licensing and technical agreements have significantly higher productivity than other enterprises. Export firms are also shown to have higher productivity than firms producing for the domestic market. Total factor productivity increases linearly with firm size. Entrepreneur characteristics such as education, experience, owning other businesses, being a member of a business group and so on are unimportant in determining efficiency differences. The largest differential in efficiency comes from firms that train their workers versus those that do not.

6.1.1 Partial Factor Productivity

The basic ratios of capital and labor productivity in our sample are presented in the tables below. Capital productivity is defined as the ratio of value added to sale value of capital. Labor productivity is measured by value added per unit of labor. In each case we compare these ratios with factor intensity, measured as the ratio of capital over labor. All nominal values have been converted to US dollars to facilitate comparison with other studies. Overall distribution is presented below:

Table 6.1
Distribution of Partial Factor Productivity

	VA/K	VA/L	K/L
Mean	4.62	1612.8	1782.11
(std)	(10.04)	(2056.4)	(2633.2)
Median	1.36	1015.01	772.01
N	179	179	179

Examining first productivity by firm size classes, we see a clear and sensible pattern emerging. Capital intensity increases dramatically with size up to the medium size class, and then falls. The decline in the capital/labor ratio in the largest size classes is due to the fact that many large firms in the sample operate in the relatively labor-intensive garments and carpets industries. As capital intensity rises, one expects marginal productivity of capital to fall and labor productivity to rise. This is exactly what the data indicate.

Table 6.2
Distribution of Partial Factor Productivity by Firm Size (US\$)

Ratios	<20 emp.	20-49	50-99	100-199	200+
N	30	40	30	40	39
Value Added/Capital	5.13 (7.46)	3.39 (4.76)	1.36 (1.22)	4.08 (8.73)	8.52 (17.34)
Value Added/Labor	1325.61 (2057.9)	1697.18 (1958.5)	2110.2 (2485.3)	1514.5 (1638.3)	1465.22 (2207.0)
Capital/Labor	794.4 (1177.7)	1349.2 (1599.7)	2964.9 (3305.1)	2088.9 (2406.9)	1761.5 (3512.7)

Across sectors of economic activity, we see that capital intensity differs significantly, with pharmaceuticals being the most capital intensive — almost twenty times greater than the carpet sector. Textiles, food and non-metal fabrication all use technologies which have much greater capital intensity than wood, carpet and garments. The patterns of capital productivity broadly follow the pattern of capital intensity. Carpets, being the most labor intensive activity, has the highest capital productivity, followed by wood and then garments. This is followed by pharmaceuticals, metal, food and non-metal fabrication. Labor productivity however, is the lowest in the non-metal fabrications sector, closely followed by the wood and carpets sector. The highest labor productivity is in chemicals, followed by pharmaceuticals and food sector.

Table 6.3
Distribution of Partial Factor Productivity by Sector (US\$)

	Food	Wood	Chem.	Carpet	Other Textile	Garments	Metal	Pharm.	Non-Metal Fabric.
VA/K	2.74 (5.96)	6.47 (6.56)	2.5 (3.38)	13.5 (22.6)	1.01 (1.18)	5.26 (7.5)	1.83 (1.9)	9.99 (16.6)	1.61 (3.7)
VA/L	1569.75 (1259.4)	1070.3 (1116)	4011.9 (3677)	1301.8 (1945)	777.9 (1028)	1691.7 (1406)	1863 (3198)	2086.2 (1384)	675.1 (551.7)
K/L	2589.4 (3335.5)	645.1 (1084)	2864.3 (2282)	315.7 (505.4)	1767.3 (2028)	886.0 (906.9)	2300 (3104)	3319.3 (3646)	2061.1 (3615)
N	40	17	10	19	14	30	31	8	10

6.1.2 Total Factor Productivity

Turning now to the combined effect of all factors of production on firm productivity, total factor productivity, we use the production frontier approach to measure firm level technical efficiency. The stochastic frontier model can be represented formally using a conventional

production function $y = f(x)$ where y is the output and x is the vector of inputs. The Farrell measure of technical inefficiency TE is defined as:

$$TE(y, x) = \frac{y}{f(x)}$$

which is also the conventional measure of total factor productivity. The econometric specification based on this equation can then be presented in terms of the output of the i^{th} firm (y_i) as

$$y_i = f(x_i, \beta) TE_i e^{v_i} \quad (3.1)$$

where $0 < TE(y_i, x_i) < 1$, β is a vector of parameters of the production function to be estimated and v_i is the conventional error term, distributed normally with mean zero and variance σ_v^2 . Equation (3.1) can be used to estimate the stochastic production frontier using a composite error as below --

$$y_i = f(x_i, \beta) \exp(\varepsilon_i) \quad (3.2)$$

where the error term ε_i is composed of two terms:

$$\varepsilon_i = v_i - u_i, \quad \text{with } u_i \geq 0.$$

Both elements of the composite error term ε are assumed to be distributed independently and identically (iid) across the observations. As before, v_i represents the usual error term reflecting random elements, including measurement errors, minor omitted variables, and other factors beyond the control of firms. The component u_i , in contrast, is a one-sided error term capturing technical efficiency, given by the ratio of observed output to frontier output, i.e.,

$$TE_i = \frac{y_i}{f(x_i, \beta) \exp(v_i)} = \exp(-u_i). \quad (3.3)$$

Since only the composite error (ε) is observed, inference about u_i has to be obtained indirectly by making additional assumptions about its specific distribution. Following Jondrow and others. (1982), u_i is assumed to follow a half normal distribution, satisfying the condition $u_i > 0$ for a firm whose output lies below the frontier. Then firm-specific efficiency for each observation in the sample is given by the mean of the inefficiency error (u_i) conditioned on the total error ($v_i - u_i$). Thus, dropping the subscript i ,

$$E[\hat{u}|v - u] = \frac{\sigma_u \sigma_v}{\sigma} \left[\frac{f(\varepsilon\lambda/\sigma)}{1 - F(\varepsilon\lambda/\sigma)} - \frac{\varepsilon\lambda}{\sigma} \right] \quad (3.4)$$

where E is the expectation operator, $\sigma = \sqrt{(\sigma_u^2 + \sigma_v^2)}$, $\lambda = \sigma_u / \sigma_v$, and $f(\cdot)$ and $F(\cdot)$ are the standard normal density and the distribution functions respectively. This yields unbiased point estimates of an efficiency parameter for the decision making unit as:⁶

$$TE_i = \exp[-\hat{u}_i] \quad (3.5)$$

In terms of the *average* technical efficiency of the sample, one estimate often used is given by $\lambda = \sigma_u / \sigma_v$. The greater the relative magnitude of the numerator, the greater the proportion of total variance in the data explained by variations in technical efficiency relative to other random effects. Specifically, the proportion of the total variance attributable to variance of the residuals measuring technical inefficiency is given by:

$$\frac{Var(u_i)}{Var(\varepsilon_i)} = \frac{[(\pi - 2) / \pi] \sigma_u^2}{[(\pi - 2) / \pi] \sigma_u^2 + \sigma_v^2} \quad (3.6).$$

However, a more natural estimate of average technical efficiency is suggested by Battese and Coelli (1988) and calculated as the unconditional mean of TE_i , i.e., $E[TE_i]$. This is the measure adopted in the analysis below, although the ratio above and λ are also presented with the econometric results.

The specific form of the production frontier estimated is a log-linear Cobb-Douglas function as follows:

$$\log Y_i = \beta_0 + \beta_1 \log L_i + \beta_2 \log K_i + \beta_3 \log X_i + \beta_4 Z_i + v_i - u_i \quad (3.7)$$

where Y_i measures value added, calculated as total value of output minus raw material and indirect costs, labor L is measured by the total number of employees in the enterprise, and K denotes capital stock measured by its replacement cost. The additional variables, X , in the specification include are two composite variables to adjust for the quality of labor and capital aggregates. The two quality-related variables included are the ratio of non-manual workers to total workers and the rate of capacity utilization. The rationale for their inclusion follows from the fact that labor and capital in equation (3.6) are aggregated over two categories: labor is the unweighted sum of two types of workers in the firms, namely, manual and non-manual workers while the figures for capital stock do not adjust for the amount of capital actually utilized. Following Griliches and Ringstad (1971), inclusion of the ratio of non-manual to total workers allows for the requisite correction if skill levels of workers in the two categories are not identical. Similar considerations hold for the inclusion of the rate of capacity utilization to correct for differential contribution of utilized and unutilized capital stock to the production process.⁷ The vector Z includes firm level characteristics that augment productivity and are described below.

⁶ The estimates are unbiased but inconsistent because their variance remains non-zero regardless of sample size, (Jondrow and others 1982).

⁷ Specifically, let $x = x_1 + x_2$ be an aggregated variable (L or K) and the question is whether or not x_2 (non-manual workers or amount of capital actually utilized) is given the “correct” weight. Let $x^* = x_1 + (1+\delta) x_2$ be the “correct”

Frontier estimates across different specifications are presented below. The first model estimates the basic frontier for Nepal across all sectors, including only labor and capital and the vector X as explanatory variables. Model II estimates the same frontier, augmenting model I with the vector Z. Model III estimates the same, but for entrepreneur firms only, and adds additional explanatory variables to the vector Z. In all cases, sector dummies are included to control for differences in technology endowments.

The additional explanatory variables included in the vector Z are as follows:

Alltrn	Training variable, defined as a dummy variable — equals one if the firm has internal and external training
Fgntech	Technology transfer dummy – equals one if the firm has a foreign technology license or a technical assistance agreement
Pctfgn	Measured as the percentage of foreign ownership
Export	Dummy variable – equals one if the firm exports more than 50 percent of its output
Impraw	Percentage of raw material imported
Secdary	Dummy variable — equals 1 if the entrepreneur has completed secondary school education
Grad	Dummy variable — equals 1 if the entrepreneur has received post-secondary education
Vocat	Dummy variable — equals 1 if the entrepreneur has had vocational training

aggregate. Then $x^* = x(1 + \delta\phi)$ where $\phi = x_2/x$. If the incorrect aggregate x is used in a log-linear specification, this amounts to leaving out of the equation $\log(1 + \delta\phi)$ where δ is the implicit “premium” (or discount). For not too high values of δ , the excluded term approximately equals $\delta\phi$. See Griliches and Ringstad (1971) for further details.

The results are presented below:

Table 6.4
Frontier Regression Results, Full Sample

	Model I	Model II
Constant	5.61* (1.07)	6.66* (1.10)
Log(capital)	0.34* (0.07)	0.32* (0.07)
Log(labor)	0.55* (0.13)	0.44* (0.13)
Sklratio	0.004 (0.11)	-0.06 (0.11)
Caput	0.47* (0.15)	0.45* (0.14)
Alltrain		-1.57** (1.27)
Fgntech		-0.65 (0.96)
Pctfgn		-9.33 (11.15)
Export		-1.13*** (0.78)
Pctimp		0.55 (0.55)
LR	9.15*	20.24*
Mean Efficiency	.55	0.51
λ	0.91	0.80

The frontier results are remarkably stable across all estimations, and so are the coefficients. The overall production function exhibits decreasing returns to scale. Capacity utilization is significant and positive in both specifications while the skill ratio is not significant. Coefficients on the sector dummies indicate that pharmaceuticals is the most efficient sector, while other textiles has the lowest productivity compared to the non-metal fabrication sector, which is the excluded category.

We use the residuals from the second specification to extract the individual efficiency scores of firms, and compare them across various size, sector and other firm characteristics. The mean efficiency score is .52. This is low by international standards — in most developed countries, the score averages about 0.7. As we will see below, this difference is in large part the result of much greater heterogeneity in efficiency among firms in Nepal than in more developed countries, but is also due to the fact that large Nepalese enterprises have lower productivity, on average, than their international competitors. Looking at the mean efficiency across broad size groups, we see that micro and small firms are the least efficient, with mean efficiency scores of .45 and .46 respectively. Large and very large firms have higher total factor productivity, with mean efficiency of .56 and .58 respectively. The differential in efficiency across the largest and smallest size classes is significant with large firms being 25 percent more efficient than small firms.

Table 6.5
Mean Efficiency, by Firm Size

	Micro	Small	Medium	Large	V. Large
Mean Efficiency	0.45	0.46	0.50	0.56	0.58
N	28	38	30	36	34

The overall mean efficiency across size classes masks the important differences across size classes within sectors. These results are presented below.

Table 6.6
Mean Efficiency Across Sectors — Size Within Sector

Sector	Average Efficiency	Avg. Efficiency – Small Firms	Avg. Efficiency – Large Firms
Food	.52	.51	.56
Wood	.53	.52	.57
Chemicals	.47	.54	.33
Carpets	.56	.40	.58
Other Textile	.49	.43	.55
Garments	.53	.37	.60
Metal	.44	.41	.53
Pharmaceuticals	.60	.55	.67
Non-metal fabric.	.53	.49	.64

As seen above, there are some sharp differences in average efficiency across sectors, and between size classes within each sector. Overall, pharmaceuticals is the most efficient sector, while metal is the least efficient. The efficiency differential between these two sectors is huge – 26.7 percent. Similarly, the chemicals and other textile sectors have much lower efficiency than the others. Grouping firms into small (less than 100 employees) and large we see that only in the chemicals sector are the large firms less efficient than small. The difference in this sector is huge – 33 percent for large firms compared to 54 percent for small firms. In all other sectors, larger firms are more efficient, though the difference is not significant in the food and wood sectors.

Examining differences across various firm characteristics, we see that exporting firms, firms importing raw materials, firms having a foreign technical assistance contract or a foreign licensing agreement, and firms that train their workers all have higher efficiency than firms which do not. The difference is greatest for worker training. Firms that train their workers have a mean efficiency of 79 percent, compared to 48 percent for firms that do not. What this indicates is that firms having access to “learning” mechanisms, which assist in acquiring and using new technologies, have higher productivity on average. Exporting firms generally improve their efficiency as a result of their contacts with the world market, and often have higher productivity

than the average domestic producer when they begin exporting because of the competitive requirements of global markets.

Studies in other developing countries indicate that enterprise access to technology transfer (“learning”) mechanisms is a major determinant of efficiency. Investment levels are important (see Section 8), but the efficiency of investment will be a function of the technical capability of firms to acquire new technologies and adapt them to local conditions, to create effective organizational structures, and to develop new marketing strategies. Operating in an “information rich” learning environment is a major determinant of the rate and efficiency with which a firm creates, upgrades, and deploys these technical capabilities.

In all countries, the leading source of technical learning is via private learning mechanisms — that is, from the internal efforts of private firms themselves to learn by way of interactions with foreign buyers and suppliers, by way of interactions with other firms in the same industry, and through hiring of consultants and other technical experts, and in-house working training. When firms cannot meet all their learning needs internally, there is a demand for “collective” technical support services from government, NGOs, and donor agencies.

The survey finds that private as well as collective learning mechanisms in Nepal are weak. In house firm training is very limited (Section 9.5), buyers and suppliers are not coming to Nepal in some industries, the availability of local expert business consultants is limited, and there are few foreign investors or experienced local firms to serve as role models for “benchmarking” the competitiveness of a firms operations. Good public and private business training sources external to the firm are also limited, and government technical support services are either non-existent or underfinanced and poorly managed. NGO, business association, and donor programs to assist enterprise learning are also limited, although, where they exist, they are making a positive contribution. All of these inadequacies indicate that the enterprise learning environment in Nepal needs attention if firms are going to upgrade their technical capabilities and be more globally competitive in the future.

Table 6.7
Mean Efficiency, by Firm Characteristics

	Yes	No
Exporting	0.58* (0.22)	0.47 (0.19)
Importing Raw Material	0.53 (0.22)	0.49 (0.20)
Foreign Tech. Assistance	0.64* (0.20)	0.49 (0.21)
Training	0.79* (0.07)	0.48 (0.20)

Finally, we consider the frontier regression results for firms which are entrepreneur owned. For this group, we augment the frontier with additional entrepreneur characteristics such as entrepreneur experience, education, whether or not the entrepreneur’s parents were in the

business, whether he/she is part of a group, owns other businesses and so on. In the final specification, only the education variables were included because all others were completely insignificant. These results are presented below.

Again, we see that the likelihood ratio test indicates that the explanatory variables are jointly significant in determining efficiency. The mean efficiency of entrepreneur firms is 48 percent. Across various firm characteristics, we see in Table 6.9, that firm characteristics are more important in determining productivity differences than entrepreneur characteristics. However, the differences across groups are not large – only firms with foreign connections, technical assistance, and licensing agreements — have much greater efficiency than those that do not. The difference across education groups is also insignificant. Most of this can be explained by the fact that most entrepreneurs in our sample had a degree and are thus well educated.

Table 6.8
Regression Results –Determinants of Productivity, Entrepreneur Firms

	Model I
Constant	6.06* (1.11)
Log(capital)	0.30* (0.07)
Log(labor)	0.45* (0.13)
Sklratio	0.05 (0.13)
Caput	0.63* (0.14)
Alltrain	-1.12 (1.56)
Fgntech	-1.23 (1.20)
Pctfgn	-0.001fv (0.99)
Export	-0.00 (0.99)
Pctimp	-0.00 (0.99)
Secondary	-0.14 (0.17)
Graduate	-0.02 (0.01)
Vocational Training	0.006 (0.01)
LR (DOF)	18.39* (9)
Mean Efficiency	0.48
R ²	0.87

Table 6.9
Mean Efficiency of Entrepreneur Firms, by Firm Characteristics

	Yes	No
Exporting	0.49 (0.23)	0.48 (0.22)
Importing Raw Material	0.50 (0.23)	0.45 (0.21)
Foreign Technical Assistance	0.58* (0.17)	0.47 (0.23)
Training	0.50 (0.24)	0.48 (0.22)
Secondary Education	0.48 (0.22)	0.49 (0.25)
Graduate Education	0.48 (0.22)	0.49 (0.23)
Vocational Training	0.54 (0.21)	0.47 (0.23)

7 The Dynamics of Enterprise Growth in Nepal

Why do some firms and industries grow and prosper while others decline? This question raises a number of issues of importance to policy makers because enterprise growth is closely associated with the process of job creation, and with the changing distribution of employment across industrial activities and production units. Such structural changes in the economy not only determine the sources of employment but also influence the quality of jobs, and thus directly affect living standards. In this section we examine the patterns of firm growth in Nepal, across different sectors and locations, and by various firm characteristics. Thereafter, we examine firm mobility across size classes, to examine differences in growth rates and job creation between small and large firms. Finally, we provide an econometric analysis of the determinants of firm growth.

Our examination of firm growth yields the following results:

- Younger firms grow at a faster rate than old firms.
- Firms founded before liberalization in 1990 and still in operation in 1999, successfully weathered the transition to a more liberal environment.
- There is limited firm mobility among size classes of firms. Most micro firms remain micro while most very large firms began as medium or large firms.
- Very few firms shrink into smaller size classes.
- Firms that export, conduct worker training, or have foreign ownership all have higher growth rates.

7.1 Growth Rates

In the interviews conducted for this survey, firms were asked retrospective questions on their sales and employment histories. Given that labor recall data is generally found to be more reliable than that of sales, we use it to measure firm growth. Examining first the overall averages, we see that the mean rate of growth between start-up and present was 9 percent, with a median growth rate of 5.7 percent. Between specific periods, we see that growth rates have fluctuated in the 1990s, from 4.0 percent in the period 1990-1997, 6.1 percent in the period 1997-1998, to 3.6 percent in the 1998-1999 period. The median growth rates differ significantly from the means, indicating large skewness in the data. Also, these results do not control for sample size – new entry could be driving the higher growth rate in the latest periods.

Table 7.1
Average Annual Growth Rates in Employment

	Start-1999	1990-1997	1997-1998	1998-1999
Mean	9.0	4.0	6.1	3.6
(std)	(15.5)	(7.8)	(21.0)	(24.0)
Median	5.7	3.4	0	0
N	202	126	210	218

To examine differences in growth rates between old and new firms, we retained only those firms that had all observations and then split the sample into two groups – firms that were in existence before 1990, and new entrants post 1990 that were at least two years old. In Tables Table 7.2 and Table 7.3, the data indicate that growth rates are consistently higher for the new entrants compared to the old firms. There is again very large skewness in the data, particularly for the last two periods, with the mean differing significantly from the median, with high standard deviations. This is perhaps due to short term cyclical changes in employment in some firms and for longer term averages the data are much more stable. On average, young firms grew at a rate of 13.2 percent between start and present, compared to 5.5 percent for old firms, indicating that these are dynamic firms entering under the new government regime.

Table 7.2
Mean Annual Growth Rates

Old Firms in Existence Before 1990					
	Start-1999	1990-1997	1997-1998	1998-1999	N
Mean	5.5	3.6	2.8	1.0	101
(std)	(5.9)	(7.1)	(21.1)	(15.9)	
Median	5.0	3.6	0	0	101
New Firms Formed in 1990 or Later					
Mean	13.2		7.6	4.1	80
(std)	(20.3)		(21.0)	(30.1)	
Median	9.0		3.5	0	80

Have certain sectors prospered and others failed under the new democratic and liberalization regime in Nepal? If so, we might expect sharp differences in sectoral growth rates, particularly during the period 1990-1999. We see that during the 1990s, the carpets sector has grown the fastest, followed by pharmaceuticals and garments. These in fact are the tradable sectors, with carpets and garments being export oriented, and pharmaceuticals being the import substitution sector, all having very low effective protection rates. There are sharp differences in growth rates between start and present compared to the 1990s period. Between start and present, we see that the chemicals sector has grown the fastest (20.6 percent), followed by garments (20.1 percent) and textiles excluding carpets (17.4 percent). The other textiles sector, in contrast, has the slowest rate of growth – only 0.6 percent during the 1990s period. This sector has clearly been affected by the liberalization policy, and hurt by direct textile imports. These

sectoral differences in growth rates are examined further in the econometric analysis presented in the next section.

Table 7.3
Mean Percentage Growth in Employment by Sector

	Start-1999	1990-1999
Food & Beverage	4.9 (0.07)	3.1 (0.07)
Wood & Wood Products	5.9 (0.11)	2.0 (0.07)
Chemicals/Paints/ Plastics	20.6 (0.38)	3.5 (0.03)
Carpets	8.9 (0.13)	10.1 (0.14)
Textile excluding Carpets	17.4 (0.39)	0.6 (0.07)
Garments	20.1 (0.32)	4.7 (0.07)
Metal & Metal Products	8.3 (0.14)	3.4 (0.04)
Pharmaceuticals	14.6 (0.11)	8.1 (0.12)
Non-metal Fabrication	3.8 (0.03)	4.5 (0.04)

Notes: Standard deviations in parenthesis.

Examining differences in growth rates across regions, we see that Kathmandu has the highest growth rates in the 1990s period. This may be an indication that being close to government offices, which reduces transactions costs of dealing with the bureaucracy has a positive impact on firm performance. However, Birganj and Biratnagar have higher growth rates when examining growth from start to present. These differences are driven by the entry of new firms in these areas, while Kathmandu is the dominant base for older established firms.

Table 7.4
Mean Percentage Growth of Employment , by Location

	Kath.	Birat.	Pok.	Butwal	Birganj	Nep..	Hetauda	Dhang.
Start-1999	9.8 (0.15)	12.5 (0.29)	7.1 (0.07)	11.4 (0.18)	20.0 (0.42)	4.9 (0.10)	21.1 (0.38)	2.7 (0.05)
1990-1999	5.5 (0.09)	2.7 (0.04)	4.1 (0.04)	5.1 (0.08)	3.2 (0.06)	2.3 (0.11)	-2.3 (0.05)	4.5 (0.09)

Notes: Standard deviations in parenthesis.

In addition to factors such as initial firm size, firm age, sector and location, other firm characteristics can also drive differences in rates of firm growth. We examine differences in

firm growth based on characteristics such as foreign ownership, export orientation, legal status, whether or not a firm produces from the national priority list, and differences due to ethnicity. These results are presented in the tables below.

First looking at foreign linkages, we see that foreign owned firms have grown faster than domestic firms in all periods. This might be expected because such firms have access to their parent companies' technical capabilities, market contacts, and financial support. Similarly, exporters have grown faster than non-exporters in all periods. The reason might be that exporters have larger markets and access to learning channels where they can more easily access new technologies. In both cases, growth from start to present is almost double for firms with a foreign orientation compared to domestic firms.

Table 7.5
Mean Annual Growth Rate of Employment, Foreign vs. Domestic Firms

Ownership	Starting year-1999	1990-1999	1990-1997	1997-1999	1998-1999
Foreign	20.0 (0.5)	5.2 (0.08)	5.6 (0.07)	5.6 (0.12)	10.9 (0.39)
Domestic	10.1 (0.22)	4.1 (0.08)	4.6 (0.09)	6.3 (0.20)	6.2 (0.26)

Notes: A firm falls into the category of 'foreign' if the share by foreign individual or foreign company combined is positive.

Standard deviations in parenthesis.

Table 7.6
Mean Annual Growth Rate of Employment, Exporters vs. Non-Exporters

Ownership	Starting year-1999	1990-1999	1990-1997	1997-1999	1998-1999
Exporter	15.4 (0.27)	5.9 (0.10)	7.4 (0.21)	6.9 (0.21)	8.1 (0.35)
Non-Exporter	7.8 (0.17)	3.3 (0.06)	3.2 (0.06)	5.8 (0.18)	5.7 (0.21)

Notes: A firm is categorized as an exporter if the firm exported any positive share of its output.

Standard Deviations in Parenthesis

Does legal status matter in determining firm growth and performance? Firms that follow the formal registration procedures and allow public scrutiny of their accounts by being either public limited companies or multinationals may be expected to perform better than firms that do not have such monitoring. Below, we see that growth from start to present and in the most recent periods is far greater for this group. Similarly, the next table shows that firms producing from the national priority list and receiving five year tax breaks on their products grow faster than the non-priority group.

Table 7.7
Average Annual Growth Rate of Employment, by Legal Status

Ownership	Starting year-1999	1990-1999	1990-1997	1997-1999	1998-1999
Sole proprietorship + partnership	10.0 (0.22)	4.4 (0.08)	5.3 (0.08)	4.2 (0.16)	3.5 (0.20)
Private Company	9.6 (0.18)	4.6 (0.08)	4.8 (0.09)	7.0 (0.21)	6.5 (0.28)
Public Company	26.5 (0.49)	0.5 (0.07)	0.0 (0.12)	11.7 (0.23)	18.4 (0.33)
Multinational Corporation	7.8 (0.17)	3.3 (0.06)	3.2 (0.06)	5.8 (0.18)	5.7 (0.21)

Notes: The category ‘public company’ includes both the public companies and the subsidiary of a Nepalese public companies (one observation).
Standard Deviations in Parenthesis

Table 7.8
Average Annual Growth Rate of Employment, Firms on National Priority List vs. Non-Priority

Ownership	Starting year-1999	1990-1999	1990-1997	1997-1999	1998-1999
Priority	12.8 (0.24)	9.3 (0.09)	9.3 (0.12)	6.8 (0.16)	5.0 (0.20)
Non-Priority	10.0 (0.20)	3.2 (0.07)	4.0 (0.08)	6.6 (0.20)	5.6 (0.25)

Note: Standard Deviations in Parenthesis

Examining differences across ethnicity, we see that Thakalis/Tibetans have the lowest growth rate, followed by Brahmins and Chettris. The traditional business community comprising of Marwaris and Newars have the highest growth rates in all periods. Ethnicity in this case appears to capture differences across groups in the access and use of social and political networks, informal and formal finance and other such variables. These will be explored further below.

Table 7.9
Average Annual Growth Rate of Employment, by Ethnic Origin of Owners

Ownership	Starting year-1999	1990-1999	1990-1997	1997-1999	1998-1999
Marawari	11.3 (0.28)	3.6 (0.07)	4.3 (0.06)	9.5 (0.22)	5.7 (0.15)
Newar	11.6 (0.21)	4.1 (0.08)	3.6 (0.07)	8.0 (0.18)	13.5 (0.37)
Thakali/Tibetan	6.3 (0.13)	6.7 (0.09)	7.7 (0.12)	-2.9 (0.18)	-9.5 (0.23)
Brahmin/Chettri	8.44 (0.12)	4.5 (0.09)	5.9 (0.12)	2.9 (0.18)	1.6 (0.19)
Multinational	20.8 (0.24)	1.1 (0.05)	1.4 (0.08)	1.6 (0.10)	15.6 (0.47)
Mixed/Other	12.0 (0.24)	5.4 (0.07)	6.0 (0.11)	6.4 (0.20)	9.6 (0.31)

Note: Standard Deviations in Parenthesis

7.2 Firm Mobility in Nepal

The question of which firm size category is showing the most robust growth in Nepal is of considerable policy interest. If small and medium sized firms are entering manufacturing and growing up through the size distribution of enterprises, the presumption is that entry barriers are low, inter-firm competition is high, and structural transformation is evolving in an efficient direction. If however, we see no “graduation” of small and micro firms, it may indicate natural or policy-induced barriers to growth. In addition, we are interested to see the effects of liberalization on firms in existence before liberalization. If we observe them shrinking after the introduction of reforms it suggests that older firms were unable to effectively transition to the more competitive environment.

To investigate the types of firms that are growing in Nepal we examine the mean age and employment for different size categories for all firms, those established before 1990 and those founded after liberalization in 1990. We see in Table 7.10 that mean employment increased for all size categories from start to present and it appears that the average firm increased by one size category. The average size of old firms shows a steady increase until 1999, when it stagnates. There is not any marked decline in their mean employment after 1990 suggesting that old firms were able to effectively cope with the reforms brought by liberalization. The average size of new firms shows a much larger increase than that of the old firms, which in some respect reflects the fact that they are growing from a lower base.

Looking at just the means of employment can be misleading since the observed changes may result from large changes in a few firms. One way to avoid this problem is to use mobility tables that show how firms transition across size categories from start to present.

Table 7.11 classifies firms by size at start, and then examines the size category in which the firm belonged in 1999. We see that there is a significant amount of mobility across size classes. Reading across the diagonal, 45.2 percent of firms that started as micro remained micro, while only 28.1 percent of firms that started small remained small. As for medium and large firms, 37.5 percent remained in their size category, while 68.8 percent of very large firms remained large, with 18.7 percent downsizing to the lower size class. While many firms remained in their initial size category, firms in Nepal show more mobility than found in some other developing countries. Overall, the percentage of firms downsizing (above the diagonal) is much lower than those of graduating to higher size categories, which is consistent with the large growth in average size seen in the previous table. However, almost no firm that started as micro became very large (only 4.1 percent), while 15.6 percent of small firms grew into the largest size class. On the other hand, 50 percent of large firms expanded to very large, only 12.5 percent downsized to the lower size category.

Table 7.10
Patterns of Firm Growth —Mean Age and Employment, Classified by size at start

All Firms						
	Overall	Micro	Small	Medium	Large	V.Large
Firm age	13	17	13	10	11	12
Employment at start	64	6	24	69	134	325
Current employment	150	33	94	174	285	481
N	204	33	99	32	24	16
Old Firms (Those established before 1990)						
	Overall	Micro	Small	Medium	Large	V.Large
Firm age	17	19	18	15	14	12
Empst.	53	6	23	62	136	344
Emp90	109	24	75	165	205	463
Emp97	153	34	108	203	325	615
Emp99	151	37	103	235	297	606
N	116	27	58	13	11	7
New Firms (Those established after 1990)						
	Overall	Micro	Small	Medium	Large	V.Large
Firmage	6	7	5	5	5	6
Empst	64	7	25	75	132	339
Emp99	145	11	99	133	290	498
N	92	6	50	20	11	5

Table 7.11
Mobility of Firms Across Size Classes: Where Do Firms End Up?

Current Size	Size at start				
	0-19	20-49	50-99	100-199	200+
0-19	45.2	3.2	0.0	0.0	0.0
20-49	27.4	28.1	3.1	4.2	6.2
50-99	12.3	32.8	37.5	8.3	6.3
100-199	11.0	20.3	37.5	37.5	18.7
200+	4.1	15.6	21.9	50.0	68.8
Total	100.0	100.0	100.0	100.0	100.0

Firms classified by size as start.

The second table classifies firms by current size, to see where firms originate. We find that almost no firms that are currently large originated from micro – only 7 percent. This percentage falls to zero if we define micro as firms with 1-10 employees. Most large firms started as medium or large enterprises, and most micro firms started as micro.

Table 7.12
Mobility of Firms Across Size Classes: Where Do Firms Come From?

Current Size	Size at Start					Total
	0-19	20-49	50-99	100-199	200+	
0-19	94.3	5.7	0.0	0.0	0.0	100.0
20-49	47.6	42.9	2.4	4.7	2.4	100.0
50-99	20.4	47.7	27.3	2.3	2.3	100.0
100-199	17.8	28.8	26.7	20.0	6.7	100.0
200+	7.0	23.2	16.3	27.9	25.6	100.0

Firms classified by current size.

The third and fourth mobility tables examine firm graduation after liberalization—from 1990 to present. We see similar results, with very little growth from the micro category into the medium and large size classes. A large number of firms that started out as medium and large ended up growing into the largest size categories. The fact that there is more mobility of firms after 1990 may be caused by the entry of new firms, which grow faster because they are younger. Thus, it is not clear that liberalization has led to higher mobility. But what is revealing is that again, we observe very little downsizing after 1990, indicating that liberalization and democratization of the economy has not adversely impacted firms. In fact, Table 7.14 shows that almost 49 percent of firms currently in the very large category started as smaller firms and grew into it. Likewise, almost 43 percent of the large firms grew from small or medium firms. This pattern corresponds to the findings in Table 7.10, which shows that the average size of firms founded both before and after liberalization increased after reforms were introduced. The survey data indicates high, upward mobility among manufacturing firms, except in the micro category. While micro firms can transition to the small category they rarely go any farther and small firms

do not usually graduate to large or very large firms. Presumably, human capital and financial constraints bar these firms from becoming large – this needs to be investigated further.

Table 7.13
Mobility of Firms Across Size Classes: Where Do Firms End Up?

Current Size	Size in 1990				
	0-19	20-49	50-99	100-199	200+
0-19	69.7	6.1	0.0	0.0	0.0
20-49	24.2	57.5	0.0	0.0	5.0
50-99	3.0	27.3	40.9	12.0	5.0
100-199	0.0	6.1	45.5	52.0	15.0
200+	3.0	3.0	13.6	36.0	75.0
Total	100.0	100.0	100.0	100.0	100.0

Table 7.14
Mobility of Firms Across Size Classes: Where Do Firms Come From?

Current Size	Size in 1990					Total
	0-19	20-49	50-99	100-199	200+	
0-19	92.0	8.0	0.0	0.0	0.0	100.0
20-49	28.5	67.9	0.0	0.0	3.6	100.0
50-99	4.4	39.1	39.1	13.0	4.4	100.0
100-199	0.0	7.2	35.7	46.4	10.7	100.0
200+	3.5	3.5	10.3	31.0	51.7	100.0

7.3 Theories of Firm Growth: What Determines Employment Changes?

The tables presented above give us a general picture of firm and employment growth. However, each table does not hold other factors constant. For example foreign owned firms may be growing faster but many of them are also exporters. So it is not clear if only one or both of these factors is driving growth. To isolate the determinants of growth, it is necessary to estimate a model of growth where the effect of each determinant can be analyzed separately. Models of firm growth are divided into two groups—those that represent “stochastic” models of growth based on Gibrat’s Law, and those that represent “learning” models. Stochastic models describe firm growth as drawn from a distribution. “Lucky” firms are those firms which repeatedly draw high rates of growth over time. In these models of firm evolution, firm size and firm growth are independent of each other (Gibrat’s Law). Empirical evidence however, consistently indicates that firm growth is not a stochastic process.

The Gibrat’s Law model has been superseded in the literature by learning models which describe a correlation between firm growth and firm efficiency. Learning models emphasize the role of the manager in the learning process. Early learning models incorporate fixed or innate managerial capacity [Jovanovic, 1982], while subsequent theoretical models allow for human

capital formation to impact managerial efficiency and firm growth [Pakes and Ericson, 1989]. Thus, managers can enhance their abilities and the level of efficiency of the firm through various learning mechanisms such as formal and informal education and training. The learning models show that firm growth is higher for efficient firms which expand when managers guesses about efficiency have understated their true efficiency.

In contrast to stochastic models, the learning models predict that firm age and firm size are both negatively correlated with firm growth. In other words, as firms grow older and become larger, their rate of growth slows. This is because as a firm ages, the predictions of the manager regarding firm performance become more accurate and consequently, the firm expands at a slower rate. After controlling for age, larger firms grow more slowly because they are already at a higher level of efficiency and consequently do not have large increases in efficiency [Evans and Leighton, 1989; Bates, 1990; McPherson, 1996; Sutton, 1997].

Following up on previous firm growth studies that describe learning models of growth [Evans, 1987; Variyam and Kraybill, 1992; Hall, 1987], we use the functional form described below:

$$S_t' = G(S_t, A_t)^\tau (S_t) e^{u_t}$$

where S_t' and S_t represents the firm's final and initial size respectively, τ denotes the time interval, G represents the growth function, A represents firm age, and u is the log-normally distributed error term. Taking logs, we obtain the following:

$$\frac{\log(S_t') - \log(S_t)}{\tau} = \log G(S_t, A_t) + u_t$$

A first order expansion of the growth function, and including a vector of entrepreneurial and firm characteristics as growth shift parameters, yields the final econometric specification to be tested, as follows:

$$Y_i = \frac{\log(S_t') - \log S_t}{\tau} = \beta_0 + \beta_1 \log(S_t) + \beta_2 \log(A_t) + \sum_{i=3}^n \beta_i X_i + u_t$$

We then enhance the model by including several firm and entrepreneur characteristics to test of the importance of these variables in determining firm growth. The variables used in the regressions are as follows:

- Lfirmage Logarithm of a firm's age
- Lempst Logarithm of a firm's employment at start.
- Natprio Dummy variable — equals 1 if a firm produces from the national priority list
- Corpn Dummy variable — equals 1 if a firm is a public company or a multinational

Training	Dummy variable — equals 1 if a firm trains workers internally and at externally.
Fgntech	Dummy variable — equals 1 if a firm has either a foreign license or a technical assistance contract
Foreignd	Equals 1 if a firm has foreign equity greater than 10
Exportd	Equals 1 if a firm exports any of its products
Impraw	Equals 1 if a firm imports any portion of its raw materials
Grad	Equals 1 if an entrepreneur has at least a bachelor's degree, equals 0 otherwise
Marwari	Dummy variable — equal to 1 if entrepreneur is Marwari or Newar.
Log(exp)	Logarithm of the number of years of experience of the entrepreneur.

Sector Dummies Food and Beverages is the excluded category

The regression results are presented below. The first table presents results for the full sample and examines determinants of growth from start to present and from 1990-present. The results of the regression are what we expected and for the most part mirror the findings presented in earlier tables. As expected, the coefficients on firm age and initial firm size are negative and significant, indicating that Gibrat's Law does not hold for Nepal. Younger firms grow faster than older firms, *ceteris paribus*, while smaller firms grow faster than larger ones. Sectorally, we see that the both from start to present and from 1990-present, the garments, carpets and chemicals sectors are growing significantly faster than the excluded sector, food and beverages. This movement is in the "right" direction, with exporting sectors growing faster than the non-tradable and import substitution sectors.

We see that training, which was very significant in determining productivity, is also significant in determining firm growth from start to present. Exporters grow faster than non-exporters, so do the importers of raw materials. Examining the firm level learning channels, we see that building human capital is of critical importance in determining who grows. Firms that train their workers grow significantly faster than those that do not. Similarly, foreign learning channels play an important role in determining growth, both from start to present and during the 1990s period. Foreign technology and licensing is significant in determining growth from start to present. Connecting with global markets also has a positive effect on growth. Both exporting of output and import of raw materials are significant and positive in determining growth, even after we control for sector, size and other characteristics. It is surprising to see that imported raw materials have a positive impact on growth – presumably it occurs because these firms are producing better quality products. A large fraction of them, mainly carpet manufacturers, are also exporters.

Table 7.15
Growth Regression Results- Full Sample

	Growth – 1990 to present	Growth-start-present
Constant	0.34* (0.04)	0.37* (0.05)
Lfirmage	-0.08* (0.01)	-0.09* (0.01)
Lempst	-0.05* (0.01)	-0.06* (0.01)
Wood and furniture	0.01 (0.04)	0.01 (0.03)
Chemicals and paint	0.10* (0.04)	0.09* (0.04)
Carpets	0.09** (0.05)	0.10* (0.04)
Textiles excl. carpets	0.04 (0.04)	0.05 (0.04)
Garments	0.11* (0.03)	0.11* (0.03)
Metal and metal products	0.05*** (0.03)	0.04 (0.03)
Pharmaceuticals	0.03 (0.04)	0.05 (0.05)
Non-metal fabrication	0.08 (0.06)	0.08*** (0.05)
Natprio	0.03 (0.03)	0.01 (0.02)
Corpn	0.08*** (0.05)	0.09* (0.04)
Training	0.13* (0.03)	0.11* (0.03)
Fgntech	0.04 (0.03)	0.06** (0.03)
Foreignd	-0.03 (0.04)	-0.01 (0.04)
Exportd	0.05* (0.02)	0.05** (0.02)
Impraw	0.04*** (0.02)	0.03*** (0.02)
Adj. Rsq	0.38	0.36
N	180	188

* - significant at 1percent level

** - significant at 5 percent level

***- significant at 10 percent level

Standard Deviations in parentheses

The final table presents regression results for firms that are run by entrepreneurs. This allows us to investigate the importance of education and other entrepreneurial factors that are not important for large corporations run by professional managers. The results here are similar to those found for the full sample. Initial firm age and firm size are significant and negative in determining growth. The carpets and garments sectors, metal products and non-metal fabrication sectors are growing significantly faster than the food sector. For the other sectors, the difference is positive but not significant. Worker training, exporting and importing are all significant in determining firm growth. Characteristics of the entrepreneur, however, were not found to be significant determinants. Education dummies, no matter which way they are defined, are not significant. This result was at first surprising. But on detailed examination of the data (tables presented elsewhere in the report), we found that most entrepreneurs had a bachelor's degree; hence there was very little variance in the variable across firms. Similarly, years of experience of the entrepreneur is not important in determining who grows. Also, no significant difference was found in firm growth rates between entrepreneurs who had worked for a foreign firm versus those that had not, between entrepreneurs owning multiple businesses versus only one business, and between entrepreneurs who had parents working in the same industry versus those that did not. It seems that informal channels of learning are less important in Nepal than formal sources, such as formal training of the workforce, exporting and so on.

Table 7.16
Growth Regression Results- Entrepreneur Sample

	Growth – 1990 to present	Growth-start-present
Constant	0.33* (0.06)	0.30* (0.10)
Lfirmage	-0.07* (0.01)	-0.08* (0.01)
Lempst	-0.07* (0.01)	-0.06* (0.01)
Wood and furniture	0.04 (0.04)	0.05 (0.04)
Chemicals and paint	0.02 (0.06)	0.02 (0.05)
Carpets	0.16* (0.05)	0.16* (0.04)
Textiles excl. carpets	0.03 (0.04)	0.05 (0.04)
Garments	0.12* (0.03)	0.12* (0.03)
Metal and metal products	0.08* (0.03)	0.09* (0.03)
Pharmaceuticals	0.07 (0.05)	0.09** (0.05)
Non-metal fabrication	0.12** (0.06)	0.11** (0.05)
Corpnr	0.12 (0.07)	0.11*** (0.07)
Training	0.12* (0.04)	0.11* (0.04)
Fgntech	0.05 (0.04)	0.06*** (0.04)
Foreignd	0.05 (0.04)	0.17*** (0.09)
Exportd	0.08* (0.03)	0.07* (0.03)
Impraw	0.08* (0.03)	0.06* (0.02)
Grad	-0.01 (0.03)	-0.01 (0.02)
Marwari	0.03 (0.02)	0.04** (0.02)
Log(exp)	0.001 (0.009)	0.004 (0.008)
Adj. Rsq	0.42	0.39
N	144	151

* - significant at 1 level

** - significant at 5 level

***- significant at 10 level

Standard Deviations in parentheses.

IV. Finance and Investment

8 Finance and Investment

One of the salient features of Nepal's manufacturing sector is the low investment rate. Our study indicates that in any given year, most firms do not invest and for those that do net investment is flat. Most investment by Nepalese manufactures goes to increase output or replace existing capacity using the same technologies. Very few resources are devoted to improving production techniques or introducing new products. The lack of investment and innovation is almost certainly a major factor in the low productivity and lack of technical efficiency previously discussed and as such is important to understand. The following section examines the nature of investment in Nepal and factors, such as access to capital, and investor confidence, that play major roles in determining its level.

8.1 Access to Credit

Access to credit is usually a major problem for firms in developing countries and the situation is no different in Nepal. Though the vast majority of manufacturing firms in Nepal have access to at least some external finance, high interest rates, large collateral requirements and other factors prevent firms from obtaining as much finance as they need. Despite the presence of a wide variety of lending institutions, including the NIDC, finance companies, aid agencies and informal sources, the majority of finance is short term bank credit and most firms are unable to access long term credit.

As shown in Table 8.1, more than 77 percent of firms in the RPED sample had access to some form of external credit including bank loans, overdraft facilities or a loan from a non-bank source. But most credit comes from commercial banks and non-bank and informal sources are insignificant. Close to 75 percent of firms in the sample had either a bank overdraft facility or a bank loan. Though most companies use some type of credit, long term credit is not readily available and less than 28 percent of the sample had outstanding loans with a term length greater than a year. What is unusual for a developing country, is that most firms, even among the smallest, deal with multiple banks — the average firm deals with more than three banks. Larger firms, as expected, deal with more banks than smaller firms but over half of the smallest firms reported dealing with more than two banks and no firm reported not having a main bank. While loans may be expensive and hard to obtain, banking services appear to be available to even the smallest enterprises.

Access to credit is highly correlated with size; a much greater proportion of large firms than small firms have access to external finance. About 60 percent of firms with less than 50 workers had access to credit, while 84 percent and 93 percent respectively of the largest two categories use some form of credit. This differential access is even more pronounced for long term credit. Close to 30 percent of the firms in the largest two size categories have access to long term credit while only 17 percent of firms in the smallest two size categories do. The percentage of firms with long term loans in the largest size class is almost double that of the smallest, though still below 50 percent. Further evidence that large firms have better access to credit is provided by the short term debt to sales ratio. The median short term debt ratio for the smallest firms is .03 but it is more than 10 time greater for the super large firms. The disparity in

access to finance is also reflected in the way that investment is financed. On average, firms in the smallest size category used bank loans to finance only three percent of their equipment purchases (see Table 8.26). In contrast, firms in the super large category, on average used banks to finance 48 percent of their equipment purchases. The survey results demonstrate that short term bank credit is widely available to all classes of firms, but that long term credit in Nepal is limited, even for large firms. Since banks are the main source of credit and large firms have better access to both long term and short term bank credit than do small firms, they are better able to fund investment as well as working capital requirements with external borrowing.

Though non-bank lenders are relatively unimportant for the firms in our sample, they are beginning to develop, apparently in response to the difficulty of getting long term bank credit. Most enterprises in the sample that borrowed from non-bank sources also had bank credit, but it was not term bank credit. All of the firms that borrowed from finance companies had overdraft facilities and three had additional bank loans. Six of the seven firms with NIDC loans had bank credit. But only three firms with finance company loans and two of the firms with NIDC loans also had long term bank credit. None of the firms that borrowed from friends had long term bank finance. The mean collateral ratio is lower for finance companies than commercial banks, but the mean interest rate is higher. Finance companies, the NIDC and the aid agencies all demand high collateral ratios just like banks do, but their mean term length is longer than it is for commercial banks. Thus, the main advantage of using non-bank lenders appears to be that that they extend long term loans. Clearly most firms in Nepal that want bank finance are able to obtain some short term funds. However, it is much more difficult to access long term credit and many of the recent alternatives to bank financing have developed to provide additional sources of long term funds.

Table 8.1
Access to Credit, By Size

Size Class	Percent with Access to credit	Percent with Access to Bank Credit	Percent with Short Term Access	Percent with Long Term Access
Full Sample	77	74	74	28
< 20	58	55	55	19
20-49	60	58	58	16
50-99	88	86	86	36
100-199	85	78	78	33
200-499	84	81	81	25
>500	93	93	93	40

Access refers to borrowing from any source, including banks, non-bank and informal sources.

Table 8.2
Short Term and Long Term Debt to Sales, By Size

Size Class	STD/Sales Mean	STD/Sales Median	LTD/Sales Mean	LTD/Sales Median
Full Sample	0.293	0.110	0.194	0
< 20	0.150	0.031	0.061	0
20-49	0.284	0.102	0.020	0
50-99	0.263	0.176	0.103	0
100-199	0.296	0.131	0.336	0
200-499	0.342	0.057	0.058	0
>500	0.583	0.350	1.004	0

Our survey provides no evidence that administrative and procedural barriers limit access to credit and most firms are able to access at least some credit, though not as much as they desire. Less than 5 percent of the firms in the sample reported ever being rejected for a bank loan and just under 20 percent stated that they had never applied for a bank loan. Firms gave a wide variety of reasons for not applying but the most common was that they did not need a loan. Other reasons ranged from high collateral requirements to the high interest rate, but no firms said that they did not apply because they did not think they would receive a loan and only one small enterprise said that the process was too difficult. It is not clear if firms felt that they did not need loans because they lack profitable investment opportunities or because they had alternative sources of finance. But it is clear that most firms believe that they can access bank credit if they are willing to pay the interest rate and can provide enough collateral. It does not appear that firms are being rationed out indirectly by red tape or difficult loan procedures. The firms that were rejected and those that did not apply came from all sectors and size classes.

Table 8.3
Access to Credit, By Sector

Sector	Percent with Access to credit	Percent with Access to Bank Credit	Percent Short Term	Percent Long Term
Food	77	77	75	29
Wood	78	72	67	22
Chemicals	73	73	64	27
Carpets	71	67	67	14
Textiles	89	83	83	33
Garments	81	77	68	19
Metal	78	76	70	30
Pharm.	78	78	67	44
Non-metal	63	45	55	45

Table 8.4
Short Term and Long Term Debt to Sales, By Sector

Sector	STD/Sales Mean	STD/Sales Median	LTD/Sales Mean	LTD/Sales Median
Food	0.324	0.149	0.232	0
Wood	0.124	0.065	0.044	0
Chemicals	0.140	0.128	0.004	0
Carpets	0.106	0.002	0.006	0
Textiles	0.765	0.358	0.591	0
Garments	0.329	0.060	0.024	0
Metal	0.225	0.161	0.083	0
Pharm.	0.110	0.130	0.225	0
Non-metal	0.458	0.267	1.000	0

Table 8.5
Reasons Firms Cited by Firms that Have Not Applied for a Bank Loan

Reason	Percentage
Don't Need One	60
High Collateral Requirement	15
Don't Want More Debt	10
Interest Rate too High	10
Process too Difficult	2.5
Already Heavily Indebted	2.5

38 firms answered why they had never applied for a bank loan.

Table 8.6
**Percentage of Firms That Would Like to Borrow More
at the Current Interest Rate, by Size**

Size Class	Full Sample	< 20	20-49	50-99	100- 199	200- 499	>499
Percent that would like to borrow more at the current interest rate	32.3	48.5	30.0	34.15	23.9	15.2	46.7

Table 8.7
Percentage of Firms That Would Like to Borrow More
at the Current Interest Rate, by Location and Sector

Sector	Percent That Would Like to Borrow More	Location	Percent That Would Like to Borrow More
Food	40.43	Kathmandu	26.19
Wood	61.11	Biratnagar	33.33
Chemical + Paints	9.09	Pokhara	33.33
Carpets	14.29	Butwal	35.00
Textiles	33.33	Biratnagar	23.08
Garments	26.67	Nepalgunj	33.33
Metal	25.00	Hetauda	60.00
Pharmaceuticals	44.44	Dhanghadi	50.00
Non-Metal	30.00		

While firms are not being rationed out by procedural barriers they are still not able to access as much credit as they need. Almost 32 percent of firms in the survey stated that they would like to borrow more than they are able to at the current interest rate. Firms in the smallest and largest size classes were the most likely to be constrained with more than 48 percent of firms with less than 50 workers and over 46 percent of the super sized firms wanting to borrow more. The smallest firms told us that they are unable to access enough credit because they lacked sufficient collateral and their owners are not able to provide personal guarantees. But the largest firms are among the most credit worthy. Their inability to access adequate credit is more likely due to the small size of the domestic banking system and the fact that prudential regulations prevent banks from placing more than a fixed percentage of their assets with single firm. One large firm in particular cited this as a problem. The manager said that while his firm alone would not run up against the limit, it is part of a group and the restriction was applied to the group as a whole. So borrowing by other firms in the group limited his firm's ability to borrow. Another manager said that borrowing amounts up to \$30,000 is no problem but for larger sums it is necessary to get help from a minister or to have at least a five year track record with the bank. It is possible for firms to get around the lending limit by obtaining loans from separate banks or putting together a syndicate, but this process is slow and difficult. Some large firms also made the point that the limited capacity of the domestic banking sector hurts their competitiveness by preventing them from matching the scale of Indian competitors.

Table 8.8
Mean Term Length and Collateral Ratio by type of Loan

	Mean Term in Years	Mean Collateral Ratio	Mean Interest Rate
Bank	1.68	190	14.13
Finance Company	2	127	17.66
NIDC	2	334	12.64
Aid Agency	5	180	0
Friend	2	0	16.36

There is a marked difference in the level of constraint between sectors. Very few chemical, paint or carpet firms claim to be constrained, but over 60 percent of the wood firms and more than 40 percent of the food and pharmaceutical firms would like to borrow more. This may reflect more the nature of the industry rather than the credit worthiness of the individual firms. Carpet firms are not capital intensive and receive pre-payment for their exports so they do not require large amounts of borrowing. The chemical and paint firms are mostly large multi-nationals or members of industrial houses who receive raw materials or working capital from their parent companies. At the other end of the spectrum, wood firms tend to be small scale enterprises that must maintain large stocks of raw wood and then sell their products on consignment to local distributors. This large need for working capital exhausts their limited stock of internal funds and since most are small and have limited collateral, they are unable to borrow enough to meet their working capital and investment needs. Likewise, many food producers do not export and also must extend large amounts of trade credit to their distributors so they need more external funds. Significantly more firms in Dhanghadi and Hetauda report being constrained. It may be that there are fewer banking facilities in Dhanghadi or that most firms are small and not tied to industrial groups, so they have difficulty borrowing. But Hetauda is one of the main industrial areas and many of the country's largest manufacturers are located in this area. This seems to support the contention that, as discussed above, the Nepalese banking system may be unable to provide enough credit to finance major industrial projects.

8.1.1 Banks

Since commercial banks are the primary source of external credit for the manufacturing sector in Nepal it is important to look at the characteristics of the banking sector. Liberalization has brought to Nepal a number of private banks which has led to improvements in the banking sector. On the surface there seems to be little difference between the new private banks and the longer established public banks — the mean interest rate, term length and collateral requirements on outstanding loans are not significantly different between them. In fact many entrepreneurs accuse the banks of colluding. However, despite the similarities, significant differences remain between the operations of public and private banks, most importantly the arrival of private banks has helped lower interest rates and improve services.

From the survey results, it appears that public banks give more loans to the smallest size class of firms and their average loan size is smaller. Commercial banks provided 176 of the 232 outstanding loans for firms in the sample. Of these we could determine that 96 came from public banks and 76 from private banks. More than 10 percent of the public bank loans were to firms with less than 20 workers while less than four percent of the private bank loans went to the smallest category. The public banks made 26 percent of their loans to firms with less than 50 workers while the private banks only made 16 percent of their loans to this group. In addition private banks are more likely to support exporters than the public banks — more than 30 percent of the private bank loans went to firms that export in excess of 50 percent of their sales while only around 17 percent of the public bank loans went to this group.

The public banks have a much larger network of branches and extend into regions where the private banks have not found it profitable to operate. Consequently, small firms in outlying regions may find it easier to establish relations with public banks. Managers repeatedly commented that private banks are much more stringent in their standards and demand more extensive financial records than the government banks. This also serves to encourage small firms to use public banks instead of private banks and suggests that private banks restrict their lending to the stronger firms. But those entrepreneurs that do use the private banks commented favorably on their service and efficiency. Many managers said that the inconvenience of stricter credit reporting requirements was far outweighed by the speed and responsiveness of the private banks service. For example, one reason exporters like private banks is that their large network of correspondent banks enables them to negotiate letters of credit faster and at less cost.

Table 8.9
Percentage of Loans Made, by Size.

Size Class	Public Banks Percent of Loans	Private Banks Percent of Loans
< 20	10.42	3.93
20-49	15.63	11.84
50-99	21.88	21.05
100-199	28.13	28.95
200-499	14.58	23.68
>500	9.38	10.53
Firms that Export 50% of Sales	17.39	30.67

Table 8.10
Mean Loan Terms, Collateral Ratios and Interest Rates

Source	Mean Term in Years	Mean Collateral Ratio	Mean Interest Rate
Bank	1.68	190	14.13
Finance Company	2	127	17.66
NIDC	2	334	12.64
Aid Agency	5	180	0
Friend	2	0	16.36

Despite the private banks' greater efficiency, interviews reveal that many managers still prefer to use the public sector banks because they are less strict in monitoring the use of loans and more likely to roll them over. A large number of entrepreneurs stated that they had received loans from public banks for other enterprises they own and then shifted the funds to the firm we were interviewing. These entrepreneurs avoided the private banks because they are much more stringent in monitoring the use of their loans. Firms repeatedly told interviewers that managers of public banks demand payments of between one and four percent to approve loans. If a loan is particularly risky or the firm intends to use the funds for other than the stated purpose then kick backs are at the high end. Almost all managers claimed that private banks did not demand kick backs but also did not give borrowers such a free hand.

Bank managers say that they are particularly concerned that they do not have enough information to adequately assess risk. The arbitrary tax system encourages many firms not to keep books and those that do rarely show accurate accounts to anyone but the owners. Loan officers are well aware that the financial statements they are presented are inaccurate but have no way of knowing exactly how the accounts are biased. Consequently, they can't form a good picture of a borrower's prospects. Managers of private banks try to closely monitor their loans but they know that money is fungible and readily admit that their funds are often diverted. To reduce the costs of monitoring and enforcement problems banks follow various strategies. First all banks, both private and public, are reluctant to extend loans for longer than a year. Second, banks demand large amounts of collateral, generally ranging from 125 to 250 percent. Assets such as buildings and land, which are not mobile, are the preferred type of collateral. Most loans for equipment or vehicles are hypothecation loans that are short term and used for the purchase of a specific item. Some private banks are beginning to make term loans for equipment but it is still unusual to see long term loans secured by the equipment that they were used to purchase.

Finally, the basic policy of most banks, especially private banks, is "name lending". Since banks can not be sure of a company's accounts, loan officers look at the owners' personal wealth and reputations to determine credit worthiness. It is standard practice for banks to demand personal guarantees from the directors along with company assets pledged as collateral. They then set a borrowing limit based upon all available collateral. The total value of the company's borrowing, including letters of credit, short term working capital loans, term loans etc, must fall within this limit. This helps reduce the lender's risk if the funds are diverted or if directors strip the company of its assets.

Though these policies reduce banks' risk from poor information and enforcement, they make access to capital much more difficult. Firms are hesitant to undertake large projects if they are unable to guarantee funding and must rely on short term loans. Banks generally make lending decisions based solely on available collateral and do not consider a project's potential which makes it difficult for start up firms or small firms with limited collateral to invest and grow. The demand for personal guarantees is not unreasonable given that many people in Nepal do not make a clear distinction between a firm's assets and the directors' personal wealth. However, it defeats the purpose of limited liability companies and by shifting all of the risk to the entrepreneurs it reduces their willingness to invest. On numerous occasions owners told us

that they were considering making large investments but would not make them because they did not want to risk their houses and other personal property.

8.1.2 Trade Credit

In addition to commercial banks, the other major source of external finance is trade credit, which for our purposes is defined as short term credit extended by firms to their suppliers or customers. In many countries, including India, the standard arrangement calls for payment to be made in 30 days after delivery of a shipment but if payment is made in 10 days or less customers are given a 2 percent discount. The importance of trade credit in the manufacturing sector can not be overstated because it helps firms manage their cash flow and conserve on working capital. Ideally a firm would like to be a net debtor and would receive more credit than it extends, however this is usually not possible so firms seek to at least balance their receipt of credit with their provision of credit. Often manufacturers use trade credit as a type of marketing tool and must provide it in order to attract and keep customers. This is particularly true for manufacturing firms that must provide products to their distributors on credit and do not receive payment until the product is sold. This practice puts added pressure on a firms whose cash position is already poor and favors firms that have easy access to formal finance since they can borrow short term from banks in order to provide trade credit to their customers.

Trade credit is relatively common in Nepal and the system is much stronger than in some developing countries. However, the practice is not as wide spread as it needs to be and firms told us that they would like to be able to extend and receive more trade credit than they do. The best measures of trade credit are accounts receivable and accounts payable. Some 91 percent of firms in our sample have positive accounts payable showing that they receive trade credit and close to 83 percent have positive accounts receivable and extend trade credit. The median value of net trade credit for all firms in the sample is $-.043^8$ meaning that most firms in the sample are net providers of trade credit. This is expected since manufacturing firms typically extend credit to their distributors and suggests that the manufacturing sector provides substantial credit to other sectors in the economy.

Since the largest firms have the best access to formal credit, it might be expected that they would pass it along to smaller firms in the form of trade credit. Such an arrangement would help the large firms by making their suppliers more efficient and it supposes that large firms have better information on their suppliers than do banks. However, this does not appear to be the case in Nepal. Looking at net trade credit ratio by size class shows that the smallest size classes provide more credit relative to their sales than the largest categories. The net trade credit ratios for the smallest two categories are $-.083$ and $-.062$ while the largest two groups have median values of $-.012$ and $-.055$. It is likely that in Nepal large firms are not in a position to extend credit to small firms because they do not deal with them. As shown in Table 8.13, the majority of output from large firms is exported and most of their raw materials are imported. Consequently, large firms do not have the need or the opportunity to extend trade credit to small local firms so there is little flow of capital from banks through large firms to smaller firms.

⁸ The net trade credit ratio is defined here as: $(\text{accounts payable} + \text{pre-payments received}) - (\text{accounts receivable} + \text{pre-payments made}) / \text{total sales}$.

There is a large degree of variation between sectors in the use of trade credit. The median value of net trade credit is zero for the carpet sector and it is also very low for the garments sector. This is expected since firms in these sectors are mostly exporters and rely on pre-payments or letters of credit. On the other extreme, the median net trade credit for the metal and wood sectors is high because both of these sectors export almost nothing. In addition many of the metal firms in our sample are small producers of kitchen utensils, metal furniture or providers of containers to local manufacturers. The utensil and furniture makers must give their wares to distributors on consignment and the container manufactures also must wait for payment until their customers have sold their goods. The firms in the wood sector are predominantly producers of consumer goods for the domestic market and must market their product using trade credit.

Table 8.11
Trade Credit Ratios, by Size

Size Class	Median of Accounts Payable over Total Sales	Median of Accounts Receivable over Total Sales	Median Net Trade Credit Ratio*
Full Sample	.0385	.100	-.043
< 20	.026	.098	-.083
20-49	.033	.129	-.063
50-99	.078	.157	-.132
100-199	.051	.105	-.017
200-499	.044	.051	-.012
>500	.0155	.089	-.055

Note: *The net trade credit ratio is defined here as: (accounts payable + pre-payments received) –(accounts receivable + pre-payments made)/ total sales.

Table 8.12
Trade Credit Ratios, by Size

Sector	Median of Accounts Payable over Total Sales	Median of Accounts Receivable over Total Sales	Median Net Trade Credit Ratio*
Food	.045	.099	-.022
Wood	.028	.164	-.096
Chemicals	.062	.129	-.050
Carpets	.025	.032	0
Textiles	.024	.115	-.052
Garments	.031	.050	-.013
Pharmaceuticals	.065	.098	-.047
Metal	.029	.261	-.207
Non-metal	.048	.129	-.058

Note: *The net trade credit ratio is defined here as: (accounts payable + pre-payments received) –(accounts receivable + pre-payments made)/ total sales.

For those firms that engage in trade credit the system is similar to the practices in other countries. While more than 26 percent of firms in our sample say that they are expected to pay cash, over 33 percent say that their average terms of payment gives them 30 days. More than 56 percent of firms normally give between 7 and 30 days before they demand payment. Most firms do not give or receive cash discounts, but for those that do, most reported that they give between two and five percent. Firms that provide trade credit do so as a matter of necessity. Their customers are simply unable to pay cash. So the only way they can sell their output is to give buyers time to pay. However, since trade credit is not explicitly seen as a way to manage cash flow, most firms do not see any advantage in giving a cash discount. In addition the time to pay is very flexible. The figures given above are the standards that managers reported they would like to maintain. However, re-payment dates can slide based upon the customer's situation. Firms extend credit because they have to in order to sell. If a customer does not strictly adhere to the schedule the producers only choices are to work with them or lose future sales in a market where demand is already low.

Table 8.13
Mean and Median, Percentage of Sales Exported and of Inputs Imported, by Size.

Size Class	Percent of Output Exported Mean	Output Exported Median	Percent of Inputs Imported Median	Percent of Inputs Imported
Full Sample	27.50	0	43.99	24.5
< 20	3.06	0	3.44	0
20-49	13.94	0	38.60	6.00
50-99	12.60	0	46.69	35.00
100-199	26.33	0	64.78	82.69
200-499	66.10	98.00	43.37	26.98
>500	73.07	100.00	72.93	91.00

Table 8.14
Mean and Median, Percentage of Sales Exported and of Inputs Imported, by Sector.

Sector	Percent of Output Exported Mean	Percent of Output Exported Median	Percent of Inputs Imported Mean	Percent of Inputs Imported Median
Food	8.26	0.00	23.49	3.50
Wood	21.17	0.00	9.11	0.00
Chemicals	10.50	0.00	88.09	98.00
Carpets	79.77	100.00	38.05	0.00
Textiles	18.23	1.25	56.59	71.50
Garments	68.87	100	65.63	90.5
Pharmaceuticals	3.49	0.00	51.28	58.00
Metal	32.44	0.00	80.00	99.00
Non-metal	0.00	0.00	18.10	0.00

As indicated in Table 8.15, except for the smallest group, there is little difference in the trade credit terms between size classes and firms try and match their demand for payments with their required payment schedule. For the majority of firms this is around 30 days, the standard in India and much of the rest of the world. Most firms are not giving cash discounts but those that do, give on average around two percent. Only the smallest firms have difficulty obtaining the normal 30 days to pay, yet they are still forced to give credit close to the norm for all firms. Their difficulty in obtaining trade credit along with their lower access to formal credit suggests that the smallest firms have the most serious problems with finance.

Table 8.16 shows the wide disparity in the means and medians for payment terms by sector. Half the textile firms must pay cash while the median time for payment by pharmaceuticals, garments and metal is 30 days. Pharmaceuticals, garments and metal firms import most of their raw materials from third countries so they are given more time to make payments. The median days to demand payment is lowest in the carpet and garment sectors. This is probably because the carpet sector demands pre-payment for exports and most garments are exported against letters of credit. While this helps their cash flow situation it also limits their market because they can't give their distributors product to sell on consignment. Firms in the other sectors must extend credit to their distributors so the median time for them to demand payment is longer. Table 8.17 shows the mean and median terms for firms that export more than 50 percent of their sales and those that import more than 50 percent of their raw material. It appears that exporters extend little trade credit while importers purchase on credit. This helps explain why large firms extend less credit since, as seen previously, they mostly export. The median time to payment for raw material importers is 15 days while they give 30 days when they sell their product. However, when carpets and garments are dropped the story changes. Other than carpets and garments most exports go to India. Consequently, when these sectors are dropped the median time that both exporters and importers demand payment increases to 30 days, the standard for India. But for importers the median time they are given to pay drops to 15 days. The carpet and garment producers import their raw materials from third countries and appear to have more time to pay. Most of the others import from India but apparently don't get the customary 30 days. This may be because they are small and have no market power or because Indian suppliers face more risk from customers in Nepal.

Firms in Nepal appear to have more of their funds tied up in working capital and inventories than do firms in other parts of the world. This is partly due to the small market and the fact that many products have peak season, which forces firms to keep large inventories. It is also partly due to the inefficient import regime and distance to ports, which forces firms to keep large stocks of imported raw materials. A well developed trade credit system would help reduce these costs and allow firms to free up internal funds for investment. Though trade credit in Nepal is common, it is not nearly as extensive as it needs to be due to the poor legal system. Most firms only extend credit to firms in the local area and to those with whom they have had repeated contact. Managers told the interviewers that they are unwilling to go beyond this because the legal system is almost completely ineffective and it is not possible for small and medium firms to efficiently enforce contracts. Almost no firm in the sample said that they had ever hired a lawyer or taken someone to court for non-payment. The usual method for dealing

with non-payment was to withhold additional credit and continue to request payment. Many firms stated that they could increase their sales if they were able to extend credit to new clients and ensure payment. Some firms even mentioned the inability to collect payment among their three major business problems. The lack of information that allows lenders to assess risk and the weak legal system that makes it difficult to enforce contracts, conspire to prevent the trade credit system from expanding to fully meet the needs of the manufacturing sector.

Table 8.15
Means and Medians of Average Time to Pay and Cash Discount, by Size

Size Class	Days until Payment must be Made	Days until Payment must be Made	Cash Discount Received	Cash Discount Received	Days Until Firm Demands Payment	Days Until Firm Demands Payment	Cash Discount	Cash Discount
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Full Sample	23.39	30.00	1.12	0.00	26.25	30.00	1.85	0.00
< 20	10.38	7.00	1.00	0.00	25.42	15.00	2.08	0.00
20-49	21.56	30.00	1.47	0.00	28.58	30.30	2.58	2.00
50-99	27.38	30.00	1.29	0.00	30.30	30.30	2.03	.50
100-199	28.59	30.00	1.06	0.00	28.16	30.00	1.78	0.00
200-499	25.97	27.50	0.90	0.00	23.31	15.00	1.24	0.00
> 499	24.64	30.00	0.67	0.00	9.65	0.00	0.36	0.00

Table 8.16
Means and Medians of Average Days to Payment and Cash Discount, by Sector

Size Class	Days until Payment must be Made	Days until Payment must be Made	Cash Discount Received	Cash Discount Received	Days Until Firm Demands Payment	Days Until Firm Demands Payment	Cash Discount	Cash Discount
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Food	23.79	15.00	0.34	0.00	27.63	30.00	1.15	0.50
Wood	19.45	22.5	2.11	0.00	23.55	22.50	2.85	0.00
Chemical and Paint	20.00	15.00	0.60	0.00	32.73	30.00	1.83	0.00
Carpets	16.78	20.00	1.24	30.00	10.12	0.0	1.25	0.00
Textiles	13.27	0.00	0.65	00.00	32.50	30.00	3.45	3.00
Garments	32.17	30.00	1.77	0.00	19.44	15.00	1.28	0.00
Metals	27.91	30.00	0.73	0.00	30.76	30.00	1.25	0.00
Pharmaceuticals	24.38	30.00	1.72	0.00	41.67	45.00	2.87	2.00
Non-Metal	18.00	20.00	2.77	0.00	22.36	21.00	4.80	1.00

Summary of Access to Credit

Our survey reveals that most firms in Nepal have access to at least some credit. However, for many firms it is not as much as they desire and the majority of investment is financed with internal funds. The vast majority of external credit comes from commercial banks and for

various reasons banks face enormous difficulties obtaining information on clients, assessing their risk and enforcing contracts. The way that the tax laws are enforced discourages firms from keeping accurate books that banks can rely on. Money is fungible and it is difficult for banks to monitor how their loans are used. Once contracts are written the legal mechanisms for enforcing them are so weak that they can't be relied upon. For these and other reasons, banks restrict the length of loans, demand high levels of collateral and personal guarantees and charge high rates of interest.

The other major source of external finance is trade credit. Though most firms provide and receive trade credit it is not as extensive as firms desire. Firms in the manufacturing sector extend trade credit as a marketing tool and provide more trade credit than they receive. Without giving credit they are unable to get distributors to sell their products. However, because of the poor legal system companies report that they are hesitant to extend credit to new customers or to customers in far away locations. If the trade credit system was expanded firms would be able to increase sales as well as manage their cash flow more efficiently.

Table 8.17
Means and Medians of Average Days to Payment and Cash Discount,
Exporters and Importers

	Days until Payment must be Made Mean	Days until Payment must be Made Median	Cash Discount Received Mean	Cash Discount Received Median	Firm Demands Payment Mean	Days Until Firm Demands Payment Median	Cash Discount Mean	Discount Median
Export > 50% Of Sales	26.44	30.00	0.85	0.00	15.11	0.00	1.28	0.00
Import > 50% Of Inputs	23.75	15.00	0.93	0.00	23.99	27.5	1.71	1.71
Export > 50% Of Sales (W/O Carpets)	29.81	30.00	0.67	0.00	19.56	15.00	1.29	1.29
Import > 50% Of Inputs (W/O Carpets)	25.32	30.30	0.94	0.00	24.89	30.00	1.80	1.80
Export > 50% Of Sales (W/O Carpets + Garments)	27.78	30.00	0.28	0.00	24.11	30.00	1.99	0.00
Import > 50% Of Inputs (W/O Carpets + Garments)	23.89	15.00	1.02	0.00	28.32	30.00	2.25	1.50

8.2 Investment

Evidence from the RPED survey suggests that investment by Nepal's manufacturing sector is very low by world standards. While a few firms in the sample made large investments in the last three years, most made very little investment and many made none at all. More than half the firms in the sample did not even invest enough in 1999 to cover their reported depreciation. The evidence suggests that when firms do invest it tends to be lumpy, with major investments followed by long periods of no investment. Investment appears to be limited to proven technologies and enterprises rarely introduce new products or upgrade their technology. It is almost certain that the low investment rate is a major factor affecting the growth rate and the competitiveness of the Nepalese manufacturing sector and consequently deserves close study.

Table 8.18 provides information on the investment to capital ratio of the sample firms, showing that the level of investment is low by world standards. The table gives two measures for the three years that the survey collected data: the ratio of total investment to capital and the equipment investment to capital. The last column gives the mean and median of the three year mean of the 149 firms for which we have observations in all three years. The vast majority of investment was in equipment so from now on we will focus only on the ratio of equipment investment to capital. The median of the mean equipment investment to capital ratio for the full three year period is only .053. The ratios in all years are highly skewed with the means being much higher than the medians. This is no different from what is found in other developing countries and results from many firms not investing at all or investing very little, while a few firms make substantial investments. The medians, the best central measure, show that the investment rate has increased between 1997 through 1999. But the difference is so great that part of the increase is probably due to the fact that the data in the later year is more accurate.

Looking at investment by size category shows that the investment rate for firms with more than 500 workers was almost three times that of the next highest group.⁹ They have very high investment in 1997 suggesting that many of these firms made their initial start up investment or introduced new technologies in 1997. At the other extreme, investment by firms with less than 50 workers was very low and more than half of these firms made no investment in any year. For the size categories in between 50 and 500 workers the rates of investment are similar – they are much greater than the firms with less than 50 workers but much less than the super sized firms. The rates of investment mirror the access to credit. The super large firms have much better access to credit and use bank credit to finance much more of their investment than do small firms. The super large firms also have much higher rates of investment than other firms.

There is a large variation in investment rates between sectors as shown in Table 8.20. The investment rate for wood and carpet firms is significantly lower than that of any other sector. This is understandable since the majority of wood firms are small and operating at low capacity, they do not need to invest to expand capacity or even maintain current capacity. Though carpet exports have been growing rapidly, it is a labor intensive industry and requires little equipment investment to expand output. Carpet producers are able to expand output by hiring more weavers and do not need to purchase substantial amounts of new equipment. Garments has the

⁹ The following tables present only the equipment investment rate. The pattern for total investment was the same as would be expected since the vast majority of investment is in equipment.

highest investment rate of any sector in the sample, as firms invest in new machinery in order to take advantage of the United States garment quotas. Surprisingly investment in the non-metal sector is also relatively high.

Table 8.21 presents the fraction of total investment in the sample accounted for by firms in each sector in each year. Since this is only for the 149 firms for which we have data in every year, it is not possible to make inferences about the fraction of investment in the population. However, changes in the fraction accounted for by each sector tells us something about how the rate of investment has changed between sectors. In 1997 textiles accounted for more than 46 percent of the total investment by the sample. In 1999 it had fallen to less than 12 percent. Most of textile plants required large investment at start up or when they changed technology and now that they are on line they no longer require continued large investments. Similarly many of the chemical and paint plants have been upgraded and are currently operating below capacity so their share of total investment has declined. The share accounted for by the food sector more than doubled between 1997 and 1999, going from less than 15 percent in 1997 to over 38 percent in 1999. The fraction accounted for by metals and pharmaceuticals also grew substantially during this period.

Table 8.18
Mean and Median of Investment to Capital ratio

Investment Ratio	1997 All Firms	1998 All Firms	1999 All Firms	IK 1997-99
(Equip+Building Inv.)/K	.559	.405	.522	.375
(TIK)	.003	.040	.035	.077
(Equip Inv. /K	.320	.218	.278	.182
(IK)	.001	.018	.014	.053

Notes: Equip. Building Inv. Refers to expenditures on new equipment and Buildings in the given year.

K- the estimated replacement cost of equipment.

* This figure is the Mean and Median value for each firm's three year mean for the 149 firms we had observations in all three years.

Table 8.19
Mean and Median IK by Size

Size Category	1997 Mean	1997 Median	1998	1998 Median	1999 Mean	1999 Median	Mean* IK 97-99
< 20	0.008	0	0.083	0	.102	0	0
20-49	0.518	0	0.197	0	0.126	0	0.012
50-99	0.1378	0.058	0.227	0.039	0.316	0.082	0.054
100-199	0.1169	0.037	0.333	0.083	0.520	0.063	0.078
200-499	0.2261	0.002	0.119	0.018	0.325	0.040	0.068
> 499	1.651	0.446	0.345	0.098	0.144	0.078	0.211

Note: * This figure is the Mean and Median value for each firm's three year mean for the 149 firms we had observations in all three years.

Table 8.20
Mean and Median Equipment Investment Rate, By Sector

Sector	1997 Mean	1997 Median	1998 Mean	1998 Median	1999	1999 Median	Mean* IK 97-99	Mean* IK 97-99
Food	.2315	.0019	.248	.019	.696	.091	.151	.059
Wood	.0115	0	.228	.003	0.182	0	.052	.018
Chemical and Paint	.0501	.016	.1820	.030	.111	.069	.076	.056
Carpets	.3406	0	0.085	0.085	.074	0	.148	.008
Textiles	1.086	.026	.323	.010	.078	0	.513	.030
Garments	.4803	.038	.207	.094	.272	.045	.235	.123
Metals	.0858	.003	.238	.033	.084	0	.103	.030
Pharm.	.1820	.0086	.1203	.047	.180	.055	.161	.067
Non- Metal	.4473	.010	.174	.020	.013	.0125	.253	.095

Table 8.21
Mean I/K

Sector	1997	1998	1999
Food	0.1462	0.2714	0.38254
Wood	0.0007	0.0027	0.0109
Chemical + Paint	0.0068	0.0098	0.0164
Carpets	0.01	0.0066	0.0085
Textiles	0.464	0.2646	0.1150
Garments	0.0511	0.0721	0.0436
Metals	0.1353	0.1411	0.2002
Pharmaceuticals	0.1568	0.2223	0.2107
Non-Metal	0.0289	0.0093	0.0122

Note: For 149 firms that had observations in all years.

The investment rate in Nepal's manufacturing sector is so low that it does not even cover depreciation for most firms. The median reported depreciation rate in 1999 was .1, similar to what is found in other countries. However, the median of the mean investment for all firms in the sample with full data was only .053, well below what is needed to keep up with depreciation. In other words the average investment ratio for more than half the firms that we have full data on was less than the median depreciation rate in 1999. Less than 40 percent of the firms that reported depreciation figures made enough equipment investment to cover depreciation in 1999 (see Table 8.22). The lack of replacement investment is also illustrated by the fact that less than 5 percent of firms in the sample that made recent investments did so to replace old equipment with new equipment. As expected, a much lower percentage of the small firms than large firms

covered depreciation. Only 20 percent of firms with under 20 workers invested more than they reported in depreciation, while over 50 percent of firms with 500 or more workers did.

Table 8.23 reports the percentage of firms who covered depreciation by sector. In the garments, pharmaceuticals and non-metal sectors more than half of the firms made more equipment investment in 1999 than they reported in depreciation. In the rest of the sectors less than half the firms covered depreciation. Garment exports have been growing rapidly and in order to compete internationally, garments firms have had to upgrade their equipment. This is reflected by the median investment rate of .129, which is well above the median depreciation rate. Many garments firms were started by Indian firms who came to Nepal from India to take advantage of U.S. garments quotas. Initially most companies used the production techniques and machinery they brought from India, but as firms have grown they have sought equipment from East Asia to increase their capacity. The fact that few wood firms covered depreciation is expected since they tend to be small, old and operating at low capacity. Most of them are not fully utilizing the capital stock they currently possess and do not need to invest. The low percentage of chemical and paint firms that cover investment is more surprising since this sector does not have an abnormally low investment rate. This may be due to high reported depreciation.

Since most firms do not come close to investing enough to cover reported depreciation it appears that there is negative net investment in Nepal. If depreciation is over reported or investment is under reported this might not actually be the case. However, the median depreciation rate is reasonable and similar to that found in other countries. The low investment rate is still larger than reported in some other developing countries and firms were fairly confident in reporting this figure. So we can conclude with some confidence that overall investment is flat among firms in the sample. But the investment rates are highly skewed; some firms investing heavily and expanding while others are making negative net investment. For example, as exports have grown many garments firms have invested heavily and sought equipment from elsewhere in Asia to increase their competitiveness. Others have invested almost nothing and retained the old system of having individual tailors cutting and assembling pieces. This investment pattern can also be seen in the fact that new pharmaceutical firms and paint plants have been established while many older firms, which depended on protection or tariff differentials with India, are slowly withering away.

In addition to being low, investment by firms in the sample was not smooth. Investment was lumpy in all size classes, but larger firms appear to have smoother investment than smaller firms. Over half the firms with less than 20 workers did not invest in any of the three years while less than 10 percent of the largest firms made no investment. More than 65 percent of firms with at least 50 workers made some investment expenditures in all three years while less than 18 percent of firms with less than 50 workers invested in all three years. While investment is lumpy in Nepal clearly the smallest firms are unable to smooth their investment as well as large firms.

Table 8.22
Percentage of Firms Whose Investment Ratio Exceeded
Depreciation, by Size

Size Category	I/K > Depr.
Full Sample	39.47
< 20	20.00
20-49	39.39
50-99	46.43
100-199	46.67
200-499	36.00
> 499	54.55

Table 8.23
Percentage of Firms Whose Investment Ratio Exceeded Depreciation, by Sector

Sector	% Where I/K > Depr.	Depr. Rate Mean	Depr. Rate Median
Food	36.36	0.174	0.100
Wood	20.00	0.127	0.085
Chemical + Paint	20.00	0.161	0.131
Carpets	35.29	0.237	0.200
Textiles	38.46	0.193	0.067
Garments	58.33	0.124	0.108
Metals	32.00	0.122	0.096
Pharmaceuticals	55.56	0.106	0.077
Non-Metal	54.55	0.091	0.075

If firms can invest perfectly smoothly we would expect the total investment to be evenly divided among the three years and in each year firms would make 33 percent of the total investment for the three year period. But in our sample about 75 percent of the firms with less than 50 workers who invested anything, made more than three quarters of their total investment for the period in one year. In other words, in a three year period the majority of their investment was made in one year while investment in the other two years was low. Less than half the firms in all size classes with more than 50 workers made more than 75 percent of their investment in a single year. Table 8.24 shows the mean coefficient of variation for firms that made at least some investment in the period. This removes many of the smallest firms because they invested nothing. The coefficient of variation for the smallest size class is 1.49, significantly larger than firms with more than 50 workers.

Nepal is not unique in having lumpy investment. Investment is not perfectly smooth in any country and most major investment goes in spurts. Firms usually make a series of investments over a number of periods to introduce new technology or increase capacity. They then take time to absorb the technology, expand production to capacity and build up retained

earnings before making additional large investments. However, replacement investment takes place constantly and should be much smoother than net investment. The fact that most Nepalese firms, especially small firms, are not investing enough to cover depreciation suggests that there are constraints to investment.

Table 8.24
Mean Coefficient of Variation, by Size Class

	< 20	20-49	50-99	100-199	200-499	>499
Mean Coefficient of Variation	1.49	1.21	1.03	0.89	0.97	1.03

8.3 Determinants of Investment

It is not clear why investment in Nepal is so low. It may be that firms do not have suitable investment opportunities or it may be that market failures in the financial markets prevent them from taking advantage of available opportunities. Academic studies have shown that a wide variety of factors can affect investment and the following section discusses some that appear problematic in Nepal. These include lack of demand, underdeveloped financial markets, age of the firm and an uncertain business environment.

8.3.1 Demand

Managers we interviewed felt that a lack of demand for their products was a significant obstacle; in fact 41 percent of firms in the sample cited lack of demand as among their three biggest business problems. The average level of capacity utilization for the entire sample was only 58 percent and no sector or size group was above 70 percent. Most investment in the sample was to increase capacity or improve the production process. Less than 20 percent of the sample reported using their most recent investment to introduce a new product. Since most investment is made to increase output and not to improve quality or change products, it is not surprising that investment is low. Given the low capacity utilization and lack of demand there is no reason for firms to add capacity or even maintain the capacity that they have.

In order to help understand the determinants of investment we ran a regression estimating how various factors affect a firm's probability of investing. In this model, known as a probit, sales growth was positive and extremely significant (see Table 8.25). Here sales growth is a signal for what firms believe future demand will be. Increased sales in one period lead firms to forecast higher future demand and consequently to invest. The results of the probit demonstrate that investment by firms in the sample does react strongly to demand and the fact that demand is weak goes a long way toward explaining the low level of investment.

8.3.2 Finance

Another major factor in explaining investment is imperfections in the capital markets that prevent firms from obtaining funds to finance desired investment. As we saw in the section on access to finance, larger firms have better access and we now see that large firms also have higher rate of investment. Thus, a significant factor in the low rate of investment may be

inadequate access to finance, especially for smaller firms. In addressing these issues it is first necessary to look at how firms in Nepal finance investment.

Most new equipment purchases in Nepal are financed using internal funds. The survey asked how the average equipment purchase was financed and almost all firms reported using predominantly retained earnings or personal savings. For the entire sample internal funds were used to finance about 67 percent of the average equipment purchase while bank loans and overdrafts financed less than 23 percent. New equity is used for less than 5 percent of average equipment purchases and other sources such as friends and supplier credit are insignificant. Loans from directors and owners accounted for just under 5 percent. While such funds are usually considered outside finance, given the frequent lack of distinction between a firm's funds and those of its owners, it is not clear that directors' loans should be excluded from internal funds. Including loans from directors along with retained earnings and personal savings raises the level of internal funds to almost 72 percent.

Small firms rely much more on internal funds than do large firms. In our sample, firms in the smallest size category used internal funds for almost 88 percent of their average equipment purchases while the largest size class used retained earnings or personal savings for less than 49 percent. If loans by directors are added to retained earnings and personal savings then the difference between firms with less than 50 workers and those with between 50 and 500 narrows, but still remains significant.

The fact that the smallest firms have much less access to bank finance than do the large firms shows up strongly in investment financing. Banks funded only three percent of new equipment investment by firms with less than 20 workers and just over 16 percent for the next size class. For firms with at least 500 workers, banks funded almost 47 percent of purchases. In some countries it is common for large firms, who have better access to formal credit, to make loans to their small scale suppliers so they can buy new equipment and improve their products. However, supplier credit plays an insignificant role in financing equipment in Nepal and none for small firms. This surprising result probably reflects that fact that the largest firms import most of their inputs and do not use local suppliers. Equally surprising is that, as shown in the next to last column in Table 8.26, parent companies do not appear to play a major role in equipment finance. It seems that subsidiaries must be self sufficient after they are founded since they report receiving little help in buying new equipment. This is not because foreign owned firms find it difficult to bring in new capital, as no managers said that restrictions on importing capital is a significant problem.

Table 8.25
Determinants of Investment

Dependent Variable: Whether firm Invested in 1999

Parameter	Estimate	Std Error	Pr > $ \chi^2 $
Constant	-2.86	0.70	0.00
<i>Sector Dummies</i>			
Wood	-0.28	0.49	0.57
Chemicals	1.33	0.70	0.06
Carpets	-0.82	0.50	0.10
Textiles	-1.31	0.54	0.02
Garments	-0.28	0.38	0.46
Metal	-0.63	0.37	0.09
Pharmaceuticals	0.13	0.63	0.84
Non-Metal	0.30	0.61	0.62
Employment	0.44	0.13	0.00
Firm Age	-0.025	0.01	0.10
Age of Equip	0.23	0.12	0.05
Change in Sales	-.03	0.014	0.04
Profit	-0.06	0.03	0.05
Investment in 98	1.19	0.29	0.00

Number of Observations: 177

There is less of a difference in the source of finance between sectors than between size groups. The textiles and food sector use more bank finance than any other sectors and the carpet and wood sectors rely more on internal funds than other sectors. All sectors have bank loans and except for textiles and wood, no one sector relies dramatically more on one source than other sectors do. Bank loans finance almost 38 percent of new equipment purchases in the textile sector. Most of this comes from public banks and is probably the result of government directed credit to a few very large firms. Most wood firms are very small and do not use a large amount of equipment. Thus, they are usually able to purchase new equipment using retained earnings.

The main source of heterogeneity in sources of equipment finance in the sample appears to be between size classes and not sectors. Because of their ability to provide collateral and other guarantees large firms have much better access to bank credit, the main source of finance for the manufacturing sector. Consequently their investment is less constrained by the need to build up retained earnings, which may contribute to the smoother investment and higher investment rate observed in the large firms in the sample. The probit model provides additional evidence to support this view. Firm size, as measured by employment, was positive and highly significant, which means that large firms are more likely to invest even after controlling for sales growth, profit and other factors (see Table 8.25).

8.3.3 Age of the Firm

In studies of other developing countries firm age has been found to be a significant factor influencing investment; older firms are less likely to invest. In one respect this is unexpected. If older firms have stronger reputations and have had time to build up collateral we would expect them to have better access to finance and consequently better able to invest. To explain why older firms do not invest as much, researchers have postulated that they have outdated equipment and were founded to take advantage of government policies existing before liberalization. Such firms are no longer competitive in the new environment so they continue to produce using existing capacity but do not find it profitable to invest. This suggests that old established firms do not transition well to a liberalized environment.

In Nepal firm age was also a negative factor in determining a firm's probability of investing but it was not statistically significant. However, the average age of equipment was highly significant and positive. Firms with older equipment were much more likely to invest than firms with relatively new equipment regardless of the age of the firm. In addition the most important factor explaining investment was whether a firm invested in the previous year. This is in line with the results found in studies throughout the world. Investment projects take time and firms make a series of investments over a number of years until a major investment program is complete. For example a company may take a few years to install a new production line to increase capacity or introduce a new product. It then reduces investment while it absorbs the new technology and rebuilds depleted funds. The fact that firms with older equipment are more likely to invest, no matter when the firm was established, and investment occurs in spurts does not support the hypothesis that liberalization led to the demise of firms established under the old system of protection. Firms that have survived continue to grow and invest in a normal pattern.

8.3.4 Uncertainty and Profits

Though investment rates are low compared to other countries, returns to capital are high. Theoretically, high profit rates should attract capital and investment into Nepal until profit rates are equalized, especially with those in a nearby country like India. Table 8.27 presents data on profit rates and investment ratios in Africa, India and the United Kingdom taken from ISA (1998). The African data is from four countries surveyed previously by RPED and the information on India and the UK come from other studies. Profit rates for firms in Nepal are lower than in Africa but significantly higher than in the UK or India. This raises the question of why investment is so low if profit rates are high.

Table 8.26
Source of Average New Equipment Finance by Size Category

Size Class	Retained earnings	Own Savings	Loan from Director	Loan from Friends	Public Bank	Private Bank	Overdraft	Supplier Credit	Parent Company	New Equity
Full Sample	0.496	0.175	0.046	0.017	0.100	0.097	0.031	0.021	.007	0.045
< 20	0.727	0.152	0	0.091	0.03	0	0	0	0	0
20-49	0.611	0.136	0.034	0.008	0.096	0.067	0	0	0	0.048
50-99	0.530	0.049	0.082	0.020	0.086	0.128	0.032	0.007	0	0.065
100-199	0.441	0.130	0.115	0.008	0.105	0.060	0.025	0.055	0	0.057
200-499	0.602	0.031	0.041	0.012	0.027	0.156	0.058	0.012	0.038	0.009
>499	0.346	0.15	0	0.003	0.315	0.116	0.036	0.018	0.015	0

Source of Average New Equipment Investment by Sector

Sector	Retained earnings	Own Savings	Loan from Director	Loan from Friends	Public Bank	Private Bank	Overdraft	Supplier Credit	Parent Company	New Equity
Food	0.453	0.128	0.071	0.009	0.147	0.074	0.004	0.035	0.026316	0.054
Wood	0.645	0	0.091	0.15	0	0.023	0.091	0	0	0
Chemical and Paint	0.731	0	0.05	0	0.055	0.092	0	0	0	0.073
Carpets	0.833	0	0	0	0.042	0.042	0.083	0	0	0
Textiles	0.332	0.182	0.077	0	0.276	0.091	0	0.023	0.019091	0
Garments	0.407	0.168	0.066	0.021	0.030	0.173	0.08	0.038	0	0.016
Metals	0.556	0.055	0.093	0	0.116	0.093	0	0.018	0	0.063
Pharm.	0.507	0.083	0.044	0	0.051	0.139	0	0	0	0.176
Non-Metal	0.589	0.183	0	0.011	0.139	0.078	0	0	0	0

It has been hypothesized that the high profit rates in developing countries compensate investors for increased risk and this is likely the case in Nepal as well. In the probit current profits are negative and significant, which would appear to contradict the idea that higher profits lead to higher investment. But investment depends upon expected future profits. Higher profits today is the reward for previous investment. To the extent that it might contain information about future profits this is already accounted for in the change in sales. What matters for our discussion is average profit rates over time. Since we do not have time series information on profit rates we look at the average profit rates for all firms. Our interviews reveal that managers perceive the business environment as unstable and highly risky. Therefore the higher average returns in Nepal may be necessary to attract capital and compensate investors for the increased risk. Thus, if the business environment improves and the uncertainty and risk in Nepal falls then investment will increase. There are a wide variety of factors that contribute to the risk of doing business in Nepal including inefficient labor laws, poor legal enforcement and above all unstable government policies that create an unstable business environment.

Table 8.27
Comparative Profit Rates

	Nepal	Africa	India Small	India Large	UK (1983-1986)	UK
I/K						
Mean	.182	.12	NA	NA	0.09	0.12
Median	.053	.004	0.08	0.12	0.07	NA
Profit/K						
Mean	1.45	1.92	NA	NA	0.16	0.13
Median	0.25	0.38	0.07	0.10	0.14	NA

Note: The data for Africa is for Cameroon, Ghana, Kenya and Zimbabwe and is taken from ISA Group 1998. The Indian data is from Athey and Laumas (1994) and the UK data in the last column is from Bond, Elston, Mariaesse and Mulkay (1997). The UK data from 1983-1986 is from Bond and Meghr (1994). All data is reproduced from ISA Group (1998). The Indian data is for firms listed on the Indian stock Exchange. Size categories are based on market capitalization not employment.

In recent years Nepal had made significant strides toward liberalization and opening its economy to market forces. Yet, despite these efforts, as we will show, the business environment remains highly uncertain and not conducive to long term investment. Managers tell us that they are confident that the government is committed to liberalization and will not stray far from its path; if for no other reason than world market forces and international donors leave them little choice. However, managers believe that the new policies are poorly implemented and enforced in a highly arbitrary manner so that the business environment remains very risky. While new laws are often well written, firms believe that the bureaucrats who are charged with executing them have not accepted the reforms and continue to behave as they always have. Thus, it remains very difficult to make predictions about the effects of government policies and risky to invest. This is particularly discouraging for foreign firms who do not have personal connections with the government and many managers said that it is the reason why most take local partners.

Table 8.28
Mean Index of Government Predictability and Efficiency, by Size

Size Class	Index of Government Predictability	Index of Government Inefficiency Today	Index of Government Inefficiency 10 Years Ago
Full Sample	37.48	63.21	41.53
Foreign Own.	35.29	57.64	41.07
No Foreign Own.	37.71	63.72	41.57
< 20	37.70	69.92	40.63
20-49	32.76	61.59	39.19
50-99	44.74	68.32	42.76
100-199	35.28	66.15	45.63
200-499	40.48	53.79	37.96
> 499	29.69	50.00	41.67

Table 8.29
Mean Index of Government predictability and Efficiency, by Size

Sector	Index of Government Predictability	Index of Government Inefficiency Today	Index of Government Inefficiency
Exporters	32.70	60.74	44.34
Non-Exporters	40.27	64.45	40.41
Food	38.22	63.44	40.31
Wood	29.76	76.88	42.65
Chemical and Paint	40.28	60.58	43.75
Carpets	37.75	60.53	53.85
Textiles	32.84	61.11	40.28
Garments	35.92	57.03	28
Metals	38.67	62.86	49.22
Pharmaceuticals	43.33	70.45	36.36
Non-Metal	45.37	60.23	44.44

The survey asked a series of questions to determine the business community's perceptions of government policy. Questions about whether government policy is predictable, whether firms expect the government to change policies without consultation and if the government will continue its liberalization policies were combined into an index of government predictability. If a firm views the government as completely unpredictable the index is 100 and if it is completely predictable the index is 0. The mean value of the predictability index for the entire sample is 37.48, indicating that overall managers view the government as more predictable than unpredictable (see Table 8.28). However, this is misleading because the index is skewed by the question on will the government continue its liberalization policies. Over 60 percent of the respondents said that they found the government very unpredictable while only four percent said

that the government would stray from the path of liberalization (Table 8.30 and Table 8.31). Firms believe that the government will continue with its general liberalization policy and continue to open the market to competition. But within that context, the government remains highly unpredictable. Managers lack confidence that laws will actually be implemented as they are intended and are skeptical that the government will adhere to previous commitments to individual firms and sectors.

The super large firms rank the government highest in predictability since they are well represented in the capital and are able to lobby for their interests. There is little difference among the scores of the other size categories. The score for firms in the 50-99 worker category is slightly higher and that of the 20-49 size group. However, this is probably more a function of the types industries represented in these size classes than a size effect. Wood firms rank the government as more predictable than any other sector while the non-metal firms rank the government as most unpredictable (see Table 8.29). Wood firms do not depend upon government contracts and are affected less by government policies than other sectors. The non-metal sector, consisting of many brick and concrete pipe manufacturers depend heavily on government contracts, so it is not surprising that they rank the government as least predictable. Garments and carpets, the two largest export sectors score the government close to the mean for the full sample. The government predictability index is slightly higher for firms that export more than 10 percent of sales than non-exporters and a smaller percentage of exporters rank the government as highly unpredictable (see Table 8.29). It appears that government efforts to make it easier for exporters are working.

Table 8.30
Percentage of Firms Stating the Government is Unpredictable

Size Class	Predictable	Unpredictable	Very Unpredictable
Full Sample	23.56	13.46	62.98
Foreign Own.	26.32	21.05	52.63
No Foreign Own.	12.17	23.81	64.02
< 20	31.03	0	68.97
20-49	25.00	7.50	67.50
50-99	14.63	12.20	73.17
100-199	22.45	14.29	63.27
200-499	27.27	15.15	57.58
> 499	25.00	50.00	25.00

An index for government efficiency was created from two questions: 1) Is government viewed as a helping hand or as an opponent of business? 2) How efficient are government officials in providing services? A score of 0 is perfect efficiency and 100 is perfect inefficiency and an efficiency index was constructed for today and another for 10 years ago. The mean efficiency index is significantly higher than the predictability index and this reflects managers' disillusionment with the way in which government policies are implemented (see Table 8.28). In discussing whether they view government as an opponent, managers often brought up corruption and incompetence and pointed out that whatever the government's intentions for policies are, the implementation often makes them hurtful to business. Consequently, government ends up as an

opponent. For example, most managers felt that self assessment of income taxes is important and support the law. However, tax officials do not accept self assessments and they continue to arbitrarily levy taxes based on estimated sales. The main outcome of introducing new tax system has been to increase costs to firms because they now have to pay accountants to prepare tax returns that tax authorities ignore.

The efficiency index for 10 years before is significantly lower than the current index. It appears that managers believe that the government delivers services even less efficiently and is less helpful today than 10 years ago. But again this is a bit misleading. Firms that benefited from the liberalization and were founded recently often could not answer questions on efficiency 10 years ago. Firms that were in operation 10 years ago were in a protected market and received many benefits from the government. Now that they face competition they are less likely to perceive the government as helpful. But most managers, even those whose firms were not in operation 10 years ago said that corruption has increased and efficiency has decreased since the advent of democracy.

Table 8.31
Percentage of Firms Stating the Government is Unpredictable, By Sector

Sector	Predictable	Unpredictable	Very Unpredictable
Exporters	21.92	23.29	54.80
Non-Exporters	8.89	23.70	67.41
Food	19.61	7.84	72.55
Wood	36.84	10.53	52.63
Chemical and Paint	23.08	7.69	69.23
Carpets	31.58	21.05	47.37
Textiles	16.67	22.22	61.11
Garments	18.75	21.88	59.38
Metals	32.35	11.76	55.88
Pharmaceuticals	9.09	9.09	81.82
Non-Metal	18.18	9.09	72.73

The efficiency index does not vary much between size categories (see Table 8.28). But the super large firms again give government the best score and the smallest firms rate it as least efficient. Exporters give the government slightly higher marks than non-exporters and among the different sectors garments firms rate the government as most efficient. Garments firms also rated the government as very friendly and efficient 10 years ago. This is probably because in the past garments was a heavily protected market so those lucky enough to operate under this protection felt that the government was much more friendly than they are today when they are faced with the dangers of a competitive market.

Despite recent liberalization efforts, our survey revealed that the business environment for manufacturing firms in Nepal remains uncertain and does not inspire confidence. The large share of firms that rate the government as very unpredictable illustrates the uncertainty and risks of doing business in Nepal. Managers are confident that the government will continue its

liberalization policies but the laws are so poorly implemented that government policy is effectively uncertain. Many managers expressed their unwillingness to expand their businesses because they were uncertain about future conditions. The super large firms and exporters rate the government better than small firms and non-exporters, but all classes of firms give the government low marks. Though the market has become more open and competitive, businessmen believe that higher levels of corruption and inefficiency have accompanied the advent of democracy. The uncertain government policies, corruption and risks they entail, help explain the relatively low investment rates. They also help explain why Nepal has not attracted enough capital inflows and to drive down the high profits to capital ratios.

8.4 Investor Confidence

Overall the manufacturing sector appears to be only moderately confident about growth prospects. Table 8.32 and Table 8.34 report firms' expectations of sales growth in the next year and in the next three years. For the full sample the median value for expected sales growth in the next year is 12 percent and for three years it is 30 percent, showing that most firms expect sales to rise, though at a modest rate. Unfortunately these figures probably significantly overestimate true confidence because optimistic managers were much more likely than pessimistic managers to make sales growth predictions, especially three years out. Many firms that believed that their sales might decline refused to answer this question. Consequently, there are only 140 observations for expected sales growth in three years and most of these were from firms that expected strong growth and were planning to invest. It should be noted that many managers said that their future sales would depend upon government policies on such things as tariffs and taxes. The fact that many firms would not make sales predictions is further evidence of the uncertain business environment.

The largest firms, the ones with the highest investment rates, are the most optimistic and half the super large firms expect sales to be at least 75 percent higher in three years. There is relatively little difference between the other size categories. Expected sales growth is similar for firms with less than 50 workers and larger firms, yet small firms have lower investment rates. This is further evidence that investment by the smallest firms might be constrained by inadequate finance and is not by inadequate investment opportunities. Despite the high profitability, the carpet sector appears to be the least optimistic in the near term, which may contribute to its low level of investment. The median expected sales growth in one year is zero and 25 percent of carpet firms expect sales to fall in the next year (see Table 8.34 and Table 8.35). In the long run textiles appear the least confident with almost 20 percent expecting sales to fall in three years. The pharmaceutical sector is highly optimistic and this helps explain the recent large scale investment in the new pharmaceutical factories. The garment sector is also expecting sales to rise dramatically. Most garments firms rely on taking advantage of the United States textile quota, yet they show little worry over the possibility that it will be removed in the near future.

There is no sign that the low investment rate is likely to improve in the near future — less than half the firms in the sample stated that they expect to make a major investment within the next year or within the next three years. Fewer firms in the carpet and textile sectors said that they were likely to invest than in any other sector. Just over 23 percent of the carpet firms and

40 percent of the textile firms planned to make a major investment in the next three years. This reflects the large unused capacity in these sectors and the fact that fewer firms in these sectors predict rising sales. The pharmaceutical and chemical and paint sectors on the other hand, were the most likely to invest, demonstrating their belief that they are growth sectors.

Investor confidence in the Nepalese manufacturing sector depends very much on what sector and which firms one looks at. Companies in the pharmaceutical and garments sectors seem to believe that sales are going to rise and plan to invest to support the increased sales. Individual firms in other sectors like food and chemical and paints also seem confident. In general large and super large firms are more confident than smaller firms. But overall investor confidence seems to be weak with many firms not expecting sales to increase and most firms not planning to make major investments in the next three years.

Table 8.32
Expected Growth in Sales, Means and Medians by size.

Size Class	1 Year Mean	1 Year Median	Mean	3 Years Median
Full Sample	20.12	12	51.74	30
< 20	17.62	7	21.75	20
20-49	11.39	10	31.07	30
50-99	21.78	16	57.78	50
100-199	23.11	17.5	56.50	40
200-499	11.81	10	56.19	30
> 499	54.79	22.5	135.28	75

Table 8.33
Percentage of Firms that Expect Sales to Change, by Size

Size Class	1 Year			3 Years		
	Rise	Constant	Fall	Rise	Constant	Fall
Full Sample	66.99	19.62	12.44	77.19	12.28	9.36
< 20	63.33	26.67	10.00	72.00	12.00	16.00
20-49	62.50	25.00	12.50	70.97	22.58	3.23
50-99	72.73	15.91	11.36	78.38	16.22	5.41
100-199	67.35	18.37	10.20	73.68	13.16	10.53
200-499	66.67	20.00	13.33	89.29	0	10.71
> 499	68.75	6.25	25.00	83.33	0	16.67

Table 8.34
Expected Growth in Sales, Means and medians, by Sector

Sector	1 Year Mean	1 Year Median	3 Years Mean	3 Years Median
Food	23.22	13	59.93	31.67
Wood	15.3	10	35.42	20
Chemical and Paint	14.27	10	44.1	30
Carpets	10	0	36.54	25
Textiles	17.2	15	49.75	40
Garments	21.16	17.50	63.91	47.50
Metals	25.66	10	57.89	30
Pharmaceuticals	26.85	25	68.13	67.50
Non-Metal	12.50	12.50	17.22	25

Table 8.35
Percentage of firms that Expect Sales to Change, by Sector

Size	1 Year			3 Years		
	Rise	Constant	Fall	Rise	Constant	Fall
Food	68.63	19.61	11.76	79.07	13.95	6.98
Wood	70.00	20.00	10.00	73.33	20.00	6.67
Chemical and Paint	84.62	15.38	0.00	91.67	8.33	0.00
Carpets	45.00	30.00	25.00	82.35	11.76	5.88
Textiles	55.56	22.22	16.67	81.82	0	18.18
Garments	70.97	12.90	12.90	77.27	4.55	13.64
Metals	70.59	23.53	5.88	70.97	22.58	3.23
Pharmaceuticals	81.82	9.09	9.09	88.89	0.00	11.11
Non-Metal	54.55	18.18	27.27	54.55	9.09	36.36

Table 8.36
Percentage of Firms that Expect to Make a Substantial Increase in Investment, by Size

Size	1 Year		3 Years	
	Yes	No	Yes	No
Full Sample	46.15	53.85	48.57	49.71
< 20	40.63	59.37	55.17	41.38
20-49	59.46	40.54	50.00	50.00
50-99	46.51	53.49	47.06	52.94
100-199	36.73	59.18	45.00	52.50
200-499	53.13	46.88	51.72	48.28
> 499	40.00	60.00	36.36	63.64

Table 8.37
Percentage of firms that Expect to Make a Substantial Increase in Investment, by Sector

Sector	1 Year		3 Years	
	Yes	No	Yes	No
Food	44.23	55.77	46.67	51.11
Wood	26.32	73.68	50.00	50.00
Chemical and Paint	76.92	23.08	66.67	33.33
Carpets	26.32	73.68	23.53	76.47
Textiles	33.33	61.11	40.00	60.00
Garments	56.25	40.63	52.17	43.48
Metals	44.12	55.88	51.72	48.28
Pharmaceutical	80.00	20.00	66.67	33.33
Non-Metal	54.55	45.45	55.56	44.44

V. Labor

9 Labor Market in the Nepalese Manufacturing Sector

In this chapter, we present our findings on the structure of the labor market in the manufacturing sector. We will first look at employment distribution in our sample, cross-tabulated along different dimensions, and the characteristics of the labor force that is active in the manufacturing sector. Then we analyze the wage patterns among production workers, followed by an examination of the determinants of production wages and several types of non-pecuniary benefits. Finally, we examine factors related to worker training in the manufacturing sector. Our basic findings are that: (a) there is some evidence of geographical and sectoral segmentation of the labor market, reflected in persistent wage differentials across industries and locations; (b) almost fifty percent of the manufacturing labor force is made up of casual workers, who make similar monthly cash earnings as permanent workers but have much less job security and access to non-pecuniary benefits like health, clothing, and transportation; (c) women are highly disadvantaged in the manufacturing labor market, evidenced by their less than fourteen percent share in total employment and significantly lower wages and allowances received as compared to their male colleagues; (d) labor unions are effective in promoting their members' non-pecuniary benefits, but they seem to have little or no influence on union members' monthly earnings; (e) training is beneficial to workers, evidenced by the fact that a formally trained production worker earns about two dollars more per month than a non-trained worker who has the same earning potential otherwise. However, firms in Nepal invest very little in worker training.

9.1 *Composition and Characteristics of the Labor Force*

9.1.1 Employment distribution by sector and location in RPED sample

We measure the level of employment by the total number of employees in a firm, including all full-time permanent, full-time casual, and part-time workers. Table 9.1 presents the distribution of employment in our sample by sector and location. These figures reflect the number of workers employed at the time of our interview. However, 56 percent of the firms we interviewed said that they had a peak or low season, which on average lasted for four months a year. This leads to the possibility that the total number of workers employed at the time of the interview may overstate or understate the average level of employment year around. To address this potential problem, we constructed a seasonally adjusted annual employment level, which is calculated as the weighted average of employment at the peak or the low season and the normal season, using the duration of the seasons as the weight. The distribution of seasonally adjusted annual employment by sector and location is shown in Table 9.2. As it turns out, there is not much seasonal fluctuation in employment in manufacturing—total seasonally adjusted annual employment in the sample was 34,012, while employment at the time of our survey was 32,972, only a 3 percent difference. The distribution across sectors and locations does not change significantly either. The only movement in the rank of percentage of workers hired occurred in the Pharmaceutical sector in Nepalganj, which we found was caused by one particular firm that hired 2,000 extra workers in the peak season to tap tree sap as an input for its main product. Given that the seasonally adjusted employment level more accurately represents the actual amount of labor engaged in the activity of the manufacturing sector, we'll use it as our employment measure in the rest of this chapter.

Table 9.1
Total Employment of Firms in RPED Sample, by Location and Sector

	Kath- mandu	Birat- nagar	Pokhara	Butwal	Birganj	Nepalganj	Hetauda	Dhan- gadhi	All Locations	Perce- ntage
Food & Beverage	2305 (17)	412 (10)	322 (5)	570 (5)	214 (3)	235 (5)	220 (3)	854 (8)	5132 (56)	16 (25)
Wood & Wood Products	580 (7)	60 (4)	173 (4)	16 (2)	0	102 (2)	16 (1)	0	947 (20)	3 (9)
Chemical/ Paint/ Plastics	166 (3)	511 (4)	0	53 (1)	0	30 (1)	495 (5)	0	1255 (14)	4 (6)
Carpet	6235 (20)	0	0	0	0	0	214 (1)	0	6449 (21)	20 (9)
Textile excluding Carpet	544 (6)	3751 (4)	94 (1)	638 (2)	1209 (3)	30 (1)	0	16 (1)	6282 (18)	19 (8)
Garment/ Leather	5345 (22)	911 (5)	0	185 (3)	408 (2)	0	138 (2)	0	6987 (34)	21 (15)
Metal & Metal Products	582 (10)	566 (9)	55 (2)	606 (7)	1248 (4)	213 (3)	101 (1)	77 (2)	3448 (38)	10 (17)
Pharmaceu- tical	201 (3)	86 (1)	0	46 (1)	583 (3)	142 (3)	0	0	1058 (11)	3 (5)
Non-metal Fabrication	756 (4)	0	137 (3)	0	0	415 (2)	106 (2)	0	1414 (11)	4 (2)
All Sectors	16714 (92)	6297 (37)	781 (15)	2114 (21)	3662 (15)	1167 (17)	1290 (15)	947 (11)	32,972 (223)	
Percentage	51 (41)	19 (17)	2 (7)	6 (9)	11 (7)	4 (8)	4 (7)	3 (5)		

Note: the numbers of firms are shown in the parentheses.

Table 9.2
Total Seasonally Adjusted Annual Employment of Firms in RPED Sample, by Sector and Location

	Kath- mandu	Birat- nagar	Pok- hara	But-wal	Birganj	Nepalga- nj	Hetauda	Dhan- gadhi	All Locations	Perce- ntage
Food & Beverage	2316 (17)	471 (10)	323 (5)	570 (5)	215 (3)	235 (5)	221 (3)	852 (8)	5203 (56)	15 (25)
Wood & Wood Products	557 (7)	61 (4)	176 (4)	16 (2)	0	102 (2)	19 (1)	0	930 (20)	3 (9)
Chemical/ Paint/ Plastics	166 (3)	501 (4)	0	56 (1)	0	33 (1)	498 (5)	0	1254 (14)	4 (6)
Carpet	6168 (20)	0	0	0	0	0	214 (1)	0	6382 (21)	19 (9)
Textile excluding Carpet	538 (6)	3751 (4)	94 (1)	640 (2)	1209 (3)	30 (1)	0	16 (1)	6278 (18)	18 (8)
Garment/ Leather	5393 (22)	1051 (5)	0	185 (3)	333 (2)	0	138 (2)	0	7100 (34)	21 (15)
Metal & Metal Products	583 (10)	551 (9)	55 (2)	612 (7)	1233 (4)	213 (3)	101 (1)	77 (2)	3426 (38)	10 (17)
Pharmaceutical	201 (3)	86 (1)	0	46 (1)	583 (3)	1242 (3)	0	0	2158 (11)	6 (5)

Non-metal Fabrication	644 (4)	0	127 (3)	0	0	415 (2)	96 (2)	0	1282 (11)	4 (2)
All Sectors	16,565 (92)	6,472 (37)	775 (15)	2,126 (21)	3,574 (15)	2,270 (17)	1,286 (15)	945 (11)	34,012 (223)	
Percentage	49 (41)	19 (17)	2 (7)	6 (9)	11 (7)	7 (8)	4 (7)	3 (5)		

Note: the numbers of firms are shown in the parentheses.

9.1.2 Composition of the Labor Force in the Manufacturing Sector

Women in the Work Force In Nepal, the majority of women in the labor force are unpaid family workers. Few women are involved in paid jobs, and even fewer in the formal manufacturing sector. According to a study led by the International Labor Organization in 1997, just over 4 percent of female employment was in the organized segment of the Nepalese economy. Efforts to increase female participation in the labor market have long been called for, yet our data suggest that, at least in the manufacturing sector, the gender gap is still substantial and prevalent. We first look at the percentage of female workers hired in our sample. Table 9.3 shows that overall, only 14 percent of workers employed in the manufacturing sector are women, and the gender gap seems to be related to industry and firm size. Variations across sectors reflect, to some extent, the nature of work involved in each sector. For example, women are more concentrated in the Carpets industry, in which a significant portion of the output is contracted out and probably carried out in households. In contrast, women's participation is minimal in industries such as Metal and Metal Products and Non-Metal Fabrication. It appears that on average bigger firms tend to hire more women. However, there seems to be no such clear-cut pattern within sectors across different firm size levels. This is possibly due to the very small number of observations in our sample for some size-sector combinations. But a closer look at Table 9.3 also suggests that the positive correlation between firm size and female participation rate may arise from the fact that the larger size groups are dominated by Carpets or Garments firms (reflected by the number of observations in Table 9.3), which employ proportionately more women than other sectors. If we exclude carpets and garments, females make up about 10 percent of the workforce in each size category in the remaining sectors. Therefore the variation of the female participation rate in the Nepalese manufacturing sector may be more due to industry characteristics than to firm size.

Women's status in the manufacturing sector is even less favorable than what is shown by the figures in Table 9.3. Examining the division of labor by occupation between male and female employees reveals that women are more likely to hold jobs that require less skill and yield lower pay (see Table 9.4). At the management level, less than 3 percent are women and there are no female proprietors or managers at all in five of the nine sectors we surveyed. Similarly there are very few women professionals (engineers, scientists, economists etc., where university degrees are required to qualify) or technicians—women account for a mere 3 percent of this category. There is remarkable variation among different sectors though. About three-quarters of female managers and professionals are employed in the Garment and the Pharmaceutical industries, indicating that these two sectors are the most favorable to career-seeking women. However, in general, the percentage of women employees increases when we move toward the lower end of the job classification scale when both skills required and social status attached go down. Female workers constitute 17 percent of total production workers, the

highest participation rate by women among all the occupations. Such a distinct pattern does not by itself prove the existence of gender-based discrimination within the manufacturing sector. It could well be the outcome of the fact that women are given less education and training and thus are less qualified for positions requiring managerial, professional or technical knowledge and skills.

Table 9.3
Percentage of Female Workers, by Firm Size and Sector

	0-19	20-49	50-99	100-199	200+	All Sizes
Food & Beverage	9.8	16.8	8.6	17.1	12.9	13.4
Wood & Wood Products	0.0	15.8	31.8	27.7	.	10.3
Chemicals/ Paints/Plastics	.	8.5	9.2	0.5	0.0	5.9
Carpets	.	39.9	.	51.4	43.4	44.3
Textile excluding Carpets	37.5	0.0	27.3	10.3	6.7	16.6
Garments/Leather	.	15.3	5.9	21.4	20.3	16.8
Metal & Metal Products	3.7	3.0	0.6	3.1	1.2	2.3
Pharmaceuticals	.	12.3	10.0	23.4	12.0	14.7
Non-metal Fabrication	5.4	0.0	1.1	13.2	2.7	5.7
All Sectors	7.2	12.1	9.0	16.4	22.7	14.0

Table 9.4
Percentage of Women in Different Occupations, by Sector

	Food & Beverage	Wood & Wood Products	Chemicals /Paints/	Carpets	Textiles excluding Carpets	Garment	Metal & Metal Products	Pharmaceuticals	Non-Metal Fabrication	All Sectors
Management	0.5	3.3	0	4.3	0	12.8	0	0	0	2.8
Professional/ Technician	1.3	0	3.3	4.2	0.1	13.3	0.2	13.9	2.2	3.0
Office/Sales	6.2	13.8	2.2	9.6	1.2	12.1	3.3	5.4	2.5	6.7
Service	7.9	6.7	2.0	13.0	1.1	16.5	3.4	2.9	1.6	7.7
Production Workers	17.8	11.7	6.9	47.5	18.5	20.3	2.3	21.1	6.7	16.7

Share of blue-collar workers It has been observed in some developing countries that one of the factors that drives up labor costs is the disproportionately high ratio of ‘white collar’ (non-production) workers to blue collar (production) workers in the labor force (Mazaheri & Mazumdar, 1998). We examine the share of blue-collar workers to see whether the same problem could be affecting Nepal’s manufacturing sector. We define white-collar workers as those who are managers (either proprietors as managers or employed managers), professionals, technicians, and office and sales workers. Blue-collar workers, which include service workers, supervisors and foremen, production workers, and machine maintenance and repair workers make up around 80 percent of the workforce (see Table 9.5). This is at the higher end of the 70

percent to 80 percent range found in some other developing countries, suggesting that the proportion of white-collar workers may not lead to higher labor cost in Nepal. Carpet firms hire the lowest proportion of white-collar workers because they put out or contract a large part of their operations—much work is done in individual households and there is little need to hire office workers. Pharmaceutical firms, on the other hand, need more technicians and office personnel, given the relatively high technology in their production process.

Table 9.5
Percentage of Blue Collar Workers by Sector

Sector	Percentage	Sector	Percentage
Food & Beverage	71.5	Garment/Leather	89.0
Wood & Wood Products	79.8	Metal & Metal Products	77.0
Chemical/Paint/Plastics	76.3	Pharmaceuticals	59.1
Carpet	92.9	Non-Metal Fabrication	83.3
Textile excluding Carpet	88.1	All Sectors	79.5

An interesting pattern of the share of blue-collar workers across different firm sizes emerges from Table 9.6. With the exception of small firms (20-49 employees), it appears that the larger the firm, the fewer the white-collar workers it has in its workforce. The share of blue-collar workers in firms with the largest size (200+ employees) is over 17 percentage points higher than that in micro firms (less than 20 employees). This could be a possible source of the enhanced cost efficiency larger firms usually enjoy. One explanation for such a size distribution is that white-collar labor is more or less like a fixed overhead cost, which does not need to be increased with the pace of production expansion.

Table 9.6
Percentage of Blue-Collar Workers by Firm Size

	0-19	20-49	50-99	100-199	200+	All Sizes
Percentage	71.6	74.4	78.7	81.6	89.0	79.5

Share of casual workers A common practice among Nepal’s manufacturing enterprises is to hire casual workers. While retaining a large force of casual labor could potentially bring about various problems, such as lack of employee loyalty and therefore commitment, Nepal’s manufacturing sector still chooses to operate with 48 percent casual workers on average (see Table 9.7, Table 9.8 and Table 9.9). During our interviews, entrepreneurs expressed their concerns about the higher costs of hiring permanent workers and the difficulty of firing them. The current labor laws (Labor Act 1992, and its 1998 amendment, Labor Regulation 1993, Labor Court Regulation 1995) stipulate in detail the remuneration, the non-pecuniary benefits such as health and safety provisions and the welfare fund that a permanent worker is entitled to. In addition to these explicit costs, firms may incur implicit costs

in the form of reduced productivity. The owner of one rolling mill factory observes that casual workers hired through sub-contractors are more efficient than permanent workers. By moving from a permanent work force to one employed through a sub-contractor, its production went up from 21-25 tons per day to 35-40 tons per day, a more than 50 percent increase on average, while the wage bill increased only by 25 percent.

The difference in labor productivity between permanent and casual workers could stem from two sources—lack of incentives and poor monitoring. Because the current labor laws make it a costly and difficult process for firms to fire permanent employees, workers with permanent status do not need to worry about the most stringent punishment for shirking. Therefore, casual workers have the incentive to work hard so that they can be appointed as permanent workers who can not be fired anytime. In our interviews managers complained bitterly of high absenteeism by permanent workers, especially during harvest season. Many firms hire casual workers through sub-contractors who take all responsibility for monitoring and managing the workers. Often sub-contractors hire workers based on a special bond, such as being from the same village or of the same ethnic group. This social tie enables them to more easily supervise the workers and achieve a higher level of productivity. In this way firms effectively sub-contract out many of their problems caused by the labor law.

Costs aside, firms seem to be most concerned by the difficulty of getting rid of a permanent worker. The current labor laws provide the procedures by which a permanent worker can be retrenched. According to managers we interviewed, the red tape associated with legal procedures and other factors such as labor unions make retrenchment so difficult that it deters firms from hiring permanent workers. One extreme case provides a good example of how some entrepreneurs view the casual vs. permanent worker issue. A vegetable oil company reorganised its labor force four years ago. Due to overstaffing and a wish to restructure, all the employees voluntarily resigned and were given severance packages. Half were rehired on a two-year contract. A second two-year contract was entered into, and completed satisfactorily. Now the third is due, and the workers want to be made permanent, and have taken the matter to the District Labor Office which has said that the firm has to make them permanent as they have worked for more than 240 days. The firm appealed to the Labor Court six months ago and is waiting for a verdict. The owners told us that if they were forced to make the workers permanent, they would sell the firm.

The extent to which firms are concerned about permanent versus casual workers varies with factors such as sector, location and firm size. Firms in capital intensive sectors like Food and Beverage, Chemical/Paint/Plastics, and Textile (excluding Carpets) rely on permanent employees the most, with a little more than one-third of their workforce comprised of casual labor (see Table 9.7). Labor intensive sectors like carpets have a drastically different style, as one would expect from the contracting-out nature of the carpet industry. More than three-quarters of their employees work on a casual basis.

Table 9.7
Percentage of Casual Workers in Total Employment, by Sector

	Food	Wood	Chem.	Carpets	Textile	Garm.	Metal	Pharma.	Non-metal	All Workers
%	37.1	56.4	38.1	75.9	41.0	48.9	48.8	46.8	58.5	48.2

The variation across locations is quite remarkable too (see Table 9.8). While the ratio of casual workers to total employment is more than 60 percent in Nepalganj and Biratnagar, it is only a little more than 30 percent in the central region represented by Birganj and Hetauda. The more formal structure of employment in these two cities may be because they are in the traditional industrial corridor and have relatively long manufacturing histories.

Table 9.8
Percentage of Casual Workers in Total Employment, by Location

	Kath- mandu	Birat- nagar	Pokhara	Butwal	Birganj	Nepal- Ganj	Hetauda	ghadi	Workers
%	44.0	61.4	52.6	47.9	31.9	61.7	33.7	52.3	48.2

As recorded in Table 9.9, smaller firms employ more casual labor. However this trend is reversed when firm size jumps to above 200 employees. Such a distribution across firm size classes remains the same even if we take the carpet industry out based on the concern that the putting out characteristic of carpet production may boost firm size and percentage of casual workers at the same time. Therefore we need to turn to other factors for possible explanations why the largest firms do not follow the trend.

Table 9.9
Percentage of Casual Workers in Total Employment, by Size

	0-19	20-49	50-99	100-199	200+	All Workers
%	50.5	49.2	47.0	35.6	58.9	48.2

Our interviews revealed that labor unions aggressively pushed firms to grant workers permanent status because only permanent workers can be union members. Therefore, the strength of labor unions may be an important determinant of the share of permanent workers. When we look at worker participation in labor unions, we find an inverse correlation with the share of casual workers (see Table 9.10-Table 9.12). Dividing the sample into size categories shows that there is perfect correlation-- the largest size groups have the highest union participation rates and use the least amount of casual labor. The same is true when the sample is split by sector. Sectors with the highest worker participation in labor unions, i.e., Food and Beverage, Chemical/Paint/Plastics and Textile (excluding Carpets), have the lowest percentages of casual workers in their workforce.

Table 9.10
Mean Participation Rate of All Employees in Labor Unions, by Sector

	Food	Wood	Chem- icals	Carpets	Textile	Gar- ments	Metal	Pharma- ceuticals	Non- metal	All Workers
%	24.1	11.6	38.8	11.2	46.1	17.0	20.9	7.9	19.4	21.8

Table 9.11
Mean Participation Rate of All Employees in Labor Unions, by Location

	Kath- mandu	Birat- nagar	Pokhara	Butwal	Birganj	Nepal- ganj		Dhan- gadhi	All Workers
%	22.2	21.3	28.4	20.1	40.5	5.3	33.8	0	21.8

Table 9.12
Mean Participation Rate of All Employees in Labor Unions, by Firm Size

	0-19	20-49	50-99	100-199	200+	All Workers
%	0	13.4	23.1	36.7	28.6	21.8

In order to be able to examine the impact of different factors on the determination of the share of casual labor while holding other factors constant, we ran a regression of the percentage of full-time casual workers in a firm's total employment on sector dummies, size dummies, dummies for whether the firm has a peak season or not and the percentage of union members in a firm's workforce. The results confirmed that the share of casual workers in a firm's total employment decreases with the labor union participation rates. Most sector and size dummies are also statistically significant, indicating that sector and size specific characteristics other than union participation rates also affect the share of casual workers. Larger firms hire fewer casual workers. The dummy variable of whether the firm has a peak season or not did have the reasonable sign—firms which have a peak season would rely more on casual workers to accommodate the seasonal fluctuation in production than those whose production is pretty stable round the year. However, the detected effect is not statistically significant, which is not very surprising because out of 136 firms who had a peak season in our sample, only 36.5 percent of them reported that they hired extra workers for the peak season.

9.2 The Structure of Cash Remuneration

As part of our survey, we interviewed up to ten workers in each firm that we visited. Workers were classified into the following categories according to job function: managers, professionals (university degree required), technicians, sales and office workers, service workers, foremen and supervisors, production workers, and machine maintenance and repair workers. Whenever possible, we interviewed at least one worker of each type in every firm we visited. Altogether we talked to 1896 workers in the 223 firms in our sample. The interviews gathered information on the worker's age, gender, highest education level attained, years of working experience, whether or not the worker had received any formal training, union membership and

whether the worker was a full-time permanent employee. We also collected data on wages, salaries and non-pecuniary benefits the worker received. These data, together with other labor market information from the firm, enable us to look at the structure of wages and non-pecuniary benefits in Nepalese manufacturing sector.

Table 9.13
Monthly Wages and Allowances in 1999 USD

	Manager	Profess- ional	Tech- nician	Sales and office workers	Service workers	Foremen	Prod-uction workers	Main- tenance and repair	All workers
Wages	124.39	97.09	66.12	54.36	31.62	61.93	35.47	49.71	51.45
Cash Allowances	33.90	29.63	26.39	14.99	8.74	12.58	6.55	7.40	12.57

Table 9.13 shows the breakdown of average monthly wages and allowances by worker types, expressed in US dollars, using the 1999 official exchange rate of NRs 67.95/USD. Monthly wages averaged 51 dollars, with managers on average earning four times as much as service workers and 3.5 times as much as production workers. Allowances make up approximately 20 percent of a worker's total monthly income. Service workers are given disproportionately high allowances compared to other blue-collar workers, which might be because a lot of them are guards and are compensated for the around-the-clock nature of their job. We focus on total cash remuneration, i.e., the sum of wages and allowances in the rest of this chapter, for two reasons. First, total remuneration is what enters into the decision making process for both the demand and the supply side of the labor market and looking at only wages or allowances is inadequate for studying the labor market. Second, workers are often not able to distinguish between wages and cash allowances in their total pay. In our sample, 413 workers, or almost 22 percent of the workers who provided information on wages failed to answer questions about their allowances despite the fact that allowances are mandatory according to labor laws. Thus, reported wages are probably upward biased because they include allowances for some workers. Focusing on total remuneration avoids this problem.

Nepal's current labor laws specify a set of minimum monthly remuneration by worker age and skill level stratifications. Our data of wages and allowances can shed some light on how well firms comply with the minimum wage law and whether it is a binding constraint for the Nepalese manufacturing sector. At the time of our survey, the legal minimum remuneration for adults, consisting of both wage and allowances, was set at four different levels between 26 dollars and 32 per month, depending on the skill level of workers.¹⁰ For laborers younger than 18 years of age it was set at 21 dollars per month. Since we have little information on workers skill levels, we use 26 dollars, the lower bound of the legal minimum wage for adult workers in our analysis. This implies that the compliance with minimum wage law could be worse than our study shows as we won't be able to detect the cases in which workers with higher skill levels are paid below the corresponding legal minimum remuneration but higher than 26 dollars per month. In our survey, 1655 adult employees and 17 workers less than 18 years old reported that they were working full-time in the firm—48 hours per week as defined in the law. Eight percent of

¹⁰ We convert the minimum wages and allowances from Nepalese Rupees to USD to allow easy comparison with other countries.

the full-time adult workers reported receiving less than the legal minimum monthly remuneration. The sum of wages and allowances for this group averaged 22 dollars per month, 18 percent lower than the legal minimum. Three out of the 17 youth workers were paid less than the 21-dollar a month minimum wage—the average underpayment was six dollars, almost 30 percent of the legal requirement. Nearly 98 percent of the under-paid full-time workers were blue-collar workers. Interestingly, none of them were employed in the pharmaceutical sector. The Food and Beverage sector had the most—28 percent of all cases, followed by Metal and Textiles excluding Carpets. Location wise, almost 40 percent of the workers who are paid less than legal minimum remuneration are employed by firms in Biratnagar while firms in Birganj are only responsible for 2 percent of the cases. The number of workers who receive less than the minimum wage rises monotonically as firm size category falls. Less than 10 percent of all cases are found in firms with more than 200 workers, while 33 percent are in firms with less than 20 workers.

To examine the degree of integration of the Nepalese labor market, we analyze earnings patterns across sectors and locations. If workers in Nepal are highly mobile, we should not expect to see persistent earnings differentials across industries and locations. Although it is desirable to study the earnings patterns for each job category, we restrict our attention to production workers to avoid disturbances arising from unobserved heterogeneity among workers in the same job category. Presumably, non-skilled workers are the most homogeneous and hence the most comparable across firms. Non-skilled production workers is the largest job category, comprising 43 percent of the workers in our survey. With 817 workers, this sub-sample provides us with enough variation to disaggregate our observations by sector, location and firm size.

Table 9.14 sets out the average total monthly earnings of production workers (henceforth referred to as production earnings) by sector and location. At first glance, garment firms pay the most to production workers whereas non-metal fabrication firms pay the least. The results of t-test presented in the last column of the table shows that earnings differentials between the Garment sector and other sectors are statistically significant except for Wood and Carpets. The biggest gap in production earnings lies between the Garments sector and the Non-Metal Fabrication sector—on average, production workers in garments firms make 67 percent more in monthly earnings than those in non-metal fabrication firms. However, the high production earnings in the Garments sector does not hold across regions and it seems to be generated only by firms in Kathmandu. This is probably caused by the fact that the garments category in our sample includes footwear and most of the garments firms outside of Kathmandu and Biratnagar are footwear producers who do not export. On the other hand, Wood and Metal firms pay consistently higher wages than other sectors in all locations except Kathmandu. This is not surprising as these two sectors generally require particular skills and training of their workers.

Migration of laborers from the hill and mountain areas to the Terai region is widely observed. However, there still exists evidence of some geographical segmentation of the labor market in Nepal. There appears to be three tiers in the distribution of monthly production earnings across regions—Kathmandu valley on the top, Pokhara, Hetauda and Birganj in the middle, and Butwal, Nepalganj, Dhangadi and Biratnagar at the bottom. Workers in Kathmandu earn 40 percent more on average than their counterparts in Biratnagar. The last row of Table 9.14 shows that with the exception of Pokhara and Hetauda, the difference in average monthly

production earnings between Kathmandu and other regions are statistically significant. The persistent earnings gaps across regions indicate that the Nepalese labor market might be geographically segmented. We would be able to draw the conclusion with more certainty if we could compare the differences in earnings after controlling for the differences in living expenses across regions. Unfortunately, detailed price indices by location are not available so we can not conduct such an examination.

Table 9.14
Monthly Production Earnings in 1999 USD, by Sector and Location

	Kath- mandu	Birat- nagar	Pokhara	Butwal		Nepal- ganj	Hetauda	Dhan- gadhi	Locations	T-test**
Food & Beverage	44.49	26.40	34.98	34.41	38.99	35.44	36.26	30.66	35.02	0.01%
Wood & Wood Products	43.47	40.87	57.31	33.55	.	30.02	37.90	.	43.34	5.48%
Chemicals/Paints/Plastics	41.89	35.67	.	27.96	.	26.49	47.98	.	37.65	0.03%
Carpets	39.88	30.17	.	39.53	6.89%
Textile excluding Carpets	49.78	35.59	38.87	42.15	37.10	32.87	.	22.66	39.42	0.22%
Garments	57.19	34.17	.	31.94	35.05	.	43.08	.	50.14	N/A
Metal & Metal Products	43.06	31.79	42.31	45.12	43.54	42.92	83.59	54.08	42.88	1.69%
Pharmaceuticals	41.21	29.07	.	31.08	42.68	42.06	.	.	38.11	0.02%
Non-metal Fabrication	28.96	.	30.02	.	.	30.54	27.04	.	29.05	0.01%
All Sectors	46.43	33.16	42.60	37.94	39.12	35.71	42.45	35.00	40.53	
T-test* (Prob> T)	N/A	0.01%	29.92%	0.20%	2.16%	0.01%	23.97%	0.01%		

Notes: *--t-test between Kathmandu and each of other locations;
**--t-test between Garments and each of other sectors.

9.3 The Determinants of Remuneration

Previous studies on developing countries have shown that worker wage patterns across sector and location depend on firm characteristics as well as individual worker characteristics (Teal, 1996; Velenchik, 1997; Mazaheri & Mazumdar, 1998). At the firm level, firm size, foreign ownership and export status are the most recognized factors affecting wage levels for workers with similar backgrounds. At the worker level important characteristics include worker's education, training and skill level.

In Table 9.15, we see a positive correlation between monthly production remuneration and firm size, and the differentials in remuneration between extra large firms (with more than 200 employees) and smaller firms (those three groups with fewer than 100 workers) are statistically

significant. Workers in extra large firms earn around 16 percent more per month than those who work for the micro firms. The most likely reason that large firms pay production workers more than small firms is that they have higher productivity. As noted previously, estimation of a frontier production function using our survey data found that total productivity rises with firm size. Another possible reason why larger firms in our sample pay more to their production workers is specific to the structure of the Nepalese manufacturing sector—large firms in this country are mainly carpet and garment producers, a large portion of which are exporters. Aside from higher productivity, if there are other factors that prompt exporting firms to pay higher wages, then it is not surprising to observe larger firms correlated with higher remuneration because they have a higher probability of being exporters.

Table 9.15
Average Monthly Production Remuneration in 1999 USD, by Firm Size

	0-19	20-49	50-99	100-199	200+	All Workers
Avg. Pay	34.98	37.67	39.31	44.16	47.28	40.53
T-test (Prob> T)	0.00	.01	.03	.41	N/A	N/A

As for the role of foreign ownership and export status in the determination of production wages, previous studies in other developing countries have found that foreign firms pay higher wages than domestic ones and exporters pay higher wages than non-exporters (Teal 1996, Mazaheri & Mazumdar 1998). The comparisons from our survey are shown in Table 9.16. Overall, there is not much foreign direct investment in Nepal, resulting in a very small number of observations of foreign owned firms in our sample. For this reason, we define foreign firms as those in which foreigners have any positive shares of ownership. Consistent with previous studies, foreign firms in our sample pay higher wages, approximately 44 percent on average, than their domestic counterparts in sectors where both groups operate. The difference in the metal sector reaches as high as 38 dollars, almost 95 percent of what production workers in domestic metal firms make per month.

The wage gap between exporters and non-exporters is also distinct. We considered any firm that exports at least 20 percent of its products an exporter and found that on average, production workers in exporting firms make \$10 or almost 27 percent more per month than workers in non-exporting firms. The wage differential between exporters and non-exporters also exists at the sectoral level. Textiles is the only sector that exporters do not pay higher wages, but the difference is not statistically significant (see Table 9.16).

Table 9.16
Average Monthly Production Cash Remuneration in 1999 USD by Ownership, Export Status and Sector

	Domestic	Foreign	T-test (Prob> T)	Non-Exporters	Exporters	T-test (Prob> T)
Food & Beverage	34.81	38.71	.0028	33.87	42.24	0038
Wood & Wood Products	42.47	67.21	.0592	42.95	44.78	.7596
Chemicals/Paints/Plastics	35.83	62.55	.0001	35.83	62.55	.0001%
Carpets	39.53	.	.	29.47	43.22	0662
Textile excluding Carpets	39.42	.	.	40.11	35.80	.0028
Garments	49.77	54.05	.6409	41.75	55.41	.0034
Metal & Metal Products	40.47	78.78	.0003	42.19	61.81	.0001
Pharmaceuticals	38.11	.	.	35.67	42.06	.0709
Non-metal Fabrication	29.05	.	.	29.05	.	.
All Firms	39.72	57.26	.00	37.87	48.01	.00

On the worker's side, general knowledge and job specific skills contribute to higher labor productivity, which presumably is the basis for remuneration. Therefore education and training, two basic sources of obtaining general knowledge and skills, are often used to measure workers' earning abilities. For all types of workers we interviewed, 34 percent either had no education at all or only finished primary school (see Table 9.17). Another 38 percent had secondary or middle school as their highest education obtained. Around 14 percent of the sample attended technical or professional schools and another 14 percent were university or professional school graduates. The workforce in pharmaceutical firms contains remarkably high percentage of workers with college or graduate school education, reflecting the uniqueness of the pharmaceutical sector in Nepal's manufacturing industry development—it is much more knowledge intensive than traditional sectors. Table 9.18 shows that before it levels off from large firms to extra large firms, the share of workers with higher education from technical or professional schools, and college or graduate school increases with firm size. As far as production workers are concerned, the distribution by sector or firm size of their education attainment is not much different from that for all types of workers in our sample (see Table 9.19 and Table 9.20). It is not surprising that the majority of them only had primary or at most middle school education.

Table 9.17
Employee Education by Sector (Percentage)

	Food	Wood	Chemical	Carpet	Textile	Garment	Metal	Pharmaceutical	Non-metal	All Workers
Primary	36.3	41.4	32.3	47.3	30.6	21.9	39.0	10.1	45.8	34.4
Secondary	37.9	40.1	31.5	32.3	30.6	52.9	34.1	29.2	34.9	37.7
Tech/Prof	11.5	11.8	17.7	10.4	19.7	15.5	14.0	18.0	8.4	13.8
Higher	14.3	6.6	18.5	10.0	19.1	9.7	12.8	42.7	10.8	14.1

Table 9.18
Worker Education by Firm Size(Percentage)

	0-19	20-49	50-99	100-199	200+
Primary	63.4	46.3	29.9	23.9	26.0
Secondary	26.7	33.7	40.4	39.6	41.6
Tech/Prof.	6.4	11.8	14.6	16.3	15.6
Higher	3.5	8.2	15.1	20.2	16.7

Table 9.19
Production Worker Education by Sector (Percentage)

	Food	Wood	Chemical	Carpet	Textile	Garment	Metal	Pharmaceutical	Non-metal	All Workers
Primary	61.0	51.2	61.7	67.1	51.4	31.3	60.1	31.8	79.3	54.8
Secondary	36.1	46.5	29.8	31.8	40.3	64.8	37.1	54.5	20.7	41.4
Tech/Prof.	2.4	1.2	8.5	1.2	8.3	3.1	2.1	9.1	0	3.2
Higher	0.5	1.2	0	0	0	0.8	0.7	4.5	0	0.6

Table 9.20
Production Worker Education by Firm Size (Percentage)

	0-19	20-49	50-99	100-199	200+
Primary	73.8	64.7	46.2	40.9	47.2
Secondary	25.5	31.8	46.2	56.5	48.4
Tech/Prof.	0	3.0	5.7	2.6	4.4
Higher	0.7	0.5	1.9	0	0

To examine how the manufacturing firms value education, we list the production earnings for different levels of education in Table 9.21 and Table 9.22. Overall, education seems to be rewarded as indicated by the positive correlation between the monthly pay and a production worker's educational attainment. There exist abnormal cases along the dimensions of both sector and firm size. For example, the college-educated workers in the Garments and Pharmaceutical sectors received extremely low pay. But this could be the result of unobserved worker characteristics that could not be averaged out due to too few observations.

Table 9.21
Production Remuneration by Education Level and Sector

	Food	Wood	Chemical	Carpet	Textile	Garment	Metal	Pharmaceutical	Non-metal	All
Primary	32.17	43.34	36.37	40.40	38.74	44.23	42.12	34.76	30.02	38.04
Secondary	38.54	42.59	32.51	37.84	39.95	53.59	43.77	40.52	25.34	43.30
Tech/Prof.	43.27	69.17	61.07	32.74	40.94	45.44	42.43	36.79	.	46.16
Higher	88.30	47.09	.	.	.	22.08	61.81	33.85	.	50.63

Table 9.22
Production Remuneration by Education Level and Firm Size

	0-19	20-49	50-99	100-199	
Primary	34.38	34.67	38.81	41.21	46.13
Secondary	35.98	42.31	39.67	46.04	48.26
Tech/Prof.	.	45.62	42.19	52.94	48.83
Higher	61.81	88.30	34.34	.	.

In addition to basic education, training improves work-related skills and therefore should bring about higher wages. We asked each worker whether he or she had received any formal training from the firm, which could take place either within or outside the firm. About one fourth of the production workers reported being trained (see Table 9.23). However, for reasons ranging from owners' attitude toward training to the complexity of the production process, the percentage of workers who were trained varies across industries, from only 7 percent in the Non-Metal Fabrication sector to almost 50 percent in textile firms. Workers in larger firms are more likely to receive formal training and the variation in the percentage of workers trained across different size classes is also substantial (see Table 9.24). How training might affect monthly production remuneration is shown in Table 9.25 and Table 9.26, by sector and firm size respectively. Workers who were formally trained on average earned 10 dollars more per month than those who weren't. Carpets firms seem to value training the most—the average monthly earnings of trained workers is almost double that of non-trained workers. In the non-metal fabrication group formal training does not appear to lead to higher wages, which may help explain why less than 7 percent of its workers received formal training.¹¹ Presumably, these firms engage in low skilled operations such as making bricks and therefore training is not highly valued and seldom provided.

¹¹ The apparent drop in remuneration for trained production workers in the Non-metal Fabrication industry possibly arises from the special composition of this group in our sample. All trained workers in this group come from Nepalganj, where wages are the second lowest among all the areas in our sample, while for the non-trained workers, 78 percent of them come from Kathmandu and Pokhara, the two areas with the highest wages and the rest 22 percent come from Nepalganj.

Table 9.23
Percentage of Production Workers Trained Formally, by Sector

	Food	Wood	Chemicals	Carpet	Textile	Garment	Metal	Pharmaceutical	Non-metal	All Workers
Trained	15.61	19.77	25.53	14.12	47.22	39.04	27.27	31.82	6.90	25.09
Not Trained	84.39	80.23	74.47	85.88	52.78	60.96	72.73	68.18	93.10	74.91

Table 9.24
Percentage of Production Workers Trained Formally, by Firm Size

	0-19	20-49	50-99	100-199	200+
Trained	6.21	17.41	27.22	31.17	33.96
Not Trained	93.79	82.59	72.78	68.83	66.04

Table 9.25
Average Production Remuneration, in 1999 USD, by Training Status and Sector

	Food	Wood	Chemical	Carpet	Textile		Metal	Pharmaceutical	Non-metal	All Sectors
Trained	42.73	54.70	42.13	68.68	48.86	51.60	44.08	43.82	24.28	48.34
Not-trained	33.59	42.01	36.50	35.53	34.39	49.19	42.43	35.82	29.40	38.23

Table 9.26
Average Production Remuneration, in 1999 USD, by Training Status and Firm Size

	0-19	20-49	50-99	100-199	200+
Trained	36.17	43.43	49.50	47.76	53.43
Not Trained	34.90	36.45	35.59	42.65	44.05

While factors internal to the labor market, including both firm and individual characteristics, are crucial in the formation of market equilibrium wages, we should not neglect some institutional forces that may also play important roles. One such force is labor unions¹².

¹² It is recorded that in early 1998, there were three confederations of trade unions, which consisted of 53 federations, which in turn was made up of 1428 enterprise level unions that were registered after the enactment of Trade Union Act 1992. Our information on union membership in each firm came from two sources. One is our interviews with the human resource manager and the other is our interviews with individual workers. Earlier in this chapter, we have already presented the distribution of union participation of all employees in each firm, reported by the human resource manager. We focus here on labor union participation by production workers who participated in our workers' interview.

The distribution of union membership among production workers (see Table 9.27-Table 9.29) shows that about 16 percent of the interviewed production workers identified themselves as union members. Brick production is seasonal and carpet firms put out a significant portion of their work so they both rely heavily on casual workers who can not be unionized. As expected Non-Metal Fabrication and Carpets firms have the lowest union participation rates among their production workers. Our data also display a trend that workers in larger firms are more likely to be unionized—from no participation at all among production workers in the smallest firms to a bit more than one-third of participation rate in large firms. The drop in the extra large firms may result from the fact that many firms in this size class are carpet firms, which have disproportionately low union participation rate. Location wise, labor unions seem to have the highest penetration rate in Birganj, which has a longer history of industrial development than other regions. In contrast, the less industrialized and isolated far west and mid-west areas, represented in our sample by Dhangadhi and Nepalganj, have negligible union participation. The distribution of union participation across different regions might be the result of intertwined size, sector and geographical factors. For example, firms in the far west are isolated from the rest of the country due to poor infrastructure, they are usually very small and a lot of them engage in non-metal fabrication, all of which may deter the penetration of labor unions.

Table 9.27
Production Worker Participation in Labor Unions (Percentage), by Sector

	Food	Wood	Chemical		Textile	Garment	Metal	Pharmaceutical	Non-metal	All Sectors
Members	20.5	7.0	38.3	4.7	36.1	8.6	14.0	22.7	3.5	16.3
Non-Members	79.5	93.0	61.7	95.3	63.9	91.4	86.0	77.3	96.5	83.7

Table 9.28
Production Worker Participation in Labor Unions (Percentage), by Location

	Kath.	Birat.	Pokh.	Butw.	Birg.	Nepalg.	Hetauda	Dhang.	All Locations
Members	16.4	23.1	22.2	19.6	42.3	1.1	21.7	0	16.3
Non-Members	83.6	76.9	77.8	80.4	57.7	98.9	78.3	100.0	83.7

Table 9.29
Production Worker Participation in Labor Unions, by Firm Size

	0-19	20-49	50-99		200+	All Sizes
Members	0	15.0	13.7		19.0	16.3
Non-members	100	85.0	86.3		81.0	83.7

Interestingly, our data show that there is almost no difference in monthly earnings of production workers who are union members and those who are not (see Table 9.30-Table 9.32). But a more detailed examination across sector, location and firm size class shows that in many cases, non-union members seem to get higher monthly remuneration than union members. In particular, Carpets, Garments, Metal, and Pharmaceutical firms pay 10 to 30 percent more to their non-union production workers than to union members. The same is true for medium and extra large size firms. There could be a number of reasons behind this phenomenon. As we have explained earlier in this chapter, casual workers might have higher productivity than permanent workers. If this is true, since union members consist of only permanent workers, union members might have lower productivity, thus receiving lower pay. It's also possible that entrepreneurs who are reluctant to deal with labor unions are willing to pay a premium for a non-unionized workforce.

Table 9.30
Average Monthly Production Earnings, by Union Membership and Sector

	Food	Wood	Chemical	Carpet	Textile	Garment	Metal	Pharmaceutical	Non-metal	All Sectors
Members	43.33	58.25	36.51	33.11	38.10	40.89	38.95	31.08	39.44	40.49
Non-Members	32.87	42.59	39.89	39.86	40.48	52.50	43.52	40.30	28.68	40.81

Table 9.31
Average Monthly Production Earnings, by Union Membership and Location

	Kath.	Birat.	Pokh.	Butw.	Birg.	Nepalg.	Hetauda	Dhang.	All Locations
Members	44.20	33.80	35.81	39.31	47.63	29.43	45.95	.	40.49
Non-Members	47.02	33.46	44.54	39.06	32.89	35.78	41.67	35.00	40.81

Table 9.32
Average Real Production Wage, by Union Membership and Firm Size

	0-19	20-49	50-99	100-199	200+	All Sizes
Members	.	37.21	34.96	45.42	38.97	40.49
Non-members	35.03	38.26	40.39	43.55	49.39	40.81

From our interviews, we did see indications of unpleasant labor union practices that might encourage companies to pay a wage premium to avoid unionization. Firms often get requests for contributions from unions, particularly before elections and festivals. One firm noted that the frequency of elections in recent years had led to a lot of payments in advance of the elections to the unions, the political parties, and student groups, saying that “we fear they can do anything if we do not pay.” It reported paying USD 4,400 to such groups before one election. A carpet firm received a request from one carpet union during our visit. The firm had not previously heard of the union and did not know if any of its workers belonged to the union, but expected to pay NRs 1,500. There is also a general consensus in public that labor unions in Nepal are highly politicised, which means they might be spending their time and efforts on something other than protecting members’ wages and allowances. It is not uncommon for multiple unions, each representing a different political party to be active in one plant. In one particular location that we visited, two firms, one leather and one vegetable oil, bemoaned that the infighting between two political parties had spilled over into their workplaces through labor unions connected with the two parties.

However, labor unions might make up for lower wages by securing higher non-pecuniary benefits for their members. In our survey, we asked questions on non-pecuniary benefits that include the provision of health care, transportation and clothing by the firm. While it appears common for Nepalese manufacturing firms to provide non-pecuniary benefits to their workers, as approximately two-thirds of all production workers in our sample reported receiving some form of these benefits, union members seem to have even better access to them—more than 90 percent of the union members acknowledged that they received health care, transportation or clothing from their employers, indicating that labor unions might be effective in helping their members to secure benefits other than cash remuneration (see Table 9.33-Table 9.35).

Table 9.33
Percentage of Workers with Access to Non-Pecuniary Benefits,
by Union Membership and Sector

	Food	Wood	Chemical	Carpet	Textile	Garment	Metal	Pharmaceutical	Non-metal	Sectors
Members	100	100	100	0	100	36.4	100	100	100	91.73
Non-members	54.6	72.7	96.0	38.3	90.9	55.5	71.5	64.7	39.3	61.5

Table 9.34
Percentage of Workers with Access to Non-Pecuniary Benefits,
by Union Membership and Location

	Kath	Birat	Pokhara	Butwal	Birganj	Nepalganj		Dhangadhi
Members	83.0	97.2	10	100	90.9	100	100	.
Non-members	56.8	84.1	45.2	75.0	100	61.5	66.7	35.3

Table 9.35
Percentage of Workers with Access to Non-Pecuniary Benefits,
by Union Membership and Firm Size

	0-19	20-49	50-99	100-199	
Members	0	100	100	100	63.3
Non-members	66.9	43.0	75.0	67.3	60.9

9.4 Estimation of an Earnings Function

Our analysis in the previous sections relies on the cross-tabulations of earnings with various firm and individual worker characteristics. Inevitably it has the weakness of not controlling for other factors when examining the impact of a particular factor on earnings. Estimating an earnings function allows us to control for these other factors. Hence, to obtain a better understanding of the determinants of earnings, we run a regression of production worker's monthly remuneration on the firm and individual characteristics we have discussed in the previous section. Our model is of the form

$$Y_{ij} = X_{ij}\beta + Z_j\gamma + u_{ij} \quad (1)$$

The dependent variable, Y_{ij} , is the log of real monthly earnings for production worker i in firm j . X_{ij} is a set of worker specific variables that include 'male', 'union', 'training' and 'permanent', which are dummies for gender, union membership, training status, and whether the worker is a full-time permanent employee or not, respectively. X_{ij} also includes variables that capture acquired characteristics of each worker—three education dummies 'secondary', 'technical' and 'higher', with none or primary school education as the excluded class, 'log(age)', a

proxy for the experience before the worker joined the current firm, 'log(yrs)', the number of years the worker has been with the firm. We also include 'age2', the square of log(age) and 'yrs2', the square of log(yrs) to capture whether the marginal benefits of experience decline with longer years of experience. Z_j is a set of firm specific variables. The sector and location dummy variables are used to capture unobserved firm characteristics. Variables that capture the observable firm characteristics include dummy variables 'foreign' and 'exporter', defined in the same way as in the previous section, 'entrep', equal to 1 if the firm has sole proprietorship or partnership legal status and 0 otherwise and four size categories with micro (less than 20 employees) as the excluded category.

The results of the estimation of equation (1) are listed in Table 9.36. The estimation confirms a lot of our findings in the cross-tabulations. After controlling for other factors foreign owned firms and exporters pay higher remuneration to production workers than their counterparts by 19 percent and 8 percent, or \$7.60 and \$3.40 respectively when evaluated at the mean of monthly production earnings. There is evidence of possible gender-based discrimination. After controlling for other possible factors, a male employee still earns on average \$13.20 more than a female and the difference is highly significant. Education, especially that received from secondary or technical school, enhances the earning ability for production workers, raising monthly pay by \$2.10 and \$5.20 respectively. Training is also rewarding as the monthly earnings of an average worker who received formal training is \$3.00 higher than that of an average worker who didn't get formal training. On average, the wage premium for not joining any labor union, when other factors are held constant is \$3.40. This suggests that unless non-pecuniary benefits available to union members are large, firms may indeed be paying a premium to avoid unionization of their workforce. Permanent or casual working status seems to make no difference in terms of earning—casual workers earn slightly higher by \$0.80 per month, but the differential is not statistically significant.

We also estimated how firm and individual worker characteristics affect the probability of production workers receiving non-pecuniary benefits. We find that sole proprietorship or partnership firms are less likely to provide health, transportation or clothing benefits to their production workers than private limited or public companies. A full-time permanent worker has better chance of getting non-pecuniary benefits than a casual or part-time worker. Union membership also help workers in terms of getting access to employer provided health, transportation or clothing benefits. Interestingly, unlike in the earnings function, gender does not appear to matter for whether a worker will get non-pecuniary benefits or not as the coefficient is not statistically significant. Due to small number of observations for foreign or exporting firms and the prevalence of firms providing benefits, there seem to be not enough variation in our sample to compare foreign vs. domestic, and exporters vs. non-exporters in the probability of providing non-pecuniary benefits — the estimates of 'foreign' and 'export' are both insignificant.

Table 9.36
Determinants of Earnings of Production Workers

Dependent Variable: log of monthly earnings in 1999 USD

Parameter	Estimate	Std Error	Pr > T
Constant	-1.54	1.45	0.29
Observed Firm Characteristics:			
Foreign	0.17	0.06	0.01
Exporter	0.08	0.04	0.04
Entrep	-0.05	0.03	0.06
Unobserved Firm Characteristics:			
Sector Dummies			
Food	0.21	0.07	0.00
Wood	0.37	0.08	0.00
Chemicals	0.25	0.09	0.04
Carpets	0.13	0.08	0.11
Textiles	0.33	0.08	0.00
Garments	0.41	0.08	0.00
Metal	0.36	0.07	0.00
Pharmaceuticals	0.29	0.10	0.00
Size Dummies			
Small	0.01	0.04	0.90
Medium	-0.05	0.05	0.32
Large	0.12	0.05	0.01
Extra Large	0.14	0.06	0.02
Location Dummies			
Kathmandu	0.06	0.06	0.25
Biratnagar	0.25	0.05	0.00
Pokhara	0.11	0.07	0.14
Butwal	-0.09	0.07	0.20
Birganj	-0.11	0.08	0.21
Nepalganj	-0.11	0.06	0.06
Hetauda	0.04	0.08	0.61
Worker Characteristics:			
Male	0.30	0.03	0.00
Log(Age)	2.22	0.87	0.01
Log(YRS)	0.05	0.01	0.00
Age2	-0.30	0.13	0.02
YRS2	0.01	0.01	0.07
Training	0.07	0.03	0.04
Education Dummies:			
Secondary	0.05	0.06	0.03
Technical	0.12	0.07	0.09
Higher	0.24	0.12	0.16
Union	-0.08	0.04	0.04
Permanent	-0.02	0.03	0.62

Number of Observations 801

R-Square 0.38

Table 9.37
Determinants of Non-Pecuniary Benefits

Dependent Variable: Whether a Worker Received Non-pecuniary Benefits or Not

Parameter	Estimate	Std Error	Pr > $ \chi^2 $
Constant	1.97	0.46	0.06
<i>Unobserved Firm Characteristics:</i>			
<i>Sector Dummies</i>			
Food	0.55	0.30	0.06
Wood	0.51	0.32	0.11
Chemicals	1.61	0.46	0.00
Carpets	-0.66	0.35	0.06
Textiles	1.66	0.41	0.00
Garments	-0.46	0.32	0.16
Metal	0.74	0.31	0.02
Pharmaceuticals	0.13	0.43	0.77
<i>Size Dummies</i>			
Small	-0.59	0.18	0.00
Medium	0.09	0.20	0.66
Large	0.56	0.21	0.01
Extra Large	0.36	0.27	0.19
<i>Location Dummies</i>			
Kathmandu	0.74	0.24	0.00
Biratnagar	-1.34	0.24	0.00
Pokhara	-0.01	0.29	0.97
Butwal	1.02	0.33	0.00
Birganj	2.24	0.59	0.00
Nepalganj	0.36	0.23	0.12
Hetauda	0.74	0.33	0.02
<i>Observed Firm Characteristics:</i>			
Foreign	0.04	0.33	0.91
Exporter	0.13	0.18	0.45
Entrep	-0.51	0.12	0.00
<i>Worker Characteristics:</i>			
Male	0.11	0.14	0.43
Union	0.52	0.22	0.02
Permanent	0.21	0.13	0.09

Number of Observations 805

9.5 Training

Liberalization has opened the market and forced firms in Nepal to compete head on against both local challengers and imports. In order to survive in this new environment, firms must enhance their competitiveness by increasing their productivity. One of the most important factors in doing this is increasing technical capabilities by investing in worker training. This section looks at the current patterns of worker training in the manufacturing sector.

Formal worker training is a key element in improving productivity, yet Nepal does very little compared to other countries.¹³ The vast majority of training is done informally, on the job, and 84 percent of the firms in our sample stated that they make little or no investment in training.¹⁴ About 45 percent of firms in the sample claimed to have invested in at least some formal training in the past year. However, on average firms trained only 11 percent of their work force, about a third of what is found in Western Europe and East Asia.¹⁵ Just over 10 percent of firms have training specialist on their staff and what little formal training is conducted is mostly done by outside institutions or by equipment suppliers. Though the amount of training conducted in Nepal is low by international standards, the patterns are similar. As in other countries, large firms and firms with many skilled workers relative to unskilled workers do more training than small firms and ones with low skill ratios. Also most formal training goes to skilled production workers or non-production workers and very little goes to unskilled production workers.

As shown in Table 9.38, there is a large degree of variation across size classes in the percentage of firms providing formal training. A much greater percentage of large firms than small firms provided formal training in the last year and on average large firms trained a much greater percentage of their work force. This is the same pattern found in other countries and arises because training is relatively more expensive for small firms than large firms. Training programs have high fixed costs that small firms can not spread out over many workers so they incur a higher training cost per worker. Often it is more costly for small firms than large firms to have workers gone for training. In addition, small firms tend to have higher worker turn over so that they are more likely to lose a recently trained worker than large firms. Another important factor is that small firms have less access to capital so they are less likely to invest in training for the same reason that they are less likely to invest in capital equipment.

¹³ For the purposes of our study we define formal training as any activity conducted inside or outside the firm for the specific purpose of training. Formal training includes training by specialist in the firm, formal class room instruction at universities or technical instructions from equipment suppliers on the operating new machines. This is in contrast to informal on the job training where workers are expected to learn as they produce and receive training in an unstructured environment.

¹⁴ This figure is based on the number of firms that answered the question about why they invested little or nothing in training. See Table 12.

¹⁵ Studies in Western Europe and Asia have shown average percentage of workers trained ranging from 25-36 percent. See Lynch (1994).

Table 9.38
Percentage of Firms Providing Training in the Past Year, by Size.

Size Class	Formal Training				Informal Training
	Providing Formal Training	Training From Own Staff	Training From Suppliers	Training From Institutions	
Full Sample	46	11	22	32	87
< 20	12	0	3	9	88
20-49	33	2	20	24	88
50-99	59	12	22	49	90
100-199	57	12	31	39	90
200-499	61	26	30	35	78

Table 9.39
Percentage of Firms Providing Training in the Past Year, by Sector.

Sector	Providing Formal Training	Training From Own Staff	Training From Suppliers	Training From Institutions	Informal Training
Food	46	7	26	35	89
Wood	35	0	10	30	100
Chemicals	57	14	29	50	93
Carpets	33	19	10	24	62
Textiles	50	22	17	28	100
Garments	47	9	15	29	77
Metal	47	3	29	32	89
Pharm.	73	55	55	36	91
Non-metal	27	0	18	18	91

The majority of training in Nepal goes to skilled production workers or non-production workers. As indicated in Table 9.42, on average firms in the sample directed over 50 percent of total training to skilled workers and 30 percent to non-production workers. Some unskilled production workers did receive training but most of this training was for short duration. Just looking at the number of workers trained without considering the intensity of the training would exaggerate the resources devoted to unskilled workers. We determined total training by multiplying the number of workers trained by the average number of training days they received. Thus, it is a measure of man days of formal training received in the last year and the results are similar to what is found in other countries. Most firms invest in upgrading the capabilities of already skilled workers because this provides more value than training unskilled workers. Firms in the largest size class spent the most on non-production workers while the smallest firms spent almost nothing. Large firms are complex and have a strong need for skilled managers while small firms face less of a management challenge and concentrate their limited resources on skilled production workers.

Table 9.40
Percentage of Total Training, by Source, Means and Medians Across Size

Size Class	Staff Specialist		Equipment Supplier or Partner		Outside Institution*	
	Mean	Median	Mean	Median	Mean	Median
Full Sample	16	0	42	11	43	13
< 20	0	0	33	0	67	100
20-49	22	0	60	69	38	10
50-99	9	0	23	0	61	91
100-199	21	0	47	32	31	6
200-499	19	0	41	4	39	13

Notes: Total training is defined as the number of employees receiving formal training times the number of days the average trainee received.

* Outside institutions included Universities, trade associations, technical schools, etc. Number of days the training lasted.

In addition to being more likely to provide formal training, large firms are also more likely to have trainers on staff so they rely less on external institutions than small or medium sized firms. Given the high fixed costs of training programs, it is not surprising that almost no small firms have training specialist in their employ and they rely much more on training by institutions. The incidence of formal training by non-related institutions such as universities and trade associations is greater than that of training by suppliers and business partners. However, this is misleading because the total amount of training received is close to the same for these two sources. For those firms that provided formal training, Table 9.40 and Table 9.41 show the percentage of formal training by source across size and sector. The median percentage of man days of training across all firms provided by equipment suppliers or business partners is 11 percent and by outside institutions is 13 percent. The mean values for the two sources are also close. Much of the formal training takes place when equipment suppliers send technicians to help install and bring on line new equipment. Most other training is conducted by outside institutions such as universities or trade associations.

Along with size there is a large variation in training by sector. Firms in industries that require higher skills and use more technology invested more in formal training. The pharmaceutical sector, which has the highest skill ratio, also reported the highest incidence of training and on average trained the largest percentage of its work force (See Table 9.39 and Table 9.45). Over 72 percent of pharmaceutical firms provided some formal training and the average firm in this sector trained 17 percent of its work force. The chemical and paint and the textile sectors also require many skilled workers. Consequently, they reported relatively high incidences of formal training and on average trained a larger percentage of their work force than other sectors.

Table 9.41
Percentage of Total Training, by Source, Means and Medians Across Sector

Sector	Staff Specialist		Equipment Supplier or Partner		Outside Institution*	
	Mean	Median	Mean	Median	Mean	Median
Food	8	0	46	40	47	37
Wood	0	0	29	0	71	100
Chemicals	15	21	47	45	38	10
Carpets	37	0	18	0	45	9139
Textiles	27	0	25	0	48	641
Garments	17	0	41	0	42	1
Metal	6	0	59	96	34	4
Pharm.	48	48	27	11	25	32
Non-metal	0	0	60	81	40	19

Note: Total training is defined as the number of employees receiving formal training times the number of days the average trainee received.

* Outside institutions included Universities, trade associations, technical schools, etc. number of days the training lasted.

Sectors, such as carpets, wood and non-metal, that have many small firms or require mostly low skilled workers conducted less formal training than other sectors. The carpet, wood and non-metal sectors reported the lowest percentage of firms that invested in formal training. The carpet sector has the lowest skill ratio and most of its workers are weavers who are paid piece rate and work seasonally. Since they are low skilled, firms receive less benefit from training them. In addition, there is high labor turnover among carpet workers so if one firm were to train its workers they would be lured away very quickly. Large carpet firms do invest in training, but it is mostly for managers and technical personnel who do the dyeing and other high skilled jobs. Wood firms are generally small and also face a problem with worker turn over. Though furniture making firms require skilled artisans, if one small firm undertakes to train a worker it is likely to lose him to another firm. Consequently they are less likely to train workers and many small furniture manufacturers expressed a desire for a government institution to begin training carpenters.

Table 9.42
Percentage of Total Training by Worker Type, Means and Medians, by Size.

Size Class	Non-Production Workers		Skilled Production Workers		Unskilled Production Workers	
	Mean	Median	Mean	Median	Mean	Median
Full Sample	30	0	53	52	17	0
< 20	11	0	89	100	0	0
20-49	26	0	51	50	23	0
50-99	27	0	64	93	9	0
100-199	30	0	50	30	21	0
200-499	36	13	45	28	19	0

Notes: Total training is defined as the number of employees receiving formal training times the number of days the average trainee received.

Firms in industries that rely on highly skilled workers, such as pharmaceuticals and chemicals, are much more likely to maintain training specialists on their staffs. On the other hand firms in industries with relatively low skilled workers, such as wood and non-metal, typically retain no training staff and rely exclusively on outside sources. Sectors where most of the training is needed for maintenance and operation of machines, such as the garments and metal sectors, receive much of their training from suppliers and business partners. The usual case it for machine suppliers send technicians to help install and train operators for new machines. They occasionally return to trouble shoot the new machinery and train workers on specific problems. Most training for non-production workers is carried out in-house or at local institutions and very little comes form suppliers and partners. All sectors give the majority of their training to skilled production workers. Those sectors that appear to provide large amounts of training to non-production workers do so because there are many large firms within the sector that require skilled managers. Or, as in the cases of chemicals and pharmaceuticals, they are knowledge intensive industries and require highly skilled non-production workers such as chemists and lab technicians.

Firms with foreign ownership are far more likely to provide formal training than domestic firms. As indicated in Table 9.46, nearly 85 percent of foreign owned firms, twice the rate of domestic firms, reported conducting some formal training in the last year. This is not surprising since we expect that foreign firms are bringing in new technologies and must train the local workers. This differential between domestic and foreign owned firms amply demonstrates the role of foreign direct investment in increasing the technical capabilities of Nepalese manufacturing. Surprisingly, exporters as a group did not conduct significantly more training than non-exporters. When we define exporters as those that export more than 10 percent of sales, 49 percent of exporting firms invested in formal training while 44 percent of non-exporters did.¹⁶ The mean percentage of the work force that received formal training was actually higher for non-exporters than exporters. Knowing that most carpet firms export and don't need to

¹⁶ When the percentage of sales used to define exporters is changed the results are similar.

conduct much training we investigated the effect of dropping carpets. The results did not change and there still appears to be no significant difference between exporters and non-exporters. We would expect exporters to invest more in training since they need to increase their productivity to compete on the world market. However, if the domestic market is open to imports and domestic firms effectively compete on the world market there may be little difference between the two groups.

Almost all firms conduct informal training in one way or another. It is mostly on the job training where workers learn by watching more experienced workers and receive some informal instruction by supervisors. Generally production workers receive little training beyond this. The managers of slightly fewer than 60 firms in the entire sample could provide information on how long their firms train new hires until they are considered fully trained and productive. The mean was 67 days but the median was 30 suggesting that a few large firms train workers for an extended period of time but the majority do not. What is instructive is that most managers could not answer the question. Either these firms consider workers to be fully trained when they are hired or training is so unimportant that the managers do not know how a typical production worker is trained. This highlights the fact that training is not an important priority and very few firms in Nepal have instituted a rigorous training program designed to increase the technical capabilities of their workers.

When asked how many days of training the average production worker receives annually after he has been with the company for at least a year, even fewer firms responded. Only 52 firms could give an answer. The mean time for those that did was 8.6 days and the median under two. Most firms said that they only provide additional training when they made changes to production such adding different machines or introducing a new product. It appears that once a worker is trained, firms devote almost no resources to increasing his skills or maintaining his proficiency. Only the very largest firms did much additional training.

Almost all of the worker training is conducted independently by firms. As discussed previously, training has high fixed costs and that can be a major impediment to small firms that are unable to spread the costs over many workers. One solution is for firms to band together and jointly institute training programs. This not only serves to spread the costs but helps reduce the problem of labor turnover. A company is less likely to poach a rival's workers if they jointly bore the cost of training them. In many countries such cooperative schemes are carried out under the auspices of government agencies or trade associations. Unfortunately, in Nepal it appears that the government agencies, trade associations and training companies play an insignificant role. Only 12 firms said that they had participated in any joint training programs and most of those were with government agencies or trade associations. There have been some attempts to establish government technical schools but managers do not believe that this has been enough. And the need for better worker training by schools or institutions was a constant refrain in the interviews.

Table 9.43
Percentage of Total Training by Worker Type, Means and Medians, by Sector.

Sector	Non-production Workers		Skilled Production Workers		Unskilled Production Workers	
	Mean	Median	Mean	Median	Mean	Median
Food	46	50	49	44	5	0
Wood	20	0	0	100	0	0
Chemicals	20	10	65	75	15	0
Carpets	50	50	20	0	30	0
Textiles	15	0	75	100	10	0
Garments	27	0	42	15	30	0
Metal	6	0	61	72	32	9
Pharm.	31	10	54	49	15	3
Non-metal	71	1	29	0	0	0

Note: Total training is defined as the number of employees receiving formal training times the number of days the average trainee received.

Table 9.44
Percentage of labor Force that Received Formal Training And Skill Ratios, Means and Medians, by Size

Size Class	percent That Received Training		Skill ratio	
	Mean	Median	Mean	Median
Full Sample	11	0	.20	.17
< 20	1	0	.29	.25
20-49	10	0	.25	.22
50-99	15	0	.21	.18
100-199	18	0	.18	.14
200-499	6	0	.11	.06

Table 9.45
Percentage of Labor Force That Received Formal Training and Skill Ratios,
Means and Medians, by Sector

Sector	% That Received Training		Skill ratio	
	Mean	Median	Mean	Median
Food	11	0	.28	.26
Wood	1	0	.20	.18
Chemicals	18	0	.24	.20
Carpets	1	0	.07	.04
Textiles	14	0	.12	.12
Garments	17	0	.11	.07
Metal	12	0	.23	.19
Pharm.	17	0	.41	.48
Non-metal	1	0	.17	.19

Table 9.46
Percentage of Firms Conducting Formal Training
and Percentage of the Work Force Trained

	Foreign Owned	Domestic Owned	Exporters	Non-Exporters
Provide Formal Training	84	42	49	44
Percentage of Work Force Trained				
Mean	.18	.10	.09	.14
Median	.02	0	0	0

When asked why they invest nothing or invest very little, almost 84 percent of the firms responded. Plainly manufacturing firms in Nepal recognize that they invest little in training since only firms that felt that they were investing significant amounts did not answer. The lowest proportion of such firms were in the pharmaceutical sector which has the highest incidence of training. Table 9.47 shows a break down of why firms said that they do not invest more in training and some firms gave multiple answers. A small percentage of those that answered said it was either because training was too expensive, they lacked knowledge on how to manage training or they have a high labor turnover. A little under 10 percent said that there was a lack of training sources that fit the companies needs. But by far the most often cited reason, given by almost 73 percent of respondents, was that they do not need to do more training. Again, this is quite surprising given that has been proven that training provides a large boost to productivity.

Table 9.47
Percentage of Firms Who Don't Invest Much, By reason Across Sector

Sector	% That Don't Invest Sig.*	4 Do Not Need	1 Not Affordable	2 High Labor Turnover	3 Lack of Knowledge	5 about Benefits	6 No Training Facilities
Food	96	69.23	5.77	1.91	17.31	0.00	5.77
Wood	83	75.00	12.50	0.00	0.00	0.00	12.50
Chemicals	86	75.00	0.00	8.33	0.00	0.00	16.67
Carpets	86	88.89	0.00	11.11	0.00	0.00	0.00
Textiles	100	66.67	15.56	11.11	5.56	0.00	11.11
Garments	94	75.00	5.56	5.56	8.33	0.00	5.56
Metal	87	72.73	6.06	6.06	3.03	0.00	12.12
Pharm.	36	75.00	0.00	0.00	25.0	0.00	0.00
Non-metal	100	54.55	18.18	0.00	0.00	9.09	18.18
All sectors	84	72.60	6.30	4.80	7.20	0.05	8.70

Notes: * The percentages given in the last 6 columns are out of those that answered the question why they invested very little or not at all in training.

1. Training is not affordable because of limited resources.
2. Training is costly because of high labor turnover.
3. Lack knowledge about training or techniques and the management of training program.
4. Do not need training because any of the following:
 - a) the firm uses a mature technology and recruits quickly become proficient in the job through learning by doing.
 - b) skilled workers are readily hired from other firms.
 - c) skills provided by schools are adequate for our needs.

Table 9.48
Percentage of Firms* that Did Not Need to Invest Much in Training, By Reason Across Sector

Sector	A Mature Technology	B Workers Readily Hired	C Skills Provided by Schools Adequate	D Other
Food	46	13	2	6
Wood	50	30	0	10
Chemicals	36	29	0	0
Carpets	24	38	0	14
Textiles	22	28	0	17
Garments	24	47	0	9
Metal	21	26	0	16
Pharm.	19	9	0	0
Non-metal	45	0	0	9
All sectors	33	26	.5	10

Notes * Percentage of Sample that answered the question on why they invested very little or not at all in training.

The percentages given in the last 6 columns are out of those that answered the question.

- (A) The firm uses a mature technology and recruits quickly become proficient in the job through learning by doing.
- (B) Skilled workers are readily hired from other firms.
- (C) Skills provided by schools are adequate for our needs.
- (D) Other, such as most work was contracted out and therefore didn't deal with workers directly.

We are now left with the central question; why don't firms in Nepal invest more in training when its value has been proven? Firms that invest in worker training have been shown to be more productive and firms with the lowest level of training benefit the most from additional training. We have also seen that workers who receive training are rewarded with higher wages. Yet, less than half the firms in our sample conducted any formal training in the past year and those that did conducted very little. Is it because firms do not see a need for training? A little over 60 percent of managers listed worker training as a needed business support service. This is a smaller proportion than found in studies of other countries, but still a significant number of firms see a need for help with training. Most of the firms that did not see a need for additional worker training services felt that they were capable of providing necessary training themselves. As expected, more firms in high skill ratio industries such as pharmaceuticals and textiles saw training as a needed support service. On the other hand only 33 percent of firms in the carpet sector, which hires few skilled workers and pays piece rate, saw a need for support services in worker training.

Table 9.48 and Table 9.49 show a break down of the "do not need" responses into more specific reasons. The majority of firms gave one of two reasons; either they use a mature technology and recruits quickly become proficient or they can hire already skilled personnel. In actuality these answers are very close since firms can hire already skilled workers because they use old technology that workers are familiar with. Table 9.48 gives the percentage of firms in each sector of the full sample that said they did not need to invest more in training.¹⁷ Firms in the wood and food sectors were most likely to say that they do not need to train because they use mature technologies that are easily learned by new hires. Pharmaceutical and metal firms were the least likely. More carpet and garment firms than other types of firms felt that they could easily hire skilled workers. Almost no firms said that they did not need to do training because the skills provided by schools were adequate and most firms specifically stated that the school system does little to prepare workers.

Most managers feel that it is not worth the high cost to do much worker training. India provides a huge source of readily available, well trained workers that Nepalese firms can easily access. Consequently, as long as they use tried and true production methods and buy common machinery from India it is easier and less expensive to hire skilled workers than to train their own. This helps explain the large number of Indian technicians and managers employed by Nepalese manufacturing firms. It also lets us understand why many new firms stated that they poached workers from other firms instead of training their own. Hiring already skilled workers allows firms to avoid the high fixed costs of training workers and reduces the costs associated with worker turn over. But it also means that they will not be able to use innovative technology. This approach does not work for firms that call for large numbers of very skilled workers or use technologies that are new. Pharmaceuticals is a case in point. All of the workers must be relatively skilled and the technology is always changing. Consequently, pharmaceutical firms are forced to do much of their own training.

¹⁷ Note that Tables 1.46 and 1.48 give the percentage out of the number of firms that answered the question on why they did not invest. Tables 1.47 and 1.49 give percentages out of the entire sample. This gives a better feel for how many firms in different sectors do not need to train.

Table 9.49
Percentage of Firms Who Don't Invest Much, By reason Across Sector

Size Class	1 Not Affordable	2 High Labor Turnover	3 Lack of Knowledge	4 Do Not Need	5 Skeptical about Benefits	6 No Training Facilities
< 20	5.0	0	2.50	87.5	0	5.0
20-49	4.0	4.0	16.0	64.0	2.0	10.0
50-99	5.41	5.41	5.41	65.57	0	16.22
100-199	13.04	6.52	6.52	65.22	0	8.70
200-499	2.86	8.57	2.86	82.86	.5	2.86

- Notes: * Percentage of Sample that answered the question on why they invested very little or not at all in training.
The percentages given in the last 6 columns are out of those that answered the question why they invested very little or not at all in training.
1. Training is not affordable because of limited resources.
 2. Training is costly because of high labor turnover.
 3. Lack knowledge about training or techniques and the management of training program.
 4. Do not need training because any of the following:
 - a) the firm uses a mature technology and recruits quickly become proficient in the job through learning by doing.
 - b) skilled workers are readily hired from other firms.
 - c) skills provided by schools are adequate for our needs.

Table 9.50
Percentage of Firms* that Did Not Need to Invest Much in Training, By Reason Across Size

Size Class	A Mature Technology	B Workers Readily Hired	C Skills Provided by Schools Adequate	D Other
< 20	64.70	29.0	0	8.80
20-49	33.33	17.64	1.96	9.80
50-99	29.27	26.83	0	4.87
100-199	28.57	26.53	0	4.1
200-499	15.2	30.43	0	2.17

- Notes: (A) The firm uses a mature technology and recruits quickly become proficient in the job through learning by doing.
(B) Skilled workers are readily hired from other firms.
(C) Skills provided by schools are adequate for our needs.
(D) Other, such as most work was contracted out and therefore didn't deal with workers directly.

The lack of training goes hand in hand with the low level of capital investment. First, training is a form of investment so that Nepalese firms have low rates of training for the same reasons they have low rates of investment in capital equipment. Second, firms tend to retain their old technologies and not to upgrade very often, which reduces their need for training. Many managers claimed that one reason they only buy Indian machinery, even in cases where other equipment is superior, is because it is less expensive to find workers who can operate and maintain the Indian equipment. Investing in new technology that is not common in the area requires firms to not only buy the equipment but to bear the entire burden of training the work force. If they did buy new equipment and train their own workers other firms could easily follow their lead, buy similar equipment and poach the workers they trained. This helps explain why

Nepalese firms buy mostly machinery of proven design and do not modify or adapt it once it is installed.

Firms in Nepal face challenges in managing and motivating their work force. In our interviews managers invariably complained about the poor work ethic of their labor force. They complained of high absenteeism and that it was not unusual for workers, especially permanent workers to disappear during the harvest or festival seasons. Often managers said that the most valuable training that they could give workers was basic job skills such as being on time and reliable. Managers felt that rigid labor laws, which favor the workers, and adversarial unions combine to make it difficult for them to give incentives to good workers or discipline poor workers. Some managers even stated that they over invested in capital intensive technologies to reduce disruptions caused by labor volatility. Given managers' perceptions of the labor force and their inability to manage it effectively, it is not surprising that firms are loathe to invest more in training.

Finally, the lack of desire for worker training may be partly a case that firms "don't know what they don't know". If firms do not know about the most recent management and production techniques they will be unaware of what training their workers need. A much larger percentage of firms said they need business support services to help them find new technologies and improve productivity than said they need support to train workers. Firms are comfortable that they are able to train their workers on the technologies they currently use. However, they do not know what else is available and if they did they might need more training to implement it.

The results of the RPED survey show that the patterns of worker training parallel those found in the rest of the world. Large firms train more than small firms and most training goes to already skilled production workers. However, the incidence of training is low relative to the rest of the world. Despite the demonstrated productivity increases from worker training, firms believe that they do not need it. Either because they use mature technologies or that they can hire any skilled workers they need. The low level of training mirrors the low level of investment as a whole by the manufacturing sector and bodes ill for the competitiveness of Nepalese firms in world market.

9.6 Summary

Our analysis of the labor market for Nepal's manufacturing sector has revealed a number of salient facts. First, a large share of the labor force is composed of temporary workers who receive comparable wages to permanent workers but do not have access to the same benefits or more importantly the same level of job security. From our interviews it appears that firms attempt to avoid giving permanent status to workers because strict labor laws make very it expensive and difficult to retrench or discipline workers. Labor unions are wide spread and very strong. They appear to be very successful in obtaining benefits and permanent status for their members. However, union member's total cash earnings appear to be less than similar non-union workers. This suggests that managers might be paying a premium to encourage workers not to unionize. Thus, avoiding the complications of union political activities and the costs of appointing more permanent workers. There appears to be some geographical segmentation of

the labor market with workers in Kathmandu in particular receiving higher wages than in other areas.

The analysis of earnings clearly shows that workers training and education is rewarded by higher wages. Workers who received formal training, other things being constant could expect their earnings to be almost 7 percent higher than those that did not. The value of training is also seen by the fact that a firms who conduct formal training have higher productivity than those that do not. Despite the rewards to training, most firms in Nepal engage in relatively little, preferring to hire already trained workers or to rely on technologies that do not demand highly skilled workers. We also see that there appears conditions in the manufacturing sector are not favorable to women. Women make up a very small percentage of workers in the manufacturing sector and very few of those hold high skilled jobs. Even accounting for the difference in skills the analysis of earnings suggests that men are paid almost 30 percent more than women.

X. CONCLUSIONS AND RECOMMENDATIONS

10 Conclusions and Recommendations

The number one business problem in Nepal is the unfavorable business environment caused by poor implementation of government policy, bureaucratic burden and continuing political and policy instability. Firms point out that those factors are of much greater concern than specific government policies or regulations in shaping the business environment. In addition to problems with “government”, firms ranked, {in order) problems with: (a) low demand (due to such factors as the Asian crisis, weather problems for agriculture and foreign trade problems in key export markets: (b) inadequate access to finance and (c) poor infrastructure. An overarching difficulty in effectively addressing these issues is the poor relationship between the private sector and the government, which hampers the creation of an effective dialogue on these matters.

Apart from addressing the specific issues influencing the business environment, ways must be found to foster a more effective dialogue between the public and private sector over business environment concerns.

10.1 The Business Environment

The specific concerns raised by firms about government implementation of policy, bureaucratic burden and uncertainty include:

10.1.1 The One Window Service

In order to make the delivery of services to private business more efficient the government established the one window service – the idea being that firms would have only one stop to conduct most business with the government. However, in the words of one manager the one window service is “simply one more windowto deal with”. Currently, the service appears to be limited to an entry point for providing tax and duty drawbacks. In addition, the one window service does not seem to benefit firms outside of Kathmandu, in fact most firms outside of the capitol were not even aware of the facility. Thus, one of the main steps taken to make government more responsive to the private sector has, in practice, proven to be of little value.

The one window service to reduce the bureaucratic transaction costs imposed on business is a needed initiative. Implementation needs to be improved, first by perhaps limiting its scope and sharpening its focus to dealing with a limited group such as exporters to begin with and then expanding it to other firms, and second by extending it outside Kathmandu to other regions of the country. An important implementation issue is to foster coordination of all ministries in making the one window service operate effectively.

10.1.2 Tax Administration

Tax administration comes in for some of the most bitter complaints in the Survey. Despite recent efforts to overhaul and modernize the tax system, firms say that very little has changed. Private enterprises do not suffer from a particularly large tax burden, but rather managers are distressed by the arbitrary and capricious way that taxes are assessed. Almost 75 percent of managers in the survey stated that tax officials have too much discretion. The administration of the income tax has not changed substantially despite reforms, it continues to be for all practical purposes a tax on turnover. Though firms are required to present audited books, the tax officials ignore them and assess taxes based upon what they estimate the turnover and profit to be. The system for resolving tax disputes is said to be so inefficient that almost no firm uses it. The fact that income tax is not based upon reported profit discourages firms from making investments because, in practice, expensing them does not influence taxes paid. Firms suggest that one of the main reasons that tax administration has not improved is that tax officers are not adequately trained and can not understand complicated accounting.

The introduction of VAT has improved tax efficiency. However, firms are concerned that tax officials are not adequately trained to properly administer the VAT. In addition, the VAT registration net is not wide enough and firms that are registered have difficulty competing with unregistered firms. The introduction of VAT has led to the elimination of many old taxes. But in some cases tax officials continue to levy the extinct tax. In some cases firms claim to have been forced to pay the old Contracts Tax that ended when VAT was introduced and have been unable to obtain refunds.

More attention needs to be paid to tax administration. This should include more and better training for tax officials. In addition, the system for resolving tax disputes needs to be improved so that disputes are resolved in a more timely manner.

10.1.3 Import/Export regime

(a) Duty Draw-Back and VAT Refunds: Duty draw-backs and VAT refunds are extremely slow – often firms have to wait months or even years to obtain them after application is made. An additional problem is that exporters have six months to claim refunds. But sometimes low demand and unexpected delays can make it difficult for firms to manufacture and export their products and file claims by this deadline. The difficulty meeting the deadline is further exacerbated by the need to present original documents to claim both VAT and duty draw-back making it impossible to claim simultaneously. Finally firms' cash flow management has been made harder by the reduction in the share of imported raw material that can be brought in under a bank guarantee to 50 percent.

Steps must be taken to make the duty draw-back and VAT refund system much more efficient. The refund of VAT and duty should not be delayed to make up for government revenue shortfalls. The procedures must be streamlined so that firm can meet the procedural requirements with minimal effort.

(b) Frequent Changes in Tariff Rates: Changes in tariff rates and currency regulations are often unexpectedly made without consulting the private sector. One metal firm stated that the government is “torturing industry” by the lack of stability in tariffs. Firms complained that because of delays in bidding processes unexpected tariff changes can turn what was a profitable bid into a project that will bankrupt the firm if it is carried out. Unexpected changes in currency regulations can have similar effects. When new regulations prevented textile firms from purchasing yarn in India with dollars, the firms were suddenly faced with paying Indian excise tax of 18 percent, an unanticipated cost.

Tariff rates and currency regulations must be stable so that firms can effectively plan. Changes should be made with adequate notice and consultation. Business activities in a country such as Nepal are already risky and uncertain and there is no reason that government actions should add to the level of uncertainty.

(c) Trade Regime Bias Against Manufacturers: The trade regime in some ways is biased against the manufacturing sector. For example, large infrastructure projects, which can contribute substantially to economic activity import machinery and other products duty free from donor countries. However local companies must pay both VAT and duty on imported components to make the same machinery. Other tariffs provide a negative effective rate of protection. In the case of pharmaceutical products, imported pharmaceuticals pay a 2.5 percent duty. Domestic manufacturers must pay a 40 percent duty on imported packing material, which is a major portion of their costs.

When setting tariffs the government should be careful to closely examine effective rates of protection and not put domestic manufacturers at a disadvantage.

(d) Delay In Clearing Customs: Almost all importers stated that delays clearing customs imposed a significant cost burden. Delays are caused by two major factors. First, the customs infrastructure is poor. Many crossing points are too small to handle the volume of traffic, this is particularly true in Biratnagar. The storage facilities, particularly at the airport are also not secure and goods can be damaged by weather or lost through theft. Second, disputes over valuation. Often customs officials are not adequately trained to evaluate shipments. Customs officials often use “reference values” instead of invoices to value imports to prevent firms from under invoicing. This is problematic because the reference values are usually high and not often revised. Recent changes allow officials to accept the CIF value but often officials refuse to do so — yet another example of well meaning changes being thwarted by poor implementation. Disputes over valuation can be costly to resolve because of bribes but more importantly because large amounts of working capital are often tied up.

The customs infrastructure must be improved to handle the volume of traffic and secure shipments. Customs officers must be better trained and the WTO system of inspection implemented. Nepal is already isolated and faces high transportation costs because of geography. The import/export regime should not add to these costs.

(e) Rigid Export Selling Rules: Firms are required to export using letters of credit or pre-payment. The use of letters of credit are expensive for shipments of small value,

thus limiting firms' ability to ship samples – or as in the case of the tea industry, forcing them to use Indian intermediaries. Pre-payment makes it impossible for firms to export on consignment and many large foreign buyers refuse to pre-pay as a matter of policy.

Allowing exporters to ship on consignment or establishing a Cash Against Documents would reduce the transaction costs of system and make it easier to find foreign markets.

10.1.4 The Labor Law

The labor law is one of the few specific laws that almost all managers indicated is a significant burden. The cost of retrenching permanent workers is so high that firms attempt to limit the number of permanent workers they hire. Once a worker becomes permanent it is impossible to lay him/her off or fire him/her without permission of the labor department, which can take months or even years. Declining sales are not considered sufficient grounds for retrenchment and the process must be followed even in cases of gross worker misconduct. Consequently, many older firms are significantly overstaffed and other firms hesitate to hire new workers. The labor law is a particular problem for large multi-national firms seeking to enter a new and risky market. The existing law encourages firms to adopt more capital-intensive production techniques and constrains enterprise learning because the workforce is generally older and less permanent.

The labor law should uphold core labor standards, such as prohibition of exploitative use of child labor, prohibition of forced labor, elimination of discrimination in employment, freedom of association and provision of the right to organize and bargain collectively. However, it should be careful not to raise the costs and increase the inability to retrench workers, both of which increase the cost of doing business in Nepal.

10.2 Productivity

Enterprise and worker productivity in Nepal is low by international standards. Five major factors contribute to this productivity gap: low capacity utilization; limited economies of scale; problems with the business environment; poor infrastructure; and weakness in technology transfer mechanisms.

Small market size limits scale economies and constrains capacity utilization.. Expanding exports to widen the market could help resolve these problems, but, in many sectors in Nepal, the poor business environment, inadequate infrastructure and remote location make it difficult for Nepalese firms to take advantage of the large markets in neighboring countries, despite the recent free trade agreements. In sectors where economies of scale matter, such as textiles, pharmaceuticals and soap, firms are either protected from cheaper imports in the home market or exporting to India based upon tariff differentials for critical inputs. Labor-intensive light manufactures, like garments and carpets, have been the exception showing rapid growth in recent years. But even

here, trade policies such as US quotas and sanctions on India, have played an important role in this growth. Few Nepalese garments firms felt they were competitive enough to continue exporting after the multi-fiber agreement is eliminated without a substantial improvement in productivity.

Improvements in productivity will be a key element in increasing exports and raising standards of living in Nepal. Both the level of investment and the efficiency of investment will be important in this respect. Investment levels will depend upon the policy environment and the efficiency of the financial sector. The efficiency of investment will depend upon firms' abilities to acquire and utilize new technology which, in turn, are intimately tied to the efficiency of the technology transfer mechanisms. This survey found that many of these "learning" mechanisms are weak or missing: direct foreign investment is low (so local firms can't learn by "benchmarking" their operations against advanced foreign technology), few firms train workers and business and technical training institutions are underdeveloped, local technical consulting services are weak, although there is some opportunity to bring in technical experts from India, and in many industries, buyers and suppliers are not visiting Nepal on a regular basis, which limits the possibilities for technology transfer.

In addition to addressing elements of the business environment and the financial sector, which constrain investment levels, the efficiency of technology transfer mechanisms must be upgraded. This would include programs to increase direct foreign investment, make work permits for expatriate experts easier to obtain, raise the level of manager and worker training, improve firms' access to technical consultancy services, and assist managers to visit suppliers and buyers.

10.3 Finance

After "government", inadequate finance is one of the most often cited business problems. Financial sector reforms undertaken in the 1990s have helped, together with increases in the amount of domestic credit flowing to the private sector, give most firms in Nepal access to at least some bank credit. However, the majority of credit is short term -- long term credit for fixed asset financing remains scarce. Inadequate information, in terms of accurate accounting, makes it difficult for creditors to assess risk and contract enforcement problems make it difficult to enforce contracts. Political uncertainty and volatility in the business environment also add to lenders problems. The risks increase with the loan term, which leads most lenders to offer only short term loans. In addition, the lack of information forces creditors to demand personal guarantees and high levels of collateral. The requirement for personal guarantees effectively eliminates the advantages of limited liability and discourages entrepreneurs from taking risks.

Trade credit, or supplier credit, can be an important source of funds for manufacturing firms. A well developed system of trade credit allows firms to conserve working capital and frees up internal funds for investment. Most investment in Nepal is funded through retained earnings and other internal funds. While most firms in Nepal extend or receive some trade credit, the extent of trade credit is limited by the same

structural factors that affect bank credit. Creditors do not have adequate information on potential customers and have difficulty enforcing contracts. The lack of trade credit, along with the delays in receiving duty draw back and VAT refunds, puts pressure on firms' working capital and reduces the amount of internal funds available for investment.

In order to address the shortage of credit, particularly long term credit, it is important to deepen financial sector reforms. Steps must also be taken to improve accounting standards so that lenders will be better able to assess risks. The court and legal system must be strengthened so that contracts can be adequately enforced at a reasonable cost. Addressing these structural elements of the financial system will also enhance the environment for firms to extend trade credit.

10.4 Infrastructure

One of the major contributing factors to the high costs of doing business in Nepal is poor infrastructure. Public provision of services is inadequate, forcing manufacturing firms to provide their own. Power appears to be the most significant problem. Frequent power cuts and fluctuations in voltage cause constant interruptions to production and damages machinery. Poor roads makes it expensive to ship goods and prevents exporters from reliably meeting shipping schedules. The poor roads often force exporters to resort to very expensive air shipment. Along with power and roads the telecommunications infrastructure is a problem. Also, as environmental regulations are not enforced, most industrial waste is either buried or dumped into local water sources. As manufacturing grows, industrial pollution is going to become an important problem. Unless waste disposal issues are addressed, industrial waste is going to pose an ever growing threat to the environment and waste disposal will become an increasing cost for the private sector.

Privatization of the utilities should continue, in order to make them more efficient and more rationally priced. Roads and other facilities for exporters must be improved. Cooperation with India should be pursued to improve the roads from the border to Calcutta. The problem of industrial waste disposal must receive more attention before it becomes a sever environmental problem and a large cost for manufacturing firms.

10.5 Labor Market

The survey uncovered several problems in Nepal's labor market which need to be addressed.

1. Unavailability of skilled labor is considered by firm managers to be an underlying factor affecting low capacity utilization and low productivity.
2. Industrial relations in Nepal are poor. Factory production is often disrupted by labor unrest in the form of strikes or other labor actions.
3. Large real differences in monthly earnings across regions in Nepal for similar job categories suggests the possibility of inefficiencies in the working of the labor market

(although some inefficiencies are expected in a country where populations are isolated by poor infrastructure.)

4. Earnings of production workers are determined, inter alia, by the following factors:
- Education – there is a 30 percent wage premium for workers with education as against workers with primary education.
 - Firm Size – there is a 28 percent wage premium in working for a firms with 200+ employees.
 - Exporters – there is a 10 percent wage premium for workers in export firms.
 - Foreign Owned – there is a 20 percent wage premium for working for foreign firms.
 - Gender – women earn 30 percent less than men for the same job.
 - Casual Labor – casual laborers earn about the same as permanent workers, however, they have no other benefits.
 - Unions – unionized workers earn, on average, 8 percent less than non-union workers but they have more benefits and better job security.

11 Recommendations – Action Agenda

1. **Dialogue.** The Government and the Private Sector need to develop a more effective, regular and on-going dialogue mechanism on issues pertaining to the business environment in Nepal.
2. **On Window Service for Investors.** Implementation of the One Window Service needs to be greatly improved, by sharpening its focus to deal initially with a limited group such as exporters – and by extending it outside of Kathmandu. An important implementation issue is to foster coordination between all ministries to make the one window service operate effectively.
3. **Tax Administration.** There is a need for more and better training of tax officials. In addition, the system for resolving tax disputes needs to be improved so that disputes are resolved in a more timely manner.
4. **Duty Drawback and VAT Refunds.** Steps must be taken to make the duty drawback and VAT refund system much more efficient. The refund of VAT and duty should not be delayed. Procedures must be streamlined so that firms can meet the procedural requirements with minimal effort.
5. **Tariff rates and currency regulations** must be stable so that firms can effectively plan. Changes should only be made with adequate notice and consultation.
6. **Tariffs.** When setting tariffs the government must closely examine effective rates of protection and not put domestic manufacturers at a disadvantage.
7. **Customs Infrastructure** must be improved to handle the volume of traffic and secure shipments. Customs officers must be better trained and the WTO system of inspection implemented.
8. **Shipments on Consignment.** Exporters should be allowed to ship on consignment or establish Cash Against Documents.
9. **The Labor Law** should be revised to uphold core labor standards – but not to raise the costs and increase the inability to retrench workers.
10. **Technology Transfers.** The efficiency of technology transfer mechanisms in Nepal must be upgraded, including: programs to increase direct foreign investment, make work permits for expatriate experts easier to obtain, raise the level of manager and worker training, improve firms' access to technical consultancy services, and assist managers to visit suppliers and buyers.
11. **Finance.** In order to address the shortage of credit, particularly long term credit, it is important to deepen financial sector reforms. Steps must also be taken to improve accounting standards so that lenders will be better able to assess risks. The court and

legal system must also be strengthened so that contracts can be adequately enforced at a reasonable cost.

12. **Infrastructure.** Privatization of the utilities should continue, in order to make them more efficient and more rationally priced. Roads and other facilities for exporters must be improved. Cooperation with India should be pursued to improve the roads from the border to Calcutta. The problem of industrial waste disposal must receive more attention before it becomes a severe environmental problem and a large cost for manufacturing firms.

13. **Labor Market Issues.** It is important to study labor markets in Nepal in greater detail to better understand existing market rigidities. Such a study needs to focus on (a) developing a pool of skilled labor to enhance capacity utilization and increased productivity; (b) improving industrial relations; (c) reducing labor market rigidities; and (d) reviewing salaries across sectors, firm size, gender, type of industry.