CENTRAL STATISTICAL AGENCY

BUSINESS STATISTICS

Revised

Report on

The 2rd Quarter of the 2004 E.F.Y.

Manufacturing Business Survey

ADDIS ABABA
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Report on

The 2rd Quarter of the 2004 E.F.Y Manufacturing Business Survey

Contents

Table of content

I. Introduction

One of the major uses of industrial statistics is to support the compilation of annual national account. Even when annual industrial and other economic surveys are conducted, the information collected through them become available only sometime after the end of the reference period. For effective management of the economy as well as policy formulation it is necessary to have information available as early as possible in make use of short term indicators for measurement of changes in the level of the economic activities of the country.

In line with this, the current short term business survey is carried out to obtain data which could be used to monitor the current business situation and forecast short term developments and turning points of the business cycle. The range of information and/or indicators covered in this survey goes beyond variables that can easily be captured by conventional quantitative methods like 'qualitative information' of capacity utilization, production bottlenecks, and plans and expectations for immediate future and the mangers view on overall current economic situation of the country.

Hence, the Central Statistical Agency (CSA) as the body charged with collecting and compiling accurate and up to date Statistical information on almost all socio-economic aspects of the country. Thus, CSA has carried out this quarterly survey in line with its mandates after a hiatus of almost a year, by incorporating suggestions given by major users of this report. This business survey could play a significant role in meeting the needs of short term statistics in order to monitor the economic development of the country in quarterly basis.

Short term business statistics like all business statistics faces the opposing forces of the need for data on one hand and the cost of burden of providing data on the other. In fact the production of such statistics can be considered as bridging the gap between information users and information held by the respondents. *The current business survey can be defined as a business cycle analysis of interrelated developments. This kind of survey tries to capture judgments on past, current and future economic developments.*

Consequently, there are many users of short term statistics with many different motivations for using the data, the analysis performed generally fall in to one of the two types:

- Comparison between two different point in time, of one or several parts of the business population, and

- Comparison within one reference period of two or more different sub populations.

With this framework, these kinds of business survey play a vital role in answering the following types of questions:

- Which phase of the economic cycle are we in at present?

- What will be the probable development in near future?

- Are we currently in the continuation of the moment already started (upward or downward) or,

- Is it possible that are we in a break in relation to this moment, i.e. turning or reversal point?

Hence, to meet the demands of such kind of statistics, CSA has made a rebasing to keep up with the development and accordingly to come up with an accurate, reliable and timely information about the business activities of manufacturing industries.

II. Objectives of the Survey

This quarterly business survey aims to provide statistical information necessary to improve the competitiveness and performance of the business community in the country and also to provide information on a wide range of economic activity that are increasingly becoming important for economic analysis.

The main objectives of this quarterly business survey are:

- To produce and compile up-to-date, reliable, and comparable information on the activity, competitiveness and performance of manufacturing industries,

- To assist in economic analysis and forecast the future trend of the business sector,

- To be used in compiling the various components of quarterly national accounts, which are in turn needed in the calculation of GDP, and

- To show the cyclical movement of the sector in terms of major indicators.

Therefore, conducting the current business survey on dynamic economic sectors like manufacturing industries is an accepted way of availing basic business information to depict the general trend on interrelated developments of the economy. Moreover, it could be a base for examining the nature of the sequence of evolution and future expectations in order to ensure that adequate decisions can be made on time.

Structure of this report

Section III provides an overview of the survey methodology. Section IV presents the background on training of field staffs. Section V states the concept and definition of terms. Section VI describes about data entry, editing, cleaning and tabulation of the results. Section VII explores the major findings of the survey. Finally, Appendix I, describes the estimation procedure we followed.

III. SURVEY METHODOLOGY

3.1 Scope and Coverage

The Quarterly Manufacturing Business Sample Survey was conducted covering only those establishments producing their goods using power driven machines having 10 and above workforce in both public and private owned manufacturing industries found in the country.

3.2 Sampling Frame

The list of basic values of each and every establishment was obtained or constructed from the 2008/09 Large and Medium Scale Manufacturing Industries Census and was used as a frame for conducting this Quarterly Manufacturing Business Sample Survey.

3.3 Sample Design

A single stage stratified sample design has been implemented to select sample establishments. In order to do so, each of the establishment under consideration was grouped into a four-digit level of International Standard Industrial Classification (ISIC rev 3.1) and considered as stratum. However, the total number of the four-digit level ISICs was found to be too many and the contribution of some of the ISIC's to the total basic value was also very low. Hence, a cut-off strategy was adopted for considering those ISIC's having a contribution of 0.6 percent (threshold value) and above to the overall basic value. Therefore, a total of 33 out of 49 ISICs were finally taken into consideration but the contributions of those below the threshold value is distributed to their related ISIC's in order to limit bias of the final estimate. Fifteen domains of estimates (reporting levels) are then constructed from the 33 ISICs and major findings of the survey are reported for them. Taking into account resource constraints and the production structure of the manufacturing sector, 310 sample establishments were initially decided to be sufficient to conduct the survey. The spread of basic values across the four-digit ISICs as observed from the frame was, however, uneven. Therefore, a power allocation (with a power of ½), have been employed to distribute the 310 sample establishments among the 33 ISICs since it increases the precision of small strata by slightly decreasing the precision of large strata. However, it was found that the basic values are not good measure of size in reflecting the current structure and growth of the manufacturing sector. The reasons for this are, one the weighting structure based on basic values are too old enough to reflect the current dynamic economic performance of the sector. Second the basic values reported are not that much reliable enough to differentiate the big and small establishments so that estimates based of the basic values are not reflecting the reality, i.e. some domains are underestimated and others are overestimated, so that the need arise to change the weighting structure based on employment size are relatively more stable over time and that can reflect the right situation of

manufacturing sector. Therefore, in this fourth quarter and onward estimates are grossed up by employment size to infer about the population parameters.

A systematic sampling with probability proportional to size (PPS) selection procedure were employed, measure of size being basic value obtained from the frame, was used in order to select sample establishments from each of the 33 ISIC. In fact for the selection purpose basic value are already employed but PPS ensure the selection of big establishments so that using employment size instead of basic value does not distort their representation on the selected establishments rather than reflecting the current situation. See the following figure of already sampled establishment's representation when employment size was used instead of the basic value.

	10-19	20-99	100-499	500+
population	873	709	218	46
SAMPLE	79	113	91	28
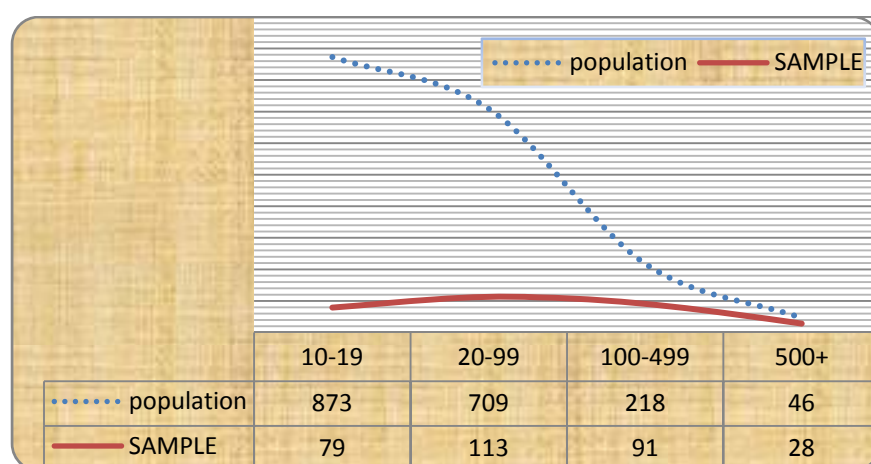
As regards to the ultimate coverage, the survey was not carried out for 46 establishments out of the sampled 310 establishments; 12 establishments were due to non-response and 34 establishments due to closure. As a result, the survey succeeded to cover 264 (85 percent) establishments throughout the country.

Estimation procedures of totals, ratios and sampling error are given in Appendix I.

IV. Training of Field Staff and Data Collection

The training was conducted in one phase by two senior staff members of the Business Statistics Directorate and experienced branch statistical office staffs took part in establishment surveys training exercise. Enumerator's manual was prepared for the survey to introduce them with the detailed explanations of the basic concepts and how to handle each and every part of the questionnaire.

V. Concepts and Definitions

Manufacturing: - is defined here according to International Standard Industrial Classification (ISIC Rev. 3) as "the physical or chemical transformation of materials or components into new products, whether the work is performed by power-driven machines or by hand, whether it is done in a factory or the worker's home, and whether the products are sold at wholesale or retail. The assembly of the component parts of manufactured products is also considered as manufacturing activities."

An Establishment: - is defined as the whole of the premises under the same ownership or management at a particular address. (e.g. a bakery, sawmill, etc.)

Permanent Workers: - these are employees, (based on the agreement between the workers and employers) engaged to work in the factory for long period of time. These workers are usually found regularly on the payroll of the establishment. Basically, this category consists of production, administrative and technical employees. According to this definition, unpaid family workers, active partners and working proprietors are excluded.

Seasonal and Temporary Workers: - these include workers who are employed for a whole or part of the year with the agreement that they work for short period of time. These workers are not regularly on the payroll of the establishment.

Revenue from Sales: - represents the total sales value of all products and by-products during the reference period valued at market price.

Raw Materials: - include all raw and auxiliary materials, parts and containers which are consumed during the reference period. The value of local raw materials is the value of locally produced raw materials and is the cost incurring the factory, which includes the purchasing price, transport charges, taxes and other incidental costs. The value of imported raw materials is the value of raw materials produced in other countries and obtained directly or from local market and is the cost incurring the factory which includes the purchasing price, transport charges, taxes and other incidental costs.

New Capital Expenditure: - is the cost of new or used capital equipment bought during the reference period by the existing establishments.

Survey Period: Based on the Ethiopian Fiscal Year, this periods are defined as follows:-

- *First Quarter* – July 8 – October 10

- *Second Quarter* – October 11 – January 8

- *Third Quarter* – January 9 – April 8

- *Fourth Quarter* - April 9 – July 7

VI. Data Processing

Editing, Coding and Verification

A number of quality control steps were taken to ensure the data quality. Instruction manuals on editing were given to personnel involved in the editing process. Briefings on the subject along with the editing manual were put to use, to edit and code the data collected. Finally, the edited and coded questionnaires were checked and verified by another group of professionals.

Data Entry, Cleaning and Tabulation

The data were entered and verified on personal computers using CSPro software. Four CSA data entry staff participated in this purpose for one day, with close supervision of one programmer. Then, the data entered were cleaned using a personal computer in combination with manual editing for some serious errors. Finally, the tabulation of the results was processed using the same software by two programmers from business statistics directorate.

VII. Summary of Survey Findings

Employment

A more compressive measure of the total size of employment in industries is the number of persons engaged at a particular time, which in turn is an important indicator for measuring

performance of industries. Survey results in Table 1 below publicize that, in this third quarter of 2004 E.F.Y., a total of 250,212 workers were engaged in the manufacturing industry, of which 174,223 (70 percent) were permanent while the remaining 76,435 (30 percent) persons were seasonal or temporary employees. Among the industrial groupings, manufacturing of food products contains the highest number of employs, employing around 33 percent of the total work force in the sector accompanied by non-metallic products which took around 23 percent. On the other hand, tobacco manufacturing establishment contributed 0.8 percent of the total employment, which contains the smallest number of employs.

Table 1 Number of Persons Engaged by Major Industrial Groupings

Major Industrial Groupings	Number of Estab.	Permanent	Contract	Total
Manufacture of food products	815	39,278	42,834	82,148
Manufacture of beverage	46	11,065	1,798	12,917
Manufacture of tobacco products	1	1,851	32	1,883
Manufacture of textiles	51	10,949	2,648	13,597
Manufacture of wearing apparel, except fur apparel	78	11,156	526	11,681
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	162	11,581	2,909	14,491
Manufacture of wood and of products and cork, except furniture	-	-	-	-
Manufacture of paper & paper products.	95	6,371	1079	7,479
Manufacture of chemicals and chemical products	82	4,288	1,930	6,218
Manufacture of rubber products	183	10,619	707	11,326
Manufacture of other non-metallic products	610	48,818	7,783	56,601
Manufacture of basic iron and steel	54	1,889	5571	7,460
Manufacture of fabricated metal products except machinery and equipment	166	6,830	5,695	11,961
Manufacture of motor vehicles, trailers and semi-trailers	7	1,604	481	2,085
Manufacture of furniture	187	7,923	2,443	10,366
Total	2,538	174,223	76,435	250,212

Beside this, a follow-up question about the employment situation was forwarded to respondents about their expectation on the number of employees in the next quarter. As presented in Table 2 below, 603 establishments responded that they would expect a change (upward or downward) in the number of the work force due to different reasons. Out of these establishments, 8.23 percent of them forecasted there will be an increase in the number of

employs, while 15.76 percent of them expect that the number of employs will decline in the next quarter. The remaining 76.01 percent would expect no change in the next quarter.

Table 2 Number of Establishments by Reason for Change in the Number of Persons Engaged in the Next Quarter

Major Industrial Groupings	Size of employees in the next quarter compared to the current one		
	It will increase	It will decrease	It will be the same
Manufacture of food products	107	79	629
Manufacture of beverage	6	2	37
Manufacture of tobacco products	-	1	-
Manufacture of textiles	-	6	45
Manufacture of wearing apparel, except fur apparel	-	-	78
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	13	10	114
Manufacture of wood and of products and cork, except furniture	-	-	-
Manufacture of paper & paper products.	1	15	79
Manufacture of chemicals and chemical products	13	4	65
Manufacture of rubber products	4	15	163
Manufacture of other non-metallic products	12	193	405
Manufacture of basic iron and steel	1	17	36
Manufacture of fabricated metal products except machinery and equipment	44	35	86
Manufacture of motor vehicles, trailers and semi-trailers	1	-	6
Manufacture of furniture	4	17	167
Total of Manufacturing	207	396	1,909
Total %	8.23	15.76	76.01

Value of Production

The value of production is regarded as one of the important variables for measuring economic activity & development of industrial production. In this quarter manufacturing industries contributes a total value of production amounting to 33.3 billon birr. Among the industries, the largest share of production value is contributed by manufacturing of food products accompanied by beverage processing and textile industries contributing 43.04 %, 17.19 % and 8.45 % of the total value, respectively. The smallest values of production were registered by

manufacturers of metal products except machinery and equipment and tobacco manufacturing which are 1.16 and 0.4 % of the total respectively as shown below in Table 3.

Table 3 Total Value of production by Major Industrial Groupings

Major Industrial Groupings	Value of Production	Percentage
Manufacture of food products	14,346,022,109	43.04
Manufacture of beverage	5,728,598,900	17.19
Manufacture of tobacco products	131,759,705	0.40
Manufacture of textiles	2,815,825,735	8.45
Manufacture of wearing apparel ,except fur apparel	1,156,585,852	3.47
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	1,068,254,994	3.20
Manufacture of wood and of products and cork, except furniture	-	-
Manufacture of paper & paper products.	1,153,535,222	3.46
Manufacture of chemicals and chemical products	785,114,534	2.36
Manufacture of rubber products	1,181,602,196	3.55
Manufacture of other non-metallic products	2,037,441,091	6.11
Manufacture of basic iron and steel	1,456,877,512	4.37
Manufacture of fabricated metal products except machinery and equipment	388,296,216	1.16
Manufacture of motor vehicles, trailers and semi-trailers	455,258,005	1.37
Manufacture of furniture	625,896,405	1.88
Total	**33,331,068,476**	**100.00**

Revenue Generation and Prospects

A total of 37.7 billion birr was earned as revenue in the manufacturing sector during the third quarter of 2004 E.F.Y, of which 97.5 percent was generated from local sales while the remaining 2.5 percent was generated from exports. Manufacturers of rubber products, food, and beverage products contributed the largest share of the total revenue generated during the quarter, amounting to 41.3, 29.5, and 6.9 percent of the total revenue, respectively, whereas, motor vehicles, trailers and semi-trailers products manufacturing industries' revenue were the lowest, amounting only 0.5 percent of the total. Most of the establishments supplied their products to local markets, except manufacturing industries of tanning, which generated 77 percent of its revenue from export market respectively, as shown in Table 4 below.

Manufacturing industries of tanning has earned about 89.7 percent of the total export revenue of the large and medium manufacturing industries. This trend indicates that the export performance of Ethiopian manufacturing industries is still very low and relies on few industries. This situation calls for prompt action concerned bodies and stakeholders to promote and enhance the performance and competence of manufacturing industries both locally and internationally.

On the other hand, a total of 19.0 billon birr was spent as cost of production in manufacturing industries in this quarter. This is equal to 50.5 percent of their revenue. Relative to revenue from sales, the highest expense for production related activities were registered in the quarter in motor vehicles, metal products and basic iron and steel industries amounting to 327 million, 446 million and 1.4 billion birr, respectively.

Table 4: Revenue from Sales by Major Industrial Groupings   **In 000' Birr**

Major Industrial Groupings	Revenue from sales						Stock	Expenses
	Local	%	Export	%	Total	%		
Manufacture of food products	11,094,610,984	99.90	11,498,095	0.10	11,106,109,079	100.00	2,210,371,670	10,610,171,498
Manufacture of beverage	2,575,232,804	99.67	8,490,436	0.33	2,583,723,240	100.00	70,069,547	997,135,720
Manufacture of tobacco products	295,807,617	95.78	13,047,411	4.22	308,855,028	100.00	-	11,176,479
Manufacture of textiles	872,868,005	98.35	14,688,000	1.65	887,556,005	100.00	397,673,525	510,335,893
Manufacture of wearing apparel, except fur apparel	381,141,187	98.76	4,788,472	1.24	385,929,659	100.00	26,289,439	332,893,970
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	251,781,730	22.99	843,322,354	77.01	1,095,104,084	100.00	148,529,946	849,104,530
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-	-	-	-
Manufacture of paper & paper products.	610,081,579	100.00	-	-	610,081,579	100.00	66,651,552	356,185,240

Manufacture of chemicals and chemical products	919,190,618	97.70	21,684,861	2.30	940,875,479	100.00	1,782,898,913	708,661,488
Manufacture of rubber products	15,552,317,848	100.00	726,376	*	15,553,044,224	100.00	1,312,443,859	845,240,323
Manufacture of other non-metallic products	1,425,507,631	99.41	8,484,047	0.59	1,433,991,677	100.00	252,573,878	1,279,124,279
Manufacture of basic iron and steel	1,537,847,229	99.70	4,553,064	0.30	1,542,400,293	100.00	163,099,168	1,363,598,582
Manufacture of fabricated metal products except machinery and equipment	465,299,275	100.00	-	-	465,299,275	100.00	289,710,849	446,112,623
Manufacture of motor vehicles, trailers and semi-trailers	183,051,167	100.00	-	-	183,051,167	100.00	341,109,781	327,146,235
Manufacture of furniture	595,744,134	98.53	8,897,752	1.47	604,641,886	100.00	667,065,510	393,444,300
Total	36,760,481,808	97.51	940,180,869	2.49	37,700,662,677	100.00	7,728,487,636	19,030,331,161

Despite this fact, the surveyed manufacturing establishments were also asked about the likely direction of their sales revenue for the coming quarter. Among the establishments who responded to this question, 953 of them (47.5 percent) would expect a future change in their total revenue due to a growing local demand for their products. On the other hand, 565 respondents (28 percent) and 231 respondents (11.5 percent) expect a decline in their total revenue due to decrease in demand locality and shortage of or high price of inputs as depicted in the table 5 below.

Table 5 Number of establishments by Reason for Change in Sales revenue with respect to the coming quarter

Major Industrial Groupings	Increase demand locally	Decrease demand locally	Increase in international demand	Decrease in international demand	Unable to compete locally	Shortage of or high price of inputs	Unable to compete with imported products	Shortage of foreign exchange	Others	Total
Manufacture of food products	342	119	5	-	-	81	-	-	106	653
Manufacture of beverage	34	-	-	-	-	-	-	-	12	46
Manufacture of tobacco products	-	-	-	-	-	-	-	-	1	1
Manufacture of textiles	13	-	-	-	-	8	-	-	-	22
Manufacture of wearing apparel, except fur apparel	48	25	-	1	-	4	-	-	-	78
Tanning and dressing of leather manufacture of footwear, luggage and hand bags	110	-	31	-	-	-	-	-	18	158
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-	-	-	-	-	-
Manufacture of paper & paper products.	27	14	-	-	-	-	-	6	6	54
Manufacture of chemicals and chemical products	36	28	1	-	-	15	-	-	2	82
Manufacture of rubber products	75	88	-	-	-	3	-	-	3	169
Manufacture of other non-metallic products	94	220	2	-	-	76	-	-	30	421
Manufacture of basic iron and steel	49	4	-	-	-	1	-	-	-	54
Manufacture of fabricated metal products except machinery and equipment	34	19	-	-	-	40	6	-	13	110
Manufacture of motor vehicles, trailers and semi-trailers	3	-	-	-	-	-	-	-	3	7
Manufacture of furniture	89	48	-	-	-	3	-	-	10	150
Total	953	565	39	1	-	231	6	6	203	2,005

As compared to the previous year quarter, the number of establishments which would expect a change in their revenue in the next quarter due to a decrease in demand for their products has increased significantly.

Raw Materials

Even though, raw material is one of the major factors of production, the majority of the Ethiopian manufacturing industries are known for high dependency on imported raw materials in their production activities and this urges for one to ask the reason for such a huge dependence. Out of the total respondent establishments for this particular question, 1,040 establishments, constituting 64 percent reported that the raw material is not available locally and hence, the major reason for depending on imported raw materials, as shown in Table 6 below. Moreover, Shortage of the available supply in the local market was reported as the second major reason by 483 establishment's i.e.30 percent of the total for relying on imported raw materials. In general, the results show that the raw material demand by local manufacturing industries couldn't be satisfied from domestic sources due to these major reasons mentioned above. Therefore, the respective government bodies and stakeholders must strive to build the capacity, interdependence and performance of manufacturing industries as a whole.

Table 6 Distribution of Establishments by Reason for Dependency on imported Raw Materials

Major industrial Groupings	Lack of available supply in the local market	%	The raw material is not found locally	%	Local suppliers are not reliable	%	The quality of locally available raw materials is not reliable	%	others	%	Total
			Major reasons for consuming imported raw materials								
Manufacture of food products	186	31	396	66	-	-	13	2	2	1	597
Manufacture of beverage	6	17	31	83	-	-	-	-	-	-	37
Manufacture of tobacco products	1	100	-	-	-	-	-	-	-	-	1
Manufacture of textiles	-	-	22	100	-	-	-	-	-	-	22
Manufacture of wearing apparel, except fur apparel	4	14	26	86	-	-	-	-	-	-	30
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	15	12	86	69	-	-	25	20	-	-	126
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-	-	-	-	-	-	-
Manufacture of paper & paper products.	29	30	61	64	-	-	5	5	1	1	95
Manufacture of chemicals and chemical products	10	13	70	87	-	-	-	-	-	-	80
Manufacture of rubber products	79	44	99	56	-	-	-	-	-	-	178
Manufacture of other non-metallic products	-	-	100	100	-	-	-	-	-	-	100
Manufacture of basic iron and steel	3	8	35	89	-	-	-	-	1	3	39
Manufacture of fabricated metal products except machinery and equipment	54	39	54	39	10	7	19	13	3	2	140
Manufacture of motor vehicles, trailers and semi-trailers	-	-	7	100	-	-	-	-	-	-	7
Manufacture of furniture	95	53	53	30	3	2	28	16	-	-	180
Total	483	30	1,040	64	13	1	89	5	7	-	1,631

New Capital Expenditure

New capital formation by the existing establishments in the quarter amounted to birr 791.8 million. Of this amount, the share of beverage manufacturing, food processing and non-metallic manufacturing industries was 185.1 million birr (23.4 percent), 150.8 million (19 percent), and 142.1 million (18 percent) respectively (see Table 7 below). The establishments have been investing their capital for acquisition of various fixed assets in the quarter, of which, around birr 401.1 million (50.7 percent) of the total new capital expenditure was spent on new machinery and equipment, while birr 195.2 million (24.7 percent) and 160 million (20.2 percent) of the total capital expenditure was spent for buildings and vehicles.

Total new capital expenditure in the sector has increased by more than 485.6 million birr as compared to the previous quarter in absolute terms. Regarding industrial groupings high investment in fixed capital was registered in manufacturing of beverage and food products for building and machinery and equipment.

Table 7 Value of New Capital Expenditure on Fixed Assets for major industrial groupings

Major Industrial Groupings	Building	Machinery & Equipment	Vehicles	Others	Total
Manufacture of food products	35,790,284	109,160,460	2,666,500	3,509,228	150,789,592
Manufacture of beverage	14,708,219	64,017,239	29,685,028	76,757,874	185,168,359
Manufacture of tobacco products	-	-	139,300	404,118	543,418
Manufacture of textiles	-	1,183,834	294,796	658,129	2,136,759
Manufacture of wearing apparel, except fur apparel	53,184,917	34,654,336	18,621,224	16,355,277	122,815,754
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	6,534,632	55,377,511	5,952,380	1,265,668	63,195,811
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-
Manufacture of paper & paper products.	100,274	13,457,002	5,772,387	3,352,323	22,681,986
Manufacture of chemicals and chemical products	104,689	3,105,129	8,323,304	902,123	13,435,245
Manufacture of rubber products	65,791,875	52,651,171	2,759,593	67,011,254	54,233,887
Manufacture of other non-metallic products	110,897	54,291,042	85,176,862	3,015,814	142,594,615
Manufacture of basic iron and steel	10,442,041	7,312,559	-	338,501	18,093,101
Manufacture of fabricated metal products except machinery and equipment	3,271,846	4,316,552	373,725	765,045	8,727,168
Manufacture of motor vehicles, trailers and semi-trailers	35,126	37,725	206,790	38,685	318,325
Manufacture of furniture	5,189,063	1,537,494	73,800	310,367	7,110,724
Total	**195,263,861**	**401,102,056**	**160,045,688**	**174,684,404**	**791,844,743**

Capacity Utilization

In almost all short-term business surveys, capacity utilization is considered as an important variable in studying the efficiency and performance of manufacturing industries overtime. For this reason, two questions were forwarded to the respondents during the survey: the first, regarding the existing level of capacity utilization by the establishments whereas the second question was about the reasons for operating under their full capacity. As shown in Table 8 below, during the quarter, only 53.82 percent of the capacity of the manufacturing industries was being utilized. A relatively high degree of capacity utilization was observed in the manufacture of paper and paper products and motor vehicles and trailers amounting to 79.26 and 77.23 percent, respectively, while low level of capacity utilization was observed in manufacturing of textiles, non-metal manufacturing industries and tanning exhibiting 39.04, 46.06 and 46.52 percent, respectively.

Table 8 Distribution of Establishments by Percentage of Capacity Utilization

Major Industrial Groupings	Number of establishments by Capacity utilization range				Average
	25 % and below	26 to 50 %	51 to 75 %	76 to 100 %	
Manufacture of food products	30	353	327	73	**52.52**
Manufacture of beverage	15	9	10	11	**50.60**
Manufacture of tobacco products	-	-	1	-	**60.00**
Manufacture of textiles	-	11	6	11	**39.04**
Manufacture of wearing apparel, except fur apparel	-	53	25	-	**56.02**
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	27	68	10	50	**46.52**
Manufacture of wood and of products and cork, except furniture	-	-	-	-	**-**
Manufacture of paper & paper products.	-	5	33	58	**79.26**
Manufacture of chemicals and chemical products	5	41	18	17	**51.84**
Manufacture of rubber products	20	66	34	63	**64.11**
Manufacture of other non-metallic products	126	129	199	92	**46.06**
Manufacture of basic iron and steel	-	8	45	1	**59.50**
Manufacture of fabricated metal products except machinery and equipment	28	52	77	6	**46.65**
Manufacture of motor vehicles, trailers and semi-trailers	-	1	2	3	**77.23**
Manufacture of furniture	4	21	46	117	**76.73**
Total	**255**	**817**	**834**	**503**	**53.82**

As shown in Table 8 among the total manufacturing establishments included in this survey, 10.6 percent of them were operating below or equal to 25 percent of their capacity, while around 20.9 percent of the establishments have been operating above 75 percent of their full capacity during the survey period. Most of the establishments (34.6 percent) have been utilizing between 51 and 75 percent of their full capacity, whereas 33.9 percent of them were operating between 26 and 50 percent. In general, the survey results indicate Ethiopian manufacturing industries are operating at a low level of capacity.

The average level of capacity utilization in the survey quarter has shown a slight increment as compared to the previous quarters. On the other hand, the number of establishments which operated between 26&50 percent of their full capacity has increased in this quarter as compared to the previous quarter.

The low level of capacity utilization in the sector would compel one to ask "what was behind this weak level of capacity utilization?" The responses obtained are presented in Table 8, which revealed 41 percent of them reported shortage of raw materials as the major reason for not operating at their full capacity. On the other hand 17 percent of them reported shortage of raw materials as the second major reason for not operating at their full capacity.

Table 9 Number of Establishments by Reason for not working at Full Capacity

	Year of Commencement					
	Less than 3 years	3 to 5 years	6 to 8 years	Above 8 years	Total	%
First Major reason for not working at full capacity						
Shortage of raw materials	263	165	162	391	981	41
Shortage of spare parts	67	7	12	20	106	4
Shortage of foreign exchange	18	-	1	-	19	1
Lack of demand/market	102	56	37	174	368	15
Shortage of working capital	149	3	23	66	241	10
Shortage of electricity and water supply	10	47	20	121	199	8
Repeated breakage of machinery	1	43	17	177	239	10
Lack of skilled man power	-	-	-	57	57	2
Government rules and regulations	27	-	-	5	32	1
Others	31	56	53	10	150	6
Total	669	377	324	1,023	2,393	100
Second Major reason for not working at full capacity						
Shortage of raw materials	83	15	20	254	371	19
Shortage of spare parts	22	-	20	67	109	6
Shortage of foreign exchange	3	34	26	102	165	8
Lack of demand/market	98	99	28	109	335	17
Shortage of working capital	52	43	11	46	153	8
Shortage of electricity and water supply	89	101	92	47	329	17
Repeated breakage of machinery	64	12	33	43	153	8
Lack of skilled man power	6	7	-	95	108	6
Government rules and regulations	-	53	-	102	156	8
Others	26	3	2	53	84	4
Total	444	368	232	918	1,961	100
Third Major reason for not working at full capacity						
Shortage of raw materials	10	44	3	5	60	4
Shortage of spare parts	-	40	22	15	77	6
Shortage of foreign exchange	-	-	-	15	15	1
Lack of demand/market	-	53	-	179	232	17
Shortage of working capital	67	106	10	39	221	16
Shortage of electricity and water supply	25	39	13	134	212	16
Repeated breakage of machinery	48	24	26	167	264	19
Lack of skilled man power	1	-	1	2	4	0
Government rules and regulations	91	-	28	50	169	12
Others	40	45	-	30	115	8
Total	**282**	**351**	**102**	**634**	**1,370**	**100**

The number of establishments which reported ''Lack of market demand '' as a reason has declined significantly in this quarter as compared to the previous quarter which is decreased from 33 to 15 percent, Whereas those which reported 'shortage of working capital' as a major

reason has shown a slight increment in this quarter. Besides 32 establishments reported government rules and regulation as a problem for not operating at their full capacity.

APPENDIX

Estimation procedures of total, ratio and sampling errors

To estimate the required variables by reporting levels (domains), the following formulas were used.

1. Estimate of domain total $\hat{Y}_h$ is given by:

$$\hat{Y}_h = \sum_{i=1}^{n_h} W_{hi} \, y_{hi} \quad \text{---------------------} \quad (1)$$

Where,

$$W_{hi} = \frac{M_h}{n_h M_{hi}} \quad \text{Is the basic sampling weight}$$

M_h = Sum of basic values of establishments in stratum h obtained from the sampling frame.

M_{hi} = Basic value of the ith establishment in stratum h obtained from the sampling frame.

n_h = Number of successfully covered sample establishments in stratum h.

y_{hi} = The observed value of a characteristic y for manufacturing industry i in stratum h.

Note:

- Estimate of total manufacturing characteristic, $\hat{Y}$ is obtained by summing up stratum/domain total estimates.

$$\hat{Y} = \sum_{h=1} \hat{Y}_h \quad \text{---------------------------------------} \quad (2)$$

- During the time of sample selection establishments having a basic value higher than the sampling interval were selected with certainty (with a probability of 1). Hence, the basic sampling weight of those establishments was taken to be 1.

3. **Sampling variance of the estimates:**

Sampling variance of estimate of stratum total are given by the following formulas:

The variance of domain or reporting total estimate is:

$$V(\hat{Y}_h) = \frac{n_h}{n_h - 1}\left[\sum_{i=1}^{n_h}\left(\hat{Y}_{hi} - \frac{\hat{Y}_h}{n_h}\right)^2\right] \text{------------------------------------} \quad (3)$$

Where,

$$\hat{Y}_{hi} = W_{hi}y_{hi}$$

Other notations are as defined above.

$$V(\hat{Y}) = \sum_h V(\hat{Y}_h) \text{---} \quad (4)$$

$$SE(\hat{Y}_h) = \sqrt{Var(\hat{Y}_h)} \text{---} \quad (5)$$

4. Coefficient of variation and confidence interval

The following formulas were used to calculate coefficient of variation and confidence interval of the domain (reporting level) total.

The coefficient of variation (CV) of domain total in percentage is:

$$CV(\hat{Y}_h) = \frac{SE(\hat{Y}_h)}{\hat{Y}_h}x100 \text{---} (6)$$

And

A 95 % confidence interval (CI) of domain total is:

$$\hat{Y}_h \pm 1.96 \, x \, SE\,(\hat{Y}_h) \text{ -- (7)}$$

5. Ratio estimates:

$$\hat{R}_h = \frac{\hat{Y}_h}{\hat{X}_h} \, and \, \hat{R} = \frac{\hat{Y}}{\hat{X}} \text{ --- (8)}$$

Where, the numerator and the denominator are estimates of domain totals of characteristic y and x, respectively.

$$Var\left(\hat{R}_h\right) = \frac{1}{\hat{X}_h^2}\left[Var\left(\hat{Y}_h\right) + \hat{R}_h^2 \, Var\left(\hat{X}_h\right) - 2\hat{R}_h \, Cov\left(\hat{Y}_h, \hat{X}_h\right)\right]$$

In which

$$Cov\left(\hat{Y}_h, \hat{X}_h\right) = \frac{n_h}{n_h - 1}\left[\sum_{i=1}^{n_h}\left(\hat{Y}_{hi} - \frac{\hat{Y}_h}{n_h}\right)\left(\hat{X}_{hi} - \frac{\hat{X}_h}{n_h}\right)\right]$$

Where,

$$\hat{X}_{hi} = W_{hi} X_{hi}$$

Other notations are as defined above.

Estimates of standard error, coefficient of variation and confidence interval for the ratio estimate can be calculated by adopting formulas 5, 6 and 7.