CENTRAL STATISTICAL AGENCY

BUSINESS STATISTICS

Revised

Report on

The 4st Quarter of the 2005 E.F.Y.

Manufacturing Business Survey

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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
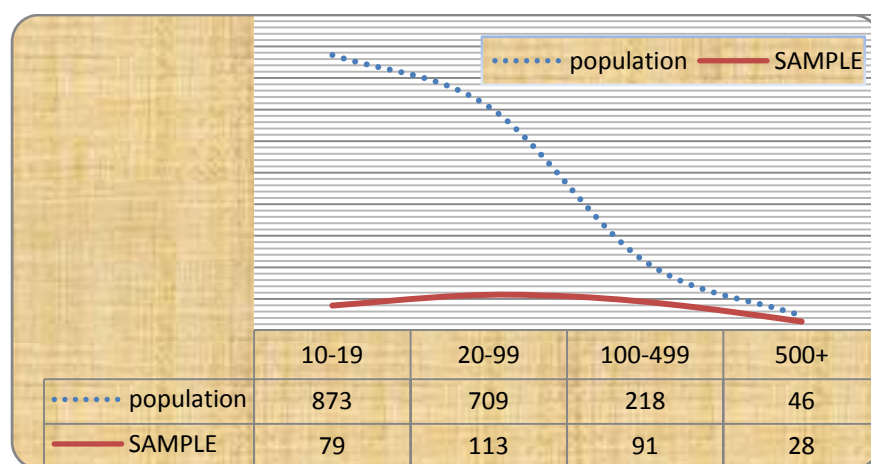
As regards to the ultimate coverage, the survey was not carried out for 46 establishments out of the sampled 310 establishments; 12 establishments were due to non-response and 34 establishments due to closure. As a result, the survey succeeded to cover 264 (85 percent) establishments throughout the country.

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 fourth quarter of 2004 E.F.Y., a total of 172,999 workers were engaged in the manufacturing industry, of which 128,952 (75 percent) were permanent while the remaining 44,140 (25 percent) persons were seasonal or temporary employees. Among the industrial groupings, manufacturing of food products contains the highest number of employs, employing around 24.1 percent of the total work force in the sector accompanied by non-metallic products which took around 13.4 percent. On the other hand, Manufacture of motor vehicles, trailers and semi-trailers contributed 1.0 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	892	29,440	12,303	41,652
Manufacture of beverage	54	10,182	1,035	11,217
Manufacture of tobacco products	1	1,005	2,227	3,232
Manufacture of textiles	18	5,933	1,032	6,965
Manufacture of wearing apparel, except fur apparel	85	13,633	1,243	14,876
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	187	13,967	6,039	20,004
Manufacture of wood and of products and cork, except furniture	-	-	-	-
Manufacture of paper & paper products.	134	8,331	1,647	9,978
Manufacture of chemicals and chemical products	106	5,415	3,189	8,604
Manufacture of rubber products	191	10,364	1,627	11,991
Manufacture of other non-metallic products	584	14,235	8,931	23,166
Manufacture of basic iron and steel	83	2,790	1,383	4,173
Manufacture of fabricated metal products except machinery and equipment	87	3,890	733	4,623
Manufacture of motor vehicles, trailers and semi-trailers	3	1,228	570	1,798
Manufacture of furniture	281	8,539	2,180	10,719
Total	2,707	128,952	44,140	172,999

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, 785 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, 19.02 percent of them forecasted there will be an increase in the number of employs, while 10.42 percent of them expect that the number of employs will decline in the next quarter. The remaining 70.56 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	205	82	564
Manufacture of beverage	9	2	42
Manufacture of tobacco products	-	-	1
Manufacture of textiles	3	-	15
Manufacture of wearing apparel, except fur apparel	-	-	85
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	54	-	133
Manufacture of wood and of products and cork, except furniture	-	-	-
Manufacture of paper & paper products.	22	-	109
Manufacture of chemicals and chemical products	6	15	86
Manufacture of rubber products	23	11	157
Manufacture of other non-metallic products	95	132	357
Manufacture of basic iron and steel	1	-	82
Manufacture of fabricated metal products except machinery and equipment	28	4	55
Manufacture of motor vehicles, trailers and semi-trailers	1	-	2
Manufacture of furniture	59	31	191
Total of Manufacturing	507	278	1,880
Total %	19.02	10.42	70.56

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 20.6 billon birr. Among the industries, the largest share of production value is contributed by manufacturing of food products accompanied by Manufacture of chemicals and chemical products and beverage processing contributing 21.75 %, 17.18 % and 11.45 % of the total value, respectively. The smallest values of production were registered by manufacturers of motor vehicles, trailers and semi-trailers and tobacco manufacturing which are 1.25 and 0.52 % 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	4,473,216,367	21.75
Manufacture of beverage	2,355,310,466	11.45
Manufacture of tobacco products	107,684,648	0.52
Manufacture of textiles	493,234,485	2.40
Manufacture of wearing apparel ,except fur apparel	493,438,663	2.40
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	914,463,769	4.45
Manufacture of wood and of products and cork, except furniture	-	-
Manufacture of paper & paper products.	1,051,996,199	5.11
Manufacture of chemicals and chemical products	3,533,448,765	17.18
Manufacture of rubber products	1,603,566,079	7.80
Manufacture of other non-metallic products	1,788,031,330	8.69
Manufacture of basic iron and steel	2,314,146,683	11.25
Manufacture of fabricated metal products except machinery and equipment	550,370,380	2.68
Manufacture of motor vehicles, trailers and semi-trailers	258,132,482	1.25
Manufacture of furniture	633,275,273	3.08
Total	**20,570,315,590**	**100**

Revenue Generation and Prospects

A total of 28.5 billion birr was earned as revenue in the manufacturing sector during the fourth quarter of 2004 E.F.Y, of which 97.41 percent was generated from local sales while the remaining 2.59 percent was generated from exports. Manufacturers of furniture products, food, and beverage products contributed the largest share of the total revenue generated during the quarter, amounting to 28.7, 14.1, and 11.32 percent of the total revenue, respectively, whereas, motor vehicles, trailers and semi-trailers products manufacturing industries' revenue were the lowest, amounting only 0.94 percent of the total. Most of the establishments supplied their products to local markets, except manufacturing industries of tanning, which generated 39.5 percent of its revenue from export market, as shown in Table 4 below.

Manufacturing industries of tanning has earned about 68.3 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 21.5 billon birr was spent as cost of production in manufacturing industries in this quarter. This is equal to 75.6 percent of their revenue. Relative to revenue from sales, the highest expense for production related activities were registered in the quarter in Manufacture of chemicals and chemical products, tanning industries and Manufacture of tobacco products amounting to 3.8 billion, 741 million and 118 million 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	3,936,085,374	98.03	78,908,247	1.97	4,014,993,621	100	1,055,351,089	3,119,381,708
Manufacture of beverage	3,218,252,517	99.80	6,324,664	0.20	3,224,577,180	100	195,234,466	1,141,785,466
Manufacture of tobacco products	265,858,233	92.52	21,499,719	7.48	287,357,952	100	20,769	118,393,103
Manufacture of textiles	437,835,402	94.36	26,163,000	5.64	463,998,402	100	59,953,148	419,352,693
Manufacture of wearing apparel, except fur apparel	519,031,282	95.79	2,004,514	0.37	541,854,686	100	104,590,055	322,667,448
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	557,766,959	60.50	364,165,557	39.50	921,932,515	100	335,592,122	741,596,238
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-	-	-	-
Manufacture of paper & paper products.	1,255,570,243	100	-	-	1,255,570,243	100	105,530,900	739,740,574
Manufacture of chemicals and chemical products	2,632,730,105	98.67	18,317,874	0.69	2,668,093,481	100	372,588,765	3,759,520,149
Manufacture of rubber products	1,680,091,200	91.03	-	-	1,845,562,554	100	126,837,955	1,076,246,322
Manufacture of other non-metallic products	1,694,917,173	99.88	1,976,413	0.12	1,696,893,586	100	226,539,821	949,633,737
Manufacture of basic iron and steel	2,485,130,302	100	-	-	2,485,130,302	100	77,358,708	2,062,734,795
Manufacture of fabricated metal products except machinery and equipment	623,617,368	100	-	-	623,617,368	100	51,210,286	405,913,012
Manufacture of motor vehicles, trailers and semi-trailers	267,548,754	100	-	-	267,548,754	100	3,000,000	67,927,209
Manufacture of furniture	8,162,981,530	99.83	13,854,590	0.17	8,176,836,120	100	108,544,458	6,592,716,764
Total	27,737,416,442	97.41	533,214,577	1.87	28,473,966,766	100	2,822,352,541	21,517,609,218

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, 1305 of them (55.8 percent) would expect a future change in their total revenue due to a growing local demand for their products. On the other hand, 495 respondents (21.2 percent) and 235 respondents (10.1 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	Major reasons for change in total sales revenue									
	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	415	157	-	2	3	44	-	-	124	745
Manufacture of beverage	27	5	-	-	-	2	-	-	6	40
Manufacture of tobacco products	-	-	-	-	-	-	-	-	1	1
Manufacture of textiles	5	6	3	-	-	5	-	-	-	18
Manufacture of wearing apparel, except fur apparel	53	25	-	-	-	-	-	-	-	78
Tanning and dressing of leather manufacture of footwear, luggage and hand bags	80	51	32	-	-	3	-	-	20	186
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-	-	-	-	-	-
Manufacture of paper & paper products.	93	1	19	-	-	-	-	-	10	123
Manufacture of chemicals and chemical products	31	37	1	-	-	9	-	-	28	106
Manufacture of rubber products	108	72	-	-	-	2	-	-	2	184
Manufacture of other non-metallic products	358	33	-	-	-	120	-	-	-	511
Manufacture of basic iron and steel	19	17	-	-	-	-	24	-	15	76
Manufacture of fabricated metal products except machinery and equipment	25	38	-	-	-	5	-	-	8	75
Manufacture of motor vehicles, trailers and semi-trailers	3	-	-	-	-	-	-	-	-	3
Manufacture of furniture	88	53	-	-	-	46	-	-	4	191
Total	1,305	495	56	2	3	235	24	-	217	2,337

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, 991 establishments, constituting 58 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 396 establishment's i.e.23 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	Major reasons for consuming imported raw materials										Total
	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	%	
Manufacture of food products	253	42	311	51	19	3	15	2	7	1	605
Manufacture of beverage	9	18	38	78	-	-	2	5	-	-	49
Manufacture of tobacco products	1	100	-	-	-	-	-	-	-	-	1
Manufacture of textiles	-	-	7	61	-	-	5	39	-	-	12
Manufacture of wearing apparel, except fur apparel	29	34	8	10	-	-	-	-	48	56	85
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	21	11	129	69	12	6	25	13	-	-	186
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-	-	-	-	-	-	-
Manufacture of paper & paper products.	34	26	92	68	7	5	-	-	1	1	134
Manufacture of chemicals and chemical products	13	16	69	84	-	-	-	-	-	-	82
Manufacture of rubber products	19	13	124	87	-	-	-	-	-	-	143
Manufacture of other non-metallic products	2	13	16	87	-	-	-	-	-	-	18
Manufacture of basic iron and steel	-	-	67	99	-	-	-	-	1	1	68
Manufacture of fabricated metal products except machinery and equipment	6	8	42	54	2	3	19	24	10	12	78
Manufacture of motor vehicles, trailers and semi-trailers	-	-	3	100	-	-	-	-	-	-	3
Manufacture of furniture	8	4	84	36	-	-	110	47	33	14	235
Total	396	23	991	58	40	2	175	10	100	6	1,701

New Capital Expenditure

New capital formation by the existing establishments in the quarter amounted to birr 877 million. Of this amount, the share of rubber products, beverage manufacturing and manufacturing of food products were 245.5 million birr (28 percent), 208.1 million (23.7 percent), and 94.4 million (10.8 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 449 million (51.2 percent) of the total new capital expenditure was spent on new machinery and equipment, while birr 169.9 million (19.4 percent) and 163.6 million (18.7 percent) of the total capital expenditure was spent for buildings and vehicles respectively.

Total new capital expenditure in the sector has increased by more than 250 million birr as compared to the previous quarter in absolute terms. Regarding industrial groupings high investment in fixed capital was registered in manufacturing of rubber products and beverage products for Machinery & Equipment and Vehicles respectively.

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	22,306,026	52,482,727	15,012,937	2,412,587	94,434,613
Manufacture of beverage	34,574,471	27,598,523	61,109,971	84,876,738	208,159,703
Manufacture of tobacco products	-	-	79,968	1,303,077	1,383,045
Manufacture of textiles	1,386,812	2,892,773	11,695,024	711,552	16,686,161
Manufacture of wearing apparel, except fur apparel	-	1,102,752	-	2,192,108	3,294,860
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	3,336,070	21,234,604	131,041	1,403,043	26,104,759
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-
Manufacture of paper & paper products.	4,974,273	23,089,293	4,442,774	766,427	33,272,766
Manufacture of chemicals and chemical products	16,570,715	25,426,513	8,023,424	1,160,672	40,913,494
Manufacture of rubber products	-	232,360,113	12,319,577	854,639	245,534,330
Manufacture of other non-metallic products	6,450,354	20,082,737	46,777,230	1,571,632	74,881,953
Manufacture of basic iron and steel	57,247,302	-	2,172,135	690,068	60,109,505
Manufacture of fabricated metal products except machinery and equipment	19,169,628	36,324,141	1,871,700	277,609	57,643,078
Manufacture of motor vehicles, trailers and semi-trailers	-	3,074,821	-	3,925,573	7,000,394
Manufacture of furniture	3,851,482	3,375,736	-	371,413	7,598,631

| Total | 169,867,134 | 449,044,734 | 163,635,780 | 102,517,138 | 877,017,292 |

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 62.54 percent of the capacity of the manufacturing industries was being utilized. A relatively high degree of capacity utilization was observed in the manufacture of wearing apparel, except fur apparel and manufacture of paper and paper products amounting to 79.68 and 77.3 percent, respectively, while low level of capacity utilization was observed in manufacturing of beverage, Manufacture of furniture and Manufacture of tobacco products exhibiting 41.92, 46.35 and 49.0 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	84	149	317	283	**62.00**
Manufacture of beverage	21	16	4	13	**41.92**
Manufacture of tobacco products	-	1	-	-	**49.00**
Manufacture of textiles	-	8	5	5	**65.60**
Manufacture of wearing apparel, except fur apparel	-	5	48	32	**79.68**
Tanning and dressing of leather, manufacture of footwear, luggage and hand bags	52	12	80	43	**56.65**
Manufacture of wood and of products and cork, except furniture	-	-	-	-	-
Manufacture of paper & paper products.	-	6	69	59	**77.30**
Manufacture of chemicals and chemical products	2	27	13	41	**53.14**
Manufacture of rubber products	20	57	38	76	**62.33**
Manufacture of other non-metallic products	31	124	171	258	**70.72**
Manufacture of basic iron and steel	1	7	62	14	**62.55**
Manufacture of fabricated metal products except machinery and equipment	-	30	8	39	**62.81**
Manufacture of motor vehicles, trailers and semi-trailers	-	-	3	-	**60.87**
Manufacture of furniture	40	100	49	48	**46.35**

Total	250	543	868	911	62.54

As shown in Table 8 among the total manufacturing establishments included in this survey, 9.72 percent of them were operating below or equal to 25 percent of their capacity, while around 35.41 percent of the establishments have been operating above 75 percent of their full capacity during the survey period. 33.75 percent of the establishments have been utilizing between 51 and 75 percent of their full capacity, whereas 21.11 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 an increment as compared to the previous quarters. On the other hand, the number of establishments which operated between 76 to 100 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 9, which revealed 36 percent of them reported Lack of demand/market as the major reason for not operating at their full capacity. On the other hand 26 percent of them reported shortage of electricity and water supply 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	81	180	90	367	718	33
Shortage of spare parts	-	11	15	11	37	2
Shortage of foreign exchange	-	-	-	-	-	-
Lack of demand/market	102	160	117	408	787	36
Shortage of working capital	-	3	12	19	34	2
Shortage of electricity and water supply	47	106	52	15	220	10
Repeated breakage of machinery	3	81	71	67	222	10
Lack of skilled man power	-	-	22	28	50	2
Government rules and regulations	-	-	-	12	12	1
Others	3	-	20	82	104	5
Total	237	541	399	1,009	2,185	100
Second Major reason for not working at full capacity						
Shortage of raw materials	64	35	119	110	328	20
Shortage of spare parts	3	-	40	19	62	4
Shortage of foreign exchange	-	34	22	1	57	3
Lack of demand/market	24	38	70	179	311	19
Shortage of working capital	7	10	9	61	86	5
Shortage of electricity and water supply	15	59	76	282	431	26
Repeated breakage of machinery	8	19	2	48	76	5
Lack of skilled man power	-	19	4	72	94	6
Government rules and regulations	-	46	-	25	71	4
Others	47	46	-	45	138	8
Total	168	304	341	841	1,654	100
Third Major reason for not working at full capacity						
Shortage of raw materials	2	-	13	2	16	2
Shortage of spare parts	7	10	16	14	48	6
Shortage of foreign exchange	3	-	-	8	11	1
Lack of demand/market	-	-	-	11	11	2
Shortage of working capital	1	11	9	21	43	6
Shortage of electricity and water supply	5	36	-	70	112	14
Repeated breakage of machinery	26	68	23	122	239	31
Lack of skilled man power	12	-	19	39	70	9
Government rules and regulations	6	25	18	55	104	13
Others	2	25	11	85	122	16
Total	**64**	**176**	**110**	**426**	**776**	**100**

The number of establishments which reported ''Lack of market demand '' as a major reason has

increased significantly in this quarter as compared to the previous quarter which increases from

25 to 36 percent, Whereas those which reported 'shortage of working capital' as a major reason has shown a decline in this quarter. Besides 12 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:

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

5. Ratio estimates:

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

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

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

In which

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

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.