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MARKET SHARE, CONCENTRATION AND PROFITABILITY
OF ETHIOPIAN LEATHER INDUSTRY

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Of Ethiopian Leather Industry

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This is to certify that the Project paper Presented by Kumlachew Yeshambe entitled: Market Share, Concentration and Profitability of Ethiopian Leather Industry and Submitted in Partial Fulfillment of the Requirements for the Degree of Masters of Arts in Economics (Competition Policy and Regulatory Economics) Complies with the Regulation of the University and Meets the Accepted Standards with Respect to Originality and Quality.

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ABSTRACT

Market share, Concentration and Profitability

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Market structure is determined by the entry and exit decisions of individual producers. These decisions are driven by past profit rate and expectations of future profits which, in turn, depend on the nature of competition within the market generally speaking. Profitability is therefore directly dependent on the market structure that the firm has been operating in the defined geographic and product market. There are two influential industrial organization hypotheses that deal with relation between market structure and firms performance. The structure-conduct-performance paradigm believed that firms' performance is highly related with the existence of concentration which directly leads to collusion among firms in the market and create monopoly power in which all the firms in the industry get monopoly profit. On the other hand, the efficiency hypotheses suggests that firms' performance is determined by efficiency gain in the market which minimizes costs and expands firms' market share so that firm with high market share (efficient) will get market power and profit rate to each firm depends on their performance. Based on these classical theories the study examines whether the SCP paradigm or the efficiency structure paradigm determines firm's performance. The study finds that the structural conduct approach holds true in Ethiopian leather industry. That means, there exists monopoly power in the industry. The concentration ratio proxy for monopoly is significant while the efficiency variable explained by the market share is insignificant. The barrier of market entry and exit is also significant which sustains the monopoly power by avoiding contestability in the domestic market. However the ten year trend of concentration dynamics has been decreasing from 66% to 33%. Thus, if this trend continues the monopoly power may not exist in the near future.

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Table of contents

<u>Title</u>	<u>pages</u>
List of Tables.....	viii
List of Acronyms and abbreviations.....	ix
Chapter one.....	1
Introduction.....	1
1.1. Background of the study.....	1
1.2. Statement of the problem.....	4
1.3. Objective of the study.....	6
1.4. Significance of the study.....	6
1.5. Limitation of the study.....	7
4.6. Organization of the paper.....	8
Chapter two.....	9
An over view of leather industry in Ethiopia.....	9
2.1. General review.....	9
2.2. Government policy to promote the leather industry.....	12
2.3. Dynamics of concentration and threat of monopolization in the industry.....	16
2.4. Problems of the industry.....	18



Chapter three	21
Literature review.....	21
3.1. The SCP paradigm and the efficient structure theoretical model.....	21
3.2. Empirical review.....	29
Chapter four	34
Methodology.....	34
4.1. Baseline model.....	34
4.2. Variable explanation and hypothesis of the study.....	36
4.3. The Data.....	42
Chapter five	44
Result and discussion.....	44
5.1. Static panel data and model specification tests.....	44
5.1.1. Model specification test: Hausman test.....	44
5.1.2. Static panel data test statistics.....	46
5.1.2.1. Test of autocorrelation.....	46
5.1.2.2. Test of heteroskedasticity.....	47
5.1.2.3. Test of fixed time effect and endogeneity.....	48
5.1.2.4. Test of multicollinearity.....	49
5.2. Econometric Results and Discussion.....	49



Chapter six	55
Conclusion and policy implications.....	55
6.1. Conclusion.....	55
6.2. Policy implications.....	58
References	
Appendices	

List of tables

<u>Table</u>	<u>pages</u>
Table 2.1: Concentration ratio dynamics in the Ethiopia leather industry.....	17
Table 5.1: Regression results of the fixed effect model.....	50



List of acronyms and abbreviations

<u>Acronyms</u>	<u>descriptions</u>
ADLI	Agricultural development leads industrialization
COMESA	Common market for eastern and southern Africa
CR4	Concentration ratio of the top four firms
CSA	Central statistics authority
FE	Fixed effect
GOE	Government of Ethiopia
GTP	Growth and transformation plan
HHI	Herfindahl-Hirschamn index
IMF	International Monetary Fund
LLPTI	Leather and leather products technology institute
LSDV	Least squares dummy variable
OLS	Ordinary least squares
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
RE	Random effect
SWOT	Strength weakness opportunity and threat
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
WB	World Bank



Chapter one

Introduction

1.1. Background of the study

Ethiopia is an agrarian country where live stock production plays a major role in its economy. The country is among the top ten largest live stock producing countries in the world and the first in Africa (Kebede, 2008). Different researchers give different statistics about the number of live-stock in Ethiopia. But according to Japan embassy (2008) study, Ethiopia possesses one of the largest populations of live stock in Africa and even 7th-9th in the world, i.e. 41 million cattle, 25 million sheep and 73 million goats. However, the resource is not fully utilized and only 2.7million hides, 8.1million sheep skins and 7.5million goat skins are sold on the market. This amounts to only 21 percent of the country's livestock population. Therefore, the leather industry still has room to be developed further, optimizing the abundance of the resource. According to the livestock marketing authority figures, in the year 200, Ethiopia had approximately 35 million cattle, 25 million sheep, and 19 million goats. The Ethiopian ministry of agriculture estimates that the current skin removal rate is 7 percent for cattle, 33 percent for sheep, and 37 percent for goats. This translates into an output of 2.4 million cowhides, 8.3 million sheepskins and 7 million goatskins in 2000. On average, Ethiopia has the capacity to supply 16 to 18 million pieces of hides and skins to local tanneries. But it is short of that due to different infrastructural and market structure problem.

But the extent to which the available resource is exploited depends on the off-take rate, which is in-turn a result of the level of economic development of a country. As Nega (2003) described it, the fact that production of hides and skins heavily relies on the demand for meat, makes the rate of expansion of the leather sector dependent on the rate of growth of the economy. Though Ethiopia has a large livestock population, its



leather sector significantly lags behind many countries that are less endowed. However, the sector plays a significant role in the overall economic development. It is the second largest exporting sector and larger industrial employment absorbing sector in the country. The leather manufacturing industry associates with the Ethiopian people living condition. About 85% of the country's populations are rural dweller, which has a direct dependency on live-stock and live-stock products for their agricultural cultivation, wear, set and other, then it is not difficult to expect that leather manufacturing is a traditional activity in the country. Therefore the government needs only to institutionalize, modernize and create linkage with agriculture in order to make the leather industry the main engine of transforming the country into industry.

The development of the leather industry is associated with the Agricultural Development Led

Industrialization (ADLI), which is the center of economic policy of the country, in that the promotion of high value-added leather products is going to encourage the process of industrialization of agriculture. For this reason, Ethiopia's Industrial Development Strategy, which was prepared in 2003, gives especial attention for the leather product industry development. Although the price of semi-finished hides/skins is higher, this trade depends on semi-finished leather, which is less value-added in the normal market (because as described in the strategic plan of MoTI (2003) finished leather is less competitive with foreign producers), and as a major export item (contributing 10 to 20 % of total foreign earnings, MoFD, 2006) this makes the industry unsustainable and vulnerable. Therefore, the attempt to promote the production and export of finished leather has been taken by the government of Ethiopia. As an incentive the industries are enjoying different privileges like tax incentive and long term loan facilities from Development Bank of Ethiopia (Japan embassy, 2008).

Currently, there are 22 tanneries operating in Ethiopia with installed daily capacity of producing 5,760 square feet of hide and 101,600 square feet of skins. The actual daily

utilization, however, is 81% and 44.97% of the number for hides and skins respectively. 9 of the 22 are engaged with 100% of export market. The footwear industry comprises of the large mechanized industry and small production units micro, small and micro enterprise including the informal sectors. There are 13 medium and large mechanized footwear factories in the formal sector. They produce primarily men's, children's and ladies shoes for the local and export market (LLPTI, 2010).

Thirdly, there are 16 enterprises operating in the leather goods and garment sub-sector. The overall installed capacities is 700 pieces and 309 pieces and actual per day output ranges from 10-60 pieces respectively (LLPTI, 2010).

As explained above, there are a number of small and medium types of industries that produce leather garments, footwear, and leather articles mainly for domestic markets. However, recently, some of these products have started selling in trade fairs and niche markets abroad. The buyers have good appreciation for these products but due to the limited capacity of the industries, they are unable to meet the international standard for bulk quantity of supply (Gizaw Molla, 2004).

World Bank Draft Country Economic Memoranda in 2004 also indicates that Ethiopian tanneries are mainly producing semi-processed products for export and small quantities of finished products for leather industry and a small proportion for export. In value terms this proportion of domestic consumption to export is 85:15, which implies that the majority (85%) of the finished leather is for local consumption (DBE, 2005). Therefore, domestic market structure is the main determinant of profitability since the export market share is relatively small and takes the international competitive horizontal demand curve.

(See MoFD, 2006; MoFD, 2011, Teshome Kebede, 2008, DBE, 2008). However, the domestic market does not receive attention by all stake-holders, government, associations, independent firms and others.

1.2. Statements of the problem

As noted by Porter (1998) market structure and profitability of a firm or an industry in general depends on level and intensity of new firms' entry, input suppliers bargaining power, buyers' power, the existence of substitutable products in the market and internal industry rivalry. Depending on these variables' intensity and level of profitability (ability and power of firm to charge price above marginal cost of production) in the market, the market can be defined as competitive, monopolistic competition, oligopolistic and monopoly market structure (Lerner, 1934). Porter's five force industry profitability and market structure analysis theory and model is more applicable in value chain techniques of analysis and no objection on it among economists and/ or market researchers as a whole. Overall market structure is determined by the entry and exit decisions of individual producers. These decisions are driven by expectations of future profits which, in turn, depend on the nature of competition within the current market (Dunne, et al., 2009).

But there is a debate among different scholars on measurement and determination of profitability and market structure of an industry in the given economy. Among them the most notable theoretical debates are the debate between Harvard school and Chicago school of thought on industrial organization. Following Bain (1951), dominant in Harvard school thought, industrial organization economists developed **structure--conduct--performance (SCP)** approach of firms and industries profitability analysis. The general hypothesis of the theory is: the structure (number and size distribution of the firm in an industry) determines its conduct (the behavior of the firm's interaction in the market) which finally in turn determined performance (profitability). This means the higher the market concentration, the higher the likelihood of collusion (cartel, merger or tacit form) among firms to raise price above marginal cost to seek supernormal or monopolistic profit. Based on this theory different researchers found a positive and significant effect of concentration on profitability of firms (see, Feeny, et al., 1999; Gerski, 1991; Round, 1976 and 1978; Weiss, 1974; Gilbert, 1984).

Even if the SCP approach dominated up to early 1980s, different theoretical and empirical works raise criticism and distrust on the theory. Among them influential Chicago economists Demsetz (1973) and Peltzman (1977) work comes with strong criticism on SCP paradigm. Demsetz didn't end up with criticism but also come up with new theory and hypothesis. He said: "the positive relationship between concentration and profitability found in previous empirical studies may not be attributable to collusion which leads supernormal profit and does not necessarily indicate a unidirectional casualty relation running from structure to performance." Demestz and others suggested the reverse that performance determines market structure rather than market structure determining performance. This hypothesis called "**efficient structure**" hypothesis. Efficient firms in management, R&D, cost, production or other, become profitable by increasing their market share which results in market concentration. Market share, a proxy for relative firm efficiency, is thus positively related to profitability. The positive relationship between concentration and profitability is spurious and simply reflects the correlation between market share and concentration. Firms processing a comparative advantage in market (product and input) or/ and management and technology produce more and take higher portion of market share which results in concentration (Sherlock, 1985).

However, actual results are different in different countries depending on the extent to which markets are free, the level of development of the country country, level of foreign competition and domestic firm protection and the nature of the product like either the product is consumable or durable, convenient or not. Chang-Yang Lee and Ishtiaq P. Mahmood (2009) had a research to test the above dominant hypothesis in determining performance of the firm. But largely due to lack of these formal theories to hold in every country, empirical specifications have been carried out in a largely ad-hoc manner, and empirical studies have failed to find conclusive support for either the market-power or

the efficiency hypotheses in the Taiwan garment industry. Rather, strategic investment and government policies to promote the sector became significant even at 1%.

In line with the above industrial organization theoretical frameworks, there is no sufficient empirical evidence, my knowledge, that shows the effect of market structure and market share on the performance (profitability) of Ethiopian leather industry, although there are different works on competitiveness and efficiency of Ethiopian tanneries and footwear industries against foreign market.

1.3. Objective of the study

Therefore the objective of the study is to examine the effect of firm concentration on profitability of leather industry in Ethiopia and to search out the existence of efficiency (market share) effect on industry performance (profitability).

If the concentration profitability weights, it has an objective to test to what extent the monopoly power in the industry derives them towards illegal commercial activities like cartel, resale price maintenance, vertical integration, exclusionary and exploitative agreements against the social welfare and efficient market. On the other hand it will examine whether the performance due to efficiency leads to collusion or not.

1.4. Significance of the study

After the study is accomplished, it may provide evidence on whether collusion due to concentration or efficiency is the most determining force for industry profitability. If the concentration approach (SCP paradigm) holds true, it is anti-competitive practice and it is illegal per se in Ethiopia competition and trade practice law so as it will help the Ethiopian competition trade practice and consumer protection authority to take measure on industries to correct their exploitative action through collusion and making price above marginal cost to extract consumers welfare as if monopoly. On the other

hand if the efficiency structure hypothesis holds, market power is due to efficiency gain so that it is no more requires the authority to intervene in the market. But it helps for the authority to follow up that whether firms are using their market power gain due to efficiency for exclusionary and exploitative practice or not.

1.5. Limitation of the study

The study is limited to static panel data frame work for the period 2001-2010. It is also forced to be limited on the domestic market and the formal sector only. The rationale to be limited on domestic market only while leather and leather product is the second largest in the country's export is because the share of domestic market is 85%. The other is competitiveness of Ethiopian finished leather products in the international market is so limited that Ethiopian firms take foreign leading firms price or the international competitive horizontal demand curve than determining their profitability due to firm specific factors like advertising and research and development. Moreover, in countries with infant and huge population/market/ but dynamic growth economy like Ethiopia, the domestic market is the highest trajectory power to influence the country's economy and market structure as depicted by Takeo Nakao (1979). The geographic market boundary of the study is all the national market except the Somali and Afar regions. The exclusion is because this area is not still integrated with the national market for reason that culture of dressing type, lack of good governance and tax administration for developmental industrialist, and geographical openness for illegal trade which hinders equal plan for competition. The product market is all the private, share company and government leather products in the boundary of the country except the excluded regions.



1.6. Organization of the paper

The paper is organized within six chapters. The first chapter is the introduction part which briefly explains the background of the study, justification for the study and its significance. Next an over view of the country's leather industry is discussed followed by the related literature review to support the analysis and model specification with different international and national works. The fourth chapter describes the model used, the rationale and the hypothesis. In chapter five the econometric results are presented discussed. Finally the conclusion and policy implication of the study is described

Chapter two

An over view of leather industry in Ethiopia

2.1. General review

Ethiopia's economy is dependent on agriculture like many developing country of the world. As per MoFED's (2010) annual report, agriculture takes 43% of the total GDP, more than 80% of employment creation and export earning, the service sector reaches 43.4% share from GDP while industry contributes 13.7% from total gross product and 15% of export earnings. The service sector improvement is so influential in the country's economy and its growth is due to expansion of government's project in health, construction, education and other sectors. But the industry sector does not show such significant change. This is because the industry sector needs the crucial role of private sector and the private sector did not take the initiative and responsibility for the development of the sector even if government gives different incentives for those engaged in manufacturing sector including the leather industry.

The resource base for the development of the country's leather industry is the abundant livestock population that Ethiopia is endowed with; that is, it has a major comparative advantage in the raw materials needed for the leather sector that makes it, in principle, very appropriate for leather production for either market, domestic or international. Parallel to the endowment, government industrial investment policy and measure of privatization has a crucial impact on the development of the sector. According to live stock Market Authority's (2000) study, Ethiopia had approximately 35 million cattle, 25 million sheep, and 19 million goats. The Ethiopian ministry of agriculture estimates that the then skin removal rate is 7 percent for cattle, 33 percent for sheep, and 37 percent for goats. This translates into an output of 2.4 million cowhides, 8.3 million sheepskins and 7 million goatskins in the time. The study of Japan embassy (2008) shows the figure has increased to 41million cattle, 25million sheep and 73million goats. However, the

resource is not fully utilized and only 2.7million hides, 8.1million sheep skins and 7.5million goat skins are sold on the market even if the country has an average capacity to supply 16 to 18 million pieces of hides and skins to local tanneries. This amounts to only 21 percent of the country's livestock population. The paradox of input shortage comes from household based traditional animal breeding; most of the slaughtering is done in private homesteads instead of abattoirs and collection of raw hides and skins involves a long line of supply chain with incoherent relationships makes proper and on time getting of skins difficult. The improvement of post-slaughter treatment of hides/skins is also needed. USAID is introducing the salting process after slaughtering to discourage bacterial growth as well as constructing warehouses to stock raw materials properly. Due to these factors the expected input requirement for the leather industry at full capacity in 2000 had a value of 246,411,748 birr to produce 513,083,422 birr products. However the total input used was 106,326,666 birr and the total product produced was 189,302,685 birr. The figure shows that the industry had used almost 37% of its capacity. The problem however was not only input shortage but it is also lack of working capital and others. Now a days the estimated total value of product reaches 1.5 billion birr and estimated raw material used is valued around 0.8 billion birr. But the value of the total product amounted to 447,150,431 birr and raw material used is 188,421,908 birr in 2010. The leather industry absorbed 3,190 employees in 2001, 3,684 in 2005 and 4,110 employees in 2010 below the PASDEP estimation of 8,000 and leather industry association's estimate of 17,000 employees in 2010. Employee absorption has shown an insignificant change within ten years. This may possible be because the owners may try to do more works with less

Man power or no enough market for their product or no attractive salary at all but the issue needs an independent research

The productivity and the gap between full capacity and actual production are so wide and needs to be improved. Therefore, the leather industry still has room to be developed further, by optimizing this abundant resource.

There are a number of small and medium types of industries that produce leather garments, footwear, and leather articles mainly for domestic markets. However, recently, some of these products are being sold in trade fairs and niche markets abroad. The buyers have good appreciation for these products but due to the limited capacity the industries have, they are unable to meet the international standard for bulk quantity of supply (Gizaw Molla 2004 cited in Development Bank of Ethiopia, 2005). According to Japan embassy (2008), currently some factories started to trade with European countries like Italy and Germany. However, the profitability from trading is lower than from the domestic market. On average exporter may make a profit of one dollar per pair of shoes maximum from the trade, which is 50 birr (about 3 dollars) less profit compared to that of the domestic market. In spite of the lower profit, is still trying to expand the trade, because the trade potential in the future is considered to be great and it is worth suffering a temporary loss which allows it to penetrate the international market in the long run. The other paradox of the sector in the international market the prices of semi-finished skins are higher than the finished ones. This is because the European market needs semi processed leather to produce by their own design. This hinders the sustainability and development of the Ethiopian leather industry. An important difficulty faced by Ethiopian leather in the international market is low productivity of the sector and obsolete technology used. One Chinese factory can produce 5,000 pair of shoes per day while the total daily product of foot ware in Ethiopia is below 7,000-8,000 even though the government has been trying to increase the number to 50,000 pair per day. In order to be internationally competitive, and to make more profit out of trade, cost reduction by mass production is a must. Also, the clients (in European markets) do not find it cost effective if the trading volume is small. Therefore, one of the factories mentioned above is planning to strengthen its capacity by purchasing the to-be-privatized public enterprise as well as using better technology.

World Bank Draft Country Economic Memoranda (2004) also indicates that Ethiopian tanneries are mainly producing semi-processed products for export and small quantities

of finished products for domestic leather industries and a small proportion for export. The export items shape and design by the European or American importers and the Ethiopian firms replicate the design than developing their own design and brand. In value terms the proportion of domestic to export consumption is 85:15, which implies that the majority (85%) of the finished leather is for local consumption. The domestic market is huge for all dimensions due to higher population and increasing infrastructural facilities. According to 2011 access capital study, the estimated urban clothing and footwear market is Birr 7.5 billion and it has 8 percent share in the urban consumption basket. This figure represents a mix of imports and local produce; given import figures of Birr 3.2 billion for clothing and footwear, this implies that only 57 percent of the market is supplied by local producers. The domestic producer can still control the market from imported Chinese products by using domestic products quality goodwill and improving the design depending on the market need as well as its accessibility in all group of market in kind and price. However the focus of government is on export market, given the situation of the international market crisis the domestic market should be targeted in the short run marketing strategy of the products. Therefore the domestic market should be given attention in order to increase the profitability and meet international standard of product in the sector.

2.2. Government policy to promote the leather industry

The main development objective of the Ethiopian Government is poverty alleviation/eradication. Hence, the country's development policies and strategies are geared towards this end. Industrial development is the driving force for the overall development of the economy. The sector has shown encouraging progress as a result of the investment policy and strategy designed by the Government. Among the steps taken to create a conducive environment to encourage private and foreign investment, streamlining bureaucratic procedures such as customs clearance within hours, and removing institutional bottlenecks, increasing the supply of affordable and, strengthening finance and banking services, quality management and improving the

market for businesses are notable ones MoFED (2006). The Government's program under the PASDEP attempted to focus on strengthening the small-scale manufacturing enterprises, as they are the foundation for the establishment and intensification of medium and large-scale industries in addition to opening the opportunity for employment generation for those not engaged in the agricultural sector. It will also serve as alternative/additional income source for those involved in agriculture. Since 2000 the Ethiopian government has developed and implemented different policies and strategies to reduce poverty. All the policies, strategies and programs are originated and in line with the country pillar economic policy, ADLI. In 2000, the government prepared a mutual understanding document between government and donors in respect of how to use the donor funds to eradicate poverty and industrial development to meet millennium development goals.

A Strategic Action Plan for the Development of the Ethiopian Leather and Leather Products Industry was prepared by the Ministry of Trade and Industry (MoTI) with support from the United Nations Industrial Development Organization (UNIDO) in March, 2005. The strategy preparation has involved many stakeholders including businessmen, which made the strategy more realistic and pragmatic. The strategy included the Strength, Weakness, Opportunity and Threat (SWOT) of the Ethiopian leather industry and an integrated strategy is recommended and in the second part of it, more concrete targets and an action plan are set in line with the strategy recommended at the initial stage. The strategy takes the 'top-down' approach that the development of high value-added products, such as shoes, garments and bags, should be focused and the other associated industries, such as tanning, will naturally follow the top-stream industries' development (Japan embassy, 2005).

To promote the export of leather footwear, the Strategic Action Plan has set a target to increase the export value from 0 in 2003/04 to 4 million US\$ in 2005/06 and 17 million US\$ in 2009/10. However, the actual export value was 1.6 million US\$ in 2005/06, while



the target was 4 million US\$, and 3.4million US \$ in 2006/07; therefore it seems difficult to reach the targeted 17million US\$ in 2010. But the government noted the failures of the target and revised the target by examining the comparative advantages so that the export earnings from leather and leather product was increased to 75.73 million USD but below PASDEP target of 221 million USD. The target seems a little too ambitious, but the export value has been steadily growing.

As PASDEP was a national program it had comprised of different activities to meet the planned target. Capacity building and market search by government bodies were the major activities done by the program leaded by MoTI. Concerning the capacity building program, it started in creating educated managers both in top level and middle level and fills the gap of trained manpower in general. Top and middle managers took training abroad in long term, short term and successive on job training which gave vital improvement in the leather industry development.

In terms of creating skilled manpower, the Leather and Leather Products Technology Institute has been established by the Common Market for Eastern and Southern Africa (COMESA) and the government of Ethiopia. It is the biggest institute in the leather sector in Africa and accepts many international trainees from many other African countries, such as Sudan, Zimbabwe, Burundi and Rwanda. The curriculum of the Technology Institute consists of diploma course for three years, job training course for one year, and short-term training course to upgrade the skills of the actual workers. The latter is held only on request and provides training for 1,000 trainees per year on average, either at the institute or at the factories. In addition to the three courses, a degree course for four years is going to start in a few years.

Job opportunities after the training are abundant at the moment. The average salary for a Graduate of the institute is 700-800 birr, which is relatively high for a blue-collar worker. This positive perspective encourages the trainees at the institutes. The institute also possesses demonstration factories with modern facilities. It facilitates as well as

provides consultations to the enterprises which have the intention to promote trade. Since the institute is meant to build capacity to promote trade, these services are not provided to those who only deal with the domestic market.

The Leather Association and MoTI have been promoting the Ethiopian leather/leather products through international fairs and the Ethiopian embassies abroad. However, despite the high quality of the finished leather and the effort of the relevant organizations, the negative image of Ethiopia makes the promotion difficult. Trade fairs in America, Italy, Germany and Japan are the most notable market linking government's activity (MoTI, 2003).

On the other hand, the leather industry has been enjoying privileges, such as tax exemption and tax holidays, and the strong support from the GOE as one of the promising industries which lead the country's economy, the lobbying activities of the Leather Association has been focusing on the provision of technical assistance and extension services for the quality improvement of leathers rather than on that of additional privileges. The privileges is, however, going to be limited only to those with the capacity to process finished leather as the in iterative for the factories to upgrade their capacity. However the impact of such incentives on the development of the sector and the economy has not yet been studied. According to the Japan embassy survey of 2005, the trade in leather has been increasing under the strong initiative of the GOE and it is expected to make a big impact on the Ethiopian economy. However, the survey has revealed that approximately 25% of the expenditure of a footwear factory interviewed during the survey flow abroad because most of the parts other than leather, e.g. buckles or laces, are imported.

Sequentially the last government's poverty reduction strategy paper is the GTP. This is prepared in consultation with independent donors, organizations including IMF and WB, and different stake holders in 2010/11. The GTP started with PASDEP's failures. During

the PASDEP period the government planned to generate 221 million USD from leather and leather product marketing. But it achieved only 75.73 million USD. It also planned to upgrade 74 unfinished leather processing industries and achieved 11 industries only. After evaluating these failures, GTP puts strategic directions in order to make the industry sector as a gear of the economy. These are creating of strong linkage between agriculture and the industry and giving appropriate support for the transformation of small and micro industry as well as medium and large industry.

Leather industry is given second priority attention and responsibility to transform the economy next to textile and garment industry. The objectives of the government on the leather industry are to increase the local production of the product in quality and variety, increase substitutability rate of the domestic product against the imported ones, increase foreign exchange earnings and technological advancement of the sector, and the objective is expected to be achieved by new investment projects, expansion of the existing ones and technological improvement of the overall production under labor intensive production schisms. In terms of foreign exchange earnings, it is supposed to earn 496.9 million USD from the international market.

2.3. Dynamics of market concentration and threat of monopolization in the Industry

Having examined the existing opportunities and limitations in the sector including policy issues, we deal with market structure of the sector under the studied period. Concentration ratio is used as an indicator of monopoly power. Competition authorities examined the dynamics and the current concentration ratio of the industry and the reason how it achieved, either through efficiency or effort to monopolize, to take corrective measures and remedies. But it needs to carefully define the geographic and product market in order to not commit first order and second order errors. If the geographic market or/and the product market is too small compared with it should be, the competition authority will commit first order error that finds monopoly power but

where there is no monopoly power in reality. This action will hamper the market by affecting the firms' efficiency especially if it is in the supply side of the market. On the other side if the authority defines the market wider than needed it will leave the monopoly as if they are not due to huge market reduces the concentration ratio. In most countries competition authority sets threshold of concentration ratio to decide whether it is monopolization move and subjected to investigation or not. The level of the threshold depends on the market size. The higher the market size the firm has been operating means there is huge sales in the market and so the threshold should be small and vice-versa. The threshold in America federal trade competition commission of anti-trust law is around 30% whereas in the Republic of South Africa it is above 45%. But the Ethiopian competition law does not specify the threshold level to say the market is concentrated or not.

Table 2.1: Concentration ratio dynamics in the Ethiopian leather industry

Year	CR4
2001	66.97%
2002	62.44%
2003	44.69%
2004	44.43%
2005	45.68%
2006	44.00%
2007	36.13%
2008	43.84%
2009	43.26%
2010	34.42%

Source: Own computation; based on CSA data

As can be seen from table 2.1, the concentration ratio continuously decreased except for 2007. An increased in number of firms in the industry will create stiff competition in the market which in turn reduces concentration ratio. This is because market share of larger firms will be taken by newly entering firms unless the barrier is strong enough to protect free entry and exist. In case of Ethiopian leather industry this prevails as shown in table 2.1. The reason why the concentration ratio increased relative to 2007 is many industries where derived out of the market at the end of 2006 and 2007 which gives concentration for the existing firms. But since 2008 the number of both small and medium sized firms entering in to the industry is remarkably so good which reduces the monopoly power of the top largest firms. The concentration of the top four firms in 2001 was 66.97% which can be considered high and monopoly power threatened the market. But in 2010 the number decreased to 34.42% which may not be considered as an indicator of monopoly power in small markets like Ethiopia. The figures show an improvement of competition in the industry.

However the reduction in concentration ratio may be raised from most top firms' participation in foreign market. Because the top firms who are engaging in export may give more attention for the foreign market than the domestic one and which may give the smaller firms to take part of their domestic sales and reduce concentration in the domestic market. However, based on the statistics in table 2.1, there is seemingly no threat of monopoly power in the domestic market. The econometric results in table 5.1 of chapter 5 also show that even if it is significant the strength of monopoly power is weak. Therefore as we have seen in table 2.1, the concentration dynamics is decreasing continuously towards competitive market situation.

2.4. Problems of the industry

In spite of the fact that Ethiopia has an advantage with the livestock endowment, cheap labor force and wide market, a number of problems hinder the country industries productivity and international competition. Among the prominent problems are;



shortage of raw materials, poor quality of hide and skins, low and obsolete technology, lack of management and technical skills etc.

It is that Ethiopia stands first in Africa in its cattle, goat and sheep resource. But these are primarily used for agricultural activity and for meat. Then hides and skins are considered as a by-product of the primary activities. On the other hand the slaughtering rate depends on the rate of meat consumption which is directly dependent on family income level. So the consumption rate is below the capacity due to predominance of low income earning families in the country. Even those who have it also consider the skin and hide as bi-product and do not properly supply it to the market and if delivered it are with poor quality.

Because of this most factories have not been using their full capacity which could have led them towards economies of scale and efficiency. Thus, they cannot minimize costs rather it increases cost of competition to get the limited raw material from the tanneries even with illegal means of vertically integrated agreement and long term contracts.

The majority of the hides and skins have defects of quality as it comes mostly from traditional husbandry practices and due to, frequent drought and diseases. Damage related with slaughtering activities is also important factor as 80% of it takes place at household level with little or no knowledge of hides and skins handling, storing and transportation.

The managerial and technical skill of the sector has not been changed remarkably as the world needs. Cost reduction and product diversification comes from economies of scale which needs extensive innovative research and development investment. The budget for R&D limited which is due to lack of know-how to conduct research on the area partly due to lack of technical and managerial skills in the area. However government has been investing on the area to improve the skill gap in the industry.

Market problem is also the other problem explored in the leather products. Promotion and advertisement to enter in to the international market and create channels of domestic market to supply and use the existing market effectively has limitations. Most of the sale takes place in the capital. But the marketing needs segmentation at different levels according to the people's level of income and interest but it needs market survey.

Chapter three

Literature review

3.1. The SCP paradigm and efficient structure theoretical model

Following Bain (1951), father of SCP approach, concentration is considered as an indicator of market power and profitability and it is a widely used measure of market structure. Concentration is defined as: majority of the product in the market is produced and supplied by few firms in the industry, which shapes/determines the conduct of firms in order to achieve the desired performance (Thomadakis, 1977). Industry intentional set of prices that are less favorable to consumers because of an imperfect competition is also an indicator of concentration and the gained market power due to the behavior of the firm originated from the concentrated market (Shaphered, 1982). There are a set of instruments to measure market concentration. The most commonly used are Herfindahl-Hirschamnn index and concentration ratio (CR). However these indexes alone do not show enough measure of firm's market power. So we should consider elasticity of demand, barrier of entry, collusive behavior of firms and other market variables together with the indexes (Kilpatrick, 1968).

Based on Scherer and Ross (1998) Cited in Basu (1993, chapter 5 & 12); Morrison, (1998); Bain (1956); Feeny and Rogres (1999) profit maximizing oligopoly firm profitability model can be written as:

$$\frac{(P-MC_i)}{P} = \frac{S_i}{e} \left[1 + \frac{dQ_i}{dq_i} \right] \text{-----} 1$$

Where P is market price of the product, MC is marginal cost, e is market elasticity of demand, q_i is firm i's product, Q_i is industry output excluding q_i and S_i is firm i's market share. $\frac{dQ_i}{dq_i}$ is the total derivative representing the response/reaction of its rivals to firms



own output variation or simply called conjectural variation. If a firm increases its product by unit and no change of production by other firms, the industry output is raised only by same unit, it is because of that in the Cournot model, the effect of a change in output by one firm on industry output is assumed to be one for one, since other firms output is unchanged.

Which leads $\frac{dQ_i}{dq_i}$ equals to one (Marrison, 1998). This means firm's profitability depends on its own market share and elasticity of demand. If we aggregate it for the industry analysis, i.e by summing up S_i and take weighted average of marginal cost, it gives:

$$\frac{P - \overline{MC}}{P} = \frac{\sum_{i=1}^k S_i}{e} \text{-----} 2$$

Where \overline{MC} is a weighted marginal cost and $\sum_{i=1}^k S_i$ is the sum of the market share of the k firms in the industry, which is normally represented by HHI (Herfindahl-Hirschman index). Then:

$$\frac{P - \overline{MC}}{P} = \frac{HHI}{e} \text{-----} 3$$

HHI is the concentration index, which proves the SCP hypothesis that the higher the concentrated the industry the higher market power and in turn higher profitability.

If $\frac{dQ_i}{dq_i} = (-1)$, that means the firm expects its rivals to offset at least partially of its output change. Then the right hand side of equation (1) becomes zero, which brings $MC=P$ or price falls to marginal cost. At this time the market is said to be a competitive market none of the firm enjoy supernormal profit. But there is an extreme case that all firms change output parallel and equally in the situation where firms are collide in

output decision and proportional market share. In this case the conjectural variation, $\frac{dQ_i}{dq_i} = \frac{Q_i}{q_i} = \frac{1}{s_i}$, then $1 + \frac{dQ_i}{dq_i}$ can be re-write $1 + \frac{Q_i}{q_i}$.

$$\frac{P-MC}{P} = \frac{S_i}{e} \left[1 + \frac{1}{s_i} \right] \text{-----4}$$

The price cost margin falls to monopoly situation. i.e. $\frac{1}{e}$ as describe by Feeny and Rogers (1999). Here collusion is not necessarily a formal contractual agreement. But it also includes a tacit collusion too. Game theory approach to industrial organization and different country anti-trust law suggest equilibrium attained in repeated game may appear to be collusive (Thomadakis, 1977 and Basu, 1993).

Therefore HHI, index of measuring market structure, is bounded between 0 and 1 with pure monopoly HHI=1 and perfect competition HHI=0. A value approaching 1 indicates existence of few dominant firms and near 0 tells us existence of many small firms. According to American anti-trust law (1883), HHI below 0.10000 indicates non-concentrated market, between 0.1000 and 0.1800 moderately concentrated and above 0.1800 confirms concentration. Generally, low or decreasing HHI shows loss of market power and increasing competition and the vice-versa gives market power to the firm and reduces competition.

The other frequently used measure of concentration is concentration ratio (CR_K).

$$CR_K = \sum_{i=1}^K s_i = s_1 + s_1 + \dots + s_k$$

It is a method of taking the sum of the market share of the top firms. Firms are ordered based on their market share from top to bottom and take k's firm market share. The

most widely used is the top three (CR₃) and top four (CR₄) firms market share. The value of CR_k is between 0 and 1. Value close to 0 implies minimum industry concentration and value approaching 1 shows maximum concentration. Most industrial organization studies use HHI and CR_k to measure concentration and monopoly power.

Following Bain (1951), industrial organization economists developed the SCP approach of analyzing firm's profitability and market power. The basic idea of the theory is: market structure (size and number distribution) determines firms conduct or behavior of reacting with in the market and which together influences performance. The paradigm hypothesis that concentration facilitates collusion or non- collusive cooperation to raise price or cut output which helps them to seek a monopoly profit.

The above hypothesis does not have a power to test profitability of firm unless it includes other profit determining factors like barrier of entry, demand and demand elasticity and other collusion triggering variables. Based on this idea, (Martin, 1979) and (Shepherd, 1986) has empirically tested the hypothesis as follows.

$$\Pi_i = f(CR, X_i)$$

Where Π_i = measure of profitability of the ith firm measured by rate of return on asset before

depreciation, interest and tax.

CR = industry measures of concentration

X_i = a vectors of control variables that are exogenous to the firm and may affect price through market or cost consideration.

However the most important model of SCP approaches is developed by seminar work of Hannan (1991), Gumbau and Maudos (2000) as follow:

$$\Pi_{it} = \beta_0 + \beta_1 CR_j + \sum_{j=2}^k \beta_j Z_{ij} + \varepsilon_i$$



Where Π_i = the return on assets for the i^{th} firm, CR is measurement of market share proxied by k-firm concentration ratio or the HHI index. Z_{ij} is additional explanatory variable included to individual firms cost and market demand factors and ϵ is stochastic disturbance term. The SCP paradigm holds true if β_1 is statistically significant and greater than zero.

On the other hand, after 1970s Chicago school philosophy emerged as a new era of industrial organization. The hypothesis of efficiency (Demsetz, 1973 and 1974) argued that concentration of the market is the result of the greater efficiency of some firms which consequently gain in market share and are more profitable. The SCP paradigm proponents are criticized on the basis of causality backwards. This is because SCP thought believed that concentration determine profits rather than the other way around. But the efficient structure theory believed that markets are workably competitive, but firms are not equally productive. Efficient firms grow and capture large shares of their markets, whereas inefficient firms shrink and eventually exit and the industry becomes concentrated. As a consequence, the industries in which efficiency differences are greatest have the most asymmetric market structures and the highest horizontal concentration. Moreover, since the large firms in those industries both dominate the market and are more profitable, there is a positive correlation between concentration and profitability. That correlation, however, does not result from the exercise of market power. Quite the contrary, it is a sign that markets are evolving efficiently.

Furthermore, the market share may not only reflect efficiency but also be a manifestation of the residual influence resulting from market power or other factors unrelated to efficiency.

Shepherd (1986) argues that although the advantages of efficiency may increase market share and result in higher profits, market power is not only obtained by collusion; firms may have market power when they enjoy high market shares. Shepherd (1986) also affirms that the empirical results only suggest that market share is more important than concentration in explaining profitability, suggesting that to support to the efficient structure hypothesis would require evidence to be obtained on specific firms, taking into account that all or most high profits reflect higher efficiency.

There are logical theories that why an efficient firm takes major market share and become profitable. There are different source of efficiency as pronounced by Shephered (1986); Demsetz (1974); Pletzman (1977) and Feeny and Rogers (1999).

These are dynamic and static efficiency factors. The dynamic efficiency arises from firms characteristics, such as research and development (R & D), management quality, qualified labor force. R&D done on process of work will reduce cost of production and help the firm to produce larger product at lower cost leads to capture higher market share by reducing price. While static efficiency is reinforcing dynamic efficiency once higher market share is achieved. If the firm had larger market share, it is a stoke to conduct R & D and process technology innovation which again scales up dynamic efficiency and larger market share due further reduction of production costs.

Therefore, concentration-profit relation emerges from competition in which the most efficient firm gets profit and market share. Additionally past advertisement and brand domination or loyalty, buyers confidence to deal with leading firm and bargaining power of firms to deal with price further increase efficiency and profitability through rise in market share. Additionally, the larger firm will extend its market share and profitability due to high sunk cost, advertising or/ and research and development barrier for new entrants (Scherer and Ross, 1990).

Empirically the theory is tested as follows by Gumbau and Maudos (2000) in line with Shepherd's (1986) work. The model is developed based on the assumption of

oligopolistic behavior of profit maximization. The firms are competing in the market to maximize their profit and in turn other firms react. The model uses efficiency and market share independently as explanatory variables of profit and tests its statistical significance. But most of the time it is difficult to measure efficiency unless we take the proxy of it. The other model which is widely used in industrial organization research which captures different variables, both industry specific and market specific variables, are developed by Bass, et al., (1978) and Slade, (2003). The model is specified as follows.

$$\Pi = f(CR, MS, X_i)$$

Where Π = measurement of profit

CR= measure of market structure

MS= measurement of market share

X_i = vector of control variable both firm specific and industry specific factors



Based on Slade (2003) the above model is further simplified as follows.

$$\pi_{ji} = \beta_1 HHI_i + \beta_2 MSH_{ji} + \beta^k X_{ji} + \varepsilon_{ji}$$

Where, π_{ji} profit rate of firm j in market i, HHI_i is sellers' concentration index, MSH_{ji} firm market share in market i and X_{ji} is control variable for k firm specific and market specific factors.

The significance of MSH, market share, in the above model implies the truthfulness of the efficient structure hypothesis. While the HHI, concentration index, tends to be significant, it assures the traditional SCP paradigm. The efficiency structure hypothesis argued any positive relation between concentration and profitability is due to efficiency rather than due to market power. So that any regression based on SCP, profitability on concentration, in a sample of industry may get positive and significant relation, but the result would not reflect the existence of market power. It is merely the effect of superior efficiency or low cost firms reward. However in any situation it is not HHI and

MSH only determines profitability of firms but there are other several variables used for the determination firm profitability.

Shepherd (1972) describes different elements of market structure which determines profitability of firm. Entry barrier is the most determinant for top firms profit sustainability. If not a barrier to entry and exit contestable firm may be attracted by supernormal profit of the oligopoly and enter in to market to seek all the super normal profit (Bain, 1956). Entry barrier may be explained by amount of investment cost, especially sunk cost, frequency of advertisement and other structural issues. Growth rate of firm will results deterioration of current profit but high profit in the future. Profit rate is measured by the ratio of return after tax and total asset.

Bass, et al., (1978) uses demand elasticity by taking change in sale in the studied period, advertising intensity, and advertising expense to sales ratio, size of firm and diversification of firm's product. So inclusion of firm specific variables like firm size, product diversification, change of demand, efficiency and market variables like concentration with market share is recommended.

The firm specific variables are varying in different works. The researchers may include variables that he/she assumes the variable can explain firm or industry profitability at a given country in the specified industry. In the specification of concentration variable some take the Herfindahl-Hirschamnn index as an indicator while the others takes the top four or three firms concentration ratio but not both simultaneously in my experience because the variables are highly correlated.



3.2. Empirical review

The first empirical work on SCP approach was presented by Bain (1951), that the 8 largest firms in mining industry take 70% of market profitability. For him advertising to sale ratio as independent variable was highly significant and Bass, (1978) explains that for 8 largest firms 70% profit share comes from advertisement insulated market. i.e. advertisement is a calculated barrier for entry and indicator of product differentiation.

Bass, et al.'s, (1978) original work on profitability and market structure of food, tobacco and cosmetics firm by considering advertising, product diversification, firm size and change of demand together with market share and concentration index as independent variable show two different results. In the unconstrained pooled data analysis the SCP paradigm holds true, means positive significant concentration index. But in the constrained pooled data regression, they found significant but negative concentration index. The authors' note that, this lack of consistency may be due to cross industry difference in sampling. However the growth and advertising variables, which are firm specific factors, were significant in both type of analysis.

Stavros and Thomadikis, (1977), conducted research on American mining industries to test future investment decision. They include risk and investment rate as a determining factor together with concentration and market share as the previous work. The results they produced were supporting for efficiency hypothesis that market share is highly significant. But the surprising result was the higher the risk that the firm will face, the higher the profitability will be because risk variable becomes positive and significant in the analysis.

The work of Roger Clarke et al., (1984), adapted Demsetz's (1971) efficiency hypothesis model to test U.K firms' profitability. They found that without collusion positive relation between concentration and profitability exists. But they are also found market power

effects on profitability together with efficiency even if they didn't explain why it happened. Martin, (1979) finds significant of efficiency for non-food producing industry while concentration holds in the food industry; however advertisement, proxy for barrier, was insignificant to explain profit in both cases.

Takeo Nakao (1979) used, the statistical results of relating profit rates to the foregoing independent variables, change in demand, advertising to sale ratio, product differentiation, asset and market variables using non-linear multiple regression analysis. The rate of return on total asset and growth of demand more significantly explained profitability than concentration and market share. The market share as well as the growth of demand is positively related to the profit rates: the leader firm's profit rate will be increased by the increase in the leader firm's market share and growth of demand of leader firm's products. However concentration index became positive but not much significant. That means growth of demand has higher power in determining profitability than static monopoly power or market share. Firm's advertising and total asset, which is considered as barrier of entry, have positive significant effect on firms performance as seen on the study. Thomadiks, (1977) also found the great significance of growth of demand on current and future profitability like asset variable. He also found asset structure of a firm determines the scale of production and future investment decision.

Stephen Martin (1979) conducted a detailed research on consumption and producer goods and determining variables for firm's performance. On his study advertising has positive and significant role on consumption goods than producer goods. Because producer goods profitability depends on quality, in turn it depends on research and development and on the interaction of advertising and R&D intensity. On the other side of his study, Seller concentration is explained in terms of dynamic adjustment to long-run levels, while profitability and advertising depend on current levels of concentration and on variables quantifying the demand side of the market. The

recent work of Simon Feeny and Mark Rogers (1999) supports this result that concentration has positive and significant role on profitability while market share is not. That means industry concentration or market power determines profitability than market share or efficiency.

In case of Germany small firms actually, (Manfred Neumann et al, 1979) found a distinctly positive relationship between the degree of concentration and profitability. The higher the degree of concentration in an industry the greater the rate of return of firm's of this industry. It is also observed that concentration seems to exert a more pronounced impact on profitability in the case of the sample of smaller firms. Relative firm size is measured by the ratio between individual sales to average sales of all firms in the respective industry. The regression coefficient for this variable is always negative and generally significantly so. Thus, within the range of firm sizes under study smaller German firms tend to be more profitable at all measures. It may be due to diseconomies of scale or X-inefficiency.

Work on SCP paradigm and efficiency structure hypothesis is extensive in general even if the results differ. Recent work of Chang-Yang Lee and Ishtiaq P. Mahmood (2009) on the legacy of the structure–efficiency debate, capture different structural variables and found the following results by using multiple non-linear regression and two stage least squares method. Advertising on industry profitability can be observed to be substantially different across the two industry types. Notably, advertising's positive effect on profitability is statistically significant only for consumer goods industries. In contrast; the direct (partial) effect of advertising is negative, although statistically insignificant, for producer goods industries. Advertising's contribution to industry profitability is as a signal of product quality or as a complement to R&D, particularly when the level of R&D is relatively high in producer good. This interpretation is in line with the advertising-as-a-quality-signal hypothesis. These results imply that under intense competition, *ceteris paribus*, strategic investment focusing on either R&D or advertising is more effective for achieving higher profitability, and that, even for

producer goods industries, concentrating more on advertising, relative to R&D, is useful for securing higher profitability. In the study either SCP paradigm or the efficient structure hypothesis holds not significant in determining firm's performance.

An empirical work of Roger et al (1984) on U.K. industry was to find out the determining factor of profitability within and between industries. In the light of this model, with the null hypothesis, they examine the implications for the within-industry relation between market share and firm-level profitability. More specifically they explore Demsetz's claim that the empirical form of this relationship should signal which of the alternative hypotheses is consistent with the between-industry profitability concentration correlation. In the study they assess the relative strengths of the market power and efficiency effects from the within industry relation. More generally, however, factors such as product differentiation and scale economies may seriously impair the information content of the relation, with at least a strong suspicion that the estimates will tend to exaggerate the evidence in favor of the efficiency hypothesis. Any ways the result they find is, for most industries, the within-industry data offer little conclusive support for either hypothesis. But, for a not insignificant minority of industries, the evidence suggests some support for the view that both efficiency and market power are at work simultaneously.

When we come specifically on the case of Ethiopian leather industry, there are different studies on the area. Most of the studies focused on factors affecting export performance, factor productivity and international competitiveness, value chain analysis concerning hides and skin quality for competitiveness of the sector, infrastructural needs and gaps to promote the leather industry and different macroeconomic factors that determine the performance of the leather industry. We have, however, not been able to find research on testing SCP or efficiency structure hypothesis. (see ; Kebede (2008), Japan embassy (2005) Berhanu Nega (2003), Gizaw Molla (2004) and Arkebe, 2009). But work of Kahsse G/kidan (2009) on profit-concentration relation in Ethiopia medium and large scale industry by using stochastic frontier model tried to test the two

dominant hypotheses in determining profitability even though nothing comes significant in the industry performance determination. Another paper by Eshetu Daniel (2010) on the Ethiopian commercial banks using panel data of 2001-2009 and applying static fixed effect model estimation technique obtains insignificant result both for SCP and efficiency hypothesis.



Chapter four

Methodology

4.1. Baseline model

There are different methodological approaches to test the effect of market structure on profitability in general and to test SCP paradigm and efficiency hypothesis in particular. Most previous studies by Bain (1953), Thomadikis, (1977), Roger, et al (1984) and others use cross-section data and apply ordinary least square estimation technique. Their estimation result was supporting the SCP paradigm; however they were criticized due to the type of data used. This is because variables that determine market structure have endogeneity problems. But later Slade, (2003) used same technique but added capital intensity as explanatory variable, to overcome cross-sectional data econometric problem and others use panel data and instrumental variables to solve the simultaneity problem. Empirically, various endogenous variables measure the performance of particular firm. Usually regression of profitability on endogenous market structure, market share and control variables uses for testing the two hypothesis together. Martin (1979), Slade, (2003) Song-Ken Hsu and Ming-Fang Tsai (2007) in non financial industries and Evanoff and Fortier (1988) and Hannan (1991) on financial industry have set the model as follows:

$$\ln\pi_{it} = \beta_0 + \beta_1 \ln CR_{it} + \beta_2 \ln S_{it} + \sum_k \ln \beta_{k+2} X^k_{it} + \lambda_t + \eta_i + \varepsilon_{it}$$

The only difference between the financial model and non financial one is the later didn't take the logarithms of variables but taking logarithms depends on stationarity of variables.

Where:

π_{it} = profitability, either return on asset, return on revenue, return after tax or before tax, ratio of return before depreciation, interest and tax of firm i in period t

- CR_{it} = market concentration, either HHI or CR4 for bank i in period t .
 S_{it} = market share of firm i in period t
 X_{it}^k = vector of control variable for k firms
 λ_t = trend variable (unobserved time effect)
 η_i = firm specific effect or time-invariant component
 ε_{it} = error term ($\varepsilon_{it} \sim \text{IID}(0, \sigma^2)$)

Some researchers include HHI and CR independently as they have different properties and might result different estimates. The HHI includes all firms in the industry where as CR4 or CR3 take top four or three firms in to account. So HHI index accommodates all variation including size and number distribution and the later accounts the top k firms. Regardless the sign and significance of market share, the CR or HHI index positive and significant coefficient holds the SCP paradigm hypothesis. On the other hand if coefficient of S comes significant and positive, this implies existence of market power and supports the efficiency or relative market power hypothesis. X is set of control variable for both firm specific and market specific character. λ_t and η_i are unobserved time and firm-specific effect, with time period of $t= 2001-2010$ and ε_{it} stochastic disturbance term. The model is fixed-effects (FE) applied whenever one is only interested in analyzing the impact of variables that vary over time. The key insight is that if the unobserved variable does not change over time, then any changes in the dependent variable must be due to influences other than these fixed characteristics. That is the fixed time invariant and firm specific unobserved variable has not any room to influence the dependent variable in the model because they are eliminated during the within difference process. The error term is not correlated with the explanatory variable and by itself identically and independently distributed within mean zero and variance of σ^2 . The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics. Based on the base line model, the model use in this study will be specified as follows:

$$PR_{it} = \beta_0 + \beta_1 CR_4 + \beta_2 MSH_{it} + \beta_3 ADSR_{it} + \beta_4 LASSET_{it} + \beta_5 GOVIN_{it} + \beta_6 PRONDUM_{it} + \lambda_t + \eta_i + \varepsilon_{it}$$

4.2. Variable Explanations and Hypothesis of the Study

The variables are; ADSR is advertising expense to sales ratio; GOVIN is government incentive to the firms proxy by government forgiven direct taxes and value of duties for machineries, accessories and inputs imported duty free as an incentive of being engaged in manufacturing activities. LASSET is the logarithm of the inverse of asset of the firm excluding land expense. The reason why we take the logarithm of the inverse of asset is due to the theory of diseconomies of scale of larger firms and long time taking to pay back the investment cost. The rationale for using these variables is discussed in different studies including Bain, (1951) and Demestz, (1971). When Shepherd (1972), deals with market structure and profitability, he argued that only market concentration and significant amount of market share couldn't assure firms profitability without barrier to entry. If the market opens to everybody, any one look supernormal profits come and extract it. Therefore in order to insure profitability for at least reasonable period of time there should be market barrier. These are higher advertising intensity, R & D (not included here in the model due to dynamic nature of the variable and short run negative impact on profitability) in process innovation and existence of growing firm size proxy by asset amount which is also a sunk cost for exit. CR4 is the concentration ratio of the top four firms' sale, HHI is the herfidhil-herchman index measures concentration of industry may be used alternatively to test the model and MSH is market share of each firm in the geographic and product market within the industry. PRONDUM is private ownership dummy variable to capture the effect of ownership on profitability. The companies are owned either by government or by privates (share or sole partnership).



For profit variable in order to hold the price cost margin theory it is better to take profit before depreciation, interest pay and tax to total revenue ratio or profit before tax to sales ratio. (Feeny and Rogers, 1999).

The expected results of the regressions and their economic meanings:

If $\beta_1 > 0$ and significant, this confirms the SCP hypothesis that the higher the concentrated the industry the higher market power and in turn higher profitability. This happens if there is lower number of firms in the industry, the higher the probability to collide in order to get higher profit through collusion. But which not be permanent due to deviation of some firms from agreement if it is un-concentrated market. There is an extreme case that all firms change output parallel and equally in the situation where firms are collide in output decision and proportional market share. The price cost margin falls to monopoly situation as describe by Feeny and Rogers (1999). Here collusion is not necessarily a formal contractual agreement. But it also includes a tacit collusion too. Game theory approach to industrial organization and different country anti-trust law suggest equilibrium attained in repeated game may appear to be collusion without conversation has occurred (Thomadakis, 1977 and Basu, 1999).

The primary goal of such market is achievement of sustainable profit maximization by any legal and illegal means of strategic games. However, concentration has negative impact on market efficiency. If we are also concerned, with the effect of concentration on efficiency, more than one measure is needed. For some aspects of efficiency we should expect horizontal and vertical integration to pull in opposite directions. Horizontal concentration can generally be expected to worsen efficiency in most respects; but vertical integration is likely to improve efficiency at least in the firm's choice of a method of production and in its combination of the different factors of production. So the significance of concentration in determining firm profitability by gearing the firms in to collusion will probably hamper the market efficiency and firm level efficiencies due to resource misallocation and production cut before optimal level.

But generally the significance of the variable shows on the other hand, the exercise of market power hypothesis is correct, the higher prices should benefit all firms equally and, in the absence of efficiency differences, on the efficiency hypothesis, there should exist little or no differences in the profitability of different sized firms within the industry.

If $B_1 \leq 0$ and significant it means concentration affects profitability in the opposite direction. A negative coefficient for concentration is contrary to expectations based on industrial organization theory, the concentration variable often has been observed to have a negative sign in different studies. The lack of consistency in findings with respect to the impact of concentration on profitability may be due to industry differences between sample data as Bass, (1978) description. A possible reason for the reversal of the sign is that in the model the firm-related variables are allowed to explain within- and between- industry variations. The extent to which these firm-related variables compete with concentration for the explanation of variation in profitability (i.e., the extent to which concentration is correlated with the firm-related variables) may have an impact on the observed change in results. It is impossible, therefore, to make any conclusion based on these results about the influence of concentration on the ability for firms to obtain excessive profits.

If $\beta_2 > 0$ efficiency structure paradigm will hold. i.e. market share leads higher concentration and market power which determines firms performance (profitability). Large firms in concentrated industries have lower cost because there are scale economies in these industries or because of some inherent superiority of the larger firms in these industries. Nonetheless they succeed in colluding so that their profit rates are relatively high. The prices they set in this collusion are not as high as to yield high profits for smaller firms as Demsetz explained it in his successive works even if he has got different results. In essence, this supposes that some industries become

concentrated because one or more firms have a strong efficiency advantage over their competitors (both actual and potential). It is this greater efficiency which leads to the concentration of a large part of the market within the hands of those leading firms and also to greater profitability. The public policy implications of this and the earlier market power hypotheses could hardly be different; for example, a policy of deconcentration (dis-integration and make the price to down) would benefit society in the form of lower prices according to the market power view, whereas it would punish efficiency if Demsetz is right.

Therefore, if efficiency is associated with concentration and significant in the above model, there should be a positive association between concentration and the difference between the rate of return earned by large firms and that earned by small firms. Thus, if the efficiency explanation is correct, we should expect to observe a within-industry positive relation between the profitability and market share of firms and relatively small firms will tend to have similar profitability regardless of concentration, but differences between small and large firm profitability should be larger as concentration increases.

If $\beta_2 \leq 0$ and significant, it shows efficiency does not play major role in determining profitability. That means the firm may get this huge relative market share by long run price reduction below marginal cost. But if the market power hypothesis holds true and the efficiency hypothesis insignificant, it shows that market power is the dominant tool to maximize profit than efficiency. However, if a loss of firm is assumed to be a predation result to create market power in the long run, it does not describe the actual market situation rather it is illegal.

$B_3 > 0$ and significant, barriers to entry and product differentiation have influenced profit rates. One barrier to entry that has received considerable attention is product differentiation achieved through advertising. A widely held belief among industrial economists is that "intensive image differentiation and brand loyalty through advertising is an important source of monopoly profits, allowing its practitioners to hold

prices above costs without encouraging the competition of new entrants" (Martin, 1979).

The significance of the estimated parameters is established, and a positive and significant coefficient for the advertising variable is taken as evidence of barrier-to-entry-related excessive profits. It can be concluded that the industry advertising-to-sales ratio has an important (positive) influence on industry profitability. Such finding is taken to mean that advertising differentiates the product and thus permits greater control (or collusion) over price, or acts as a barrier to entry, or both which in turn determine the long-run market share of the dominant group of firms by reducing demand elasticity, depends in general on entry conditions and in particular on the growth rate of sales.

And if $\beta_3 \leq 0$ and significant, the type of product may not need advertising due to easily accessed nature of the product by the public or the advertising expense is unbalanced with the sales marginal cost. Or the market may be occupied by some firms' exclusive agreement that even if the consumer wants to switch to this advertised product the past restrictive to deal with opponent agreement made advertising ineffective. Any ways the success of advertising in establishing product differentiation may well depend on the share of industry sales going to final consumer demand and how well the advertising reaches to them.

$B_4 > 0$ and significant implies high industry profitability could arise solely from the lower cost position of the large firms where scale economies only have efficiency effects, from those where the firms enjoying such economies realize entry into the industry is difficult (for whatever reason) and thus set high prices. In both cases industry profitability is higher in concentrated industries and, within these, is higher among the larger firms. Other possibilities which would increase the economic value of both the asset and the market in these model include if vertical integration happened which could benefit the integrator's position, increase concentration and also give rise to lower costs and prices, and the rather different case where the large firms produce

no more cheaply but enjoy product differentiation advantages or first-mover advantages which allow them to charge higher prices. Recently also Porter (1979) has shown how the concept of "barriers to mobility" may provide the means by which to explain inter-industry variations in profitability. Both potential entrants and incumbent firms consider the long run profits unless the fixed cost is small. Fixed asset is sunk entry and exit cost which reduces the mobility of firms in the industry. The higher the significance of the asset means the value of continuing in and exiting from the market is expensive so that number of firm in the industry is probably less in number. This implies high profitability and monopolistic power for existing firms.

If $\beta_4 \leq 0$ and significant, the difference between the sunk cost of entry and payoff rate of the incumbent is negative. The method is comparing the long-run earnings net of the relevant fixed or sunk costs between the surviving incumbents and the actual entrants provides an estimate of the barrier to entry faced by actual entrants. In a market in state each surviving incumbent will have expected earnings in the next period net of fixed costs of lesser than variable costs, while each firm that chooses to enter will have an expected next period payoff net of entry costs of its own variable cost. The difference between these two future payoffs is a measure of the barrier to entry faced by a potential entrant relative to an incumbent. So that the negative significant sign will show the difference in expected future returns net of costs between an incumbent and an entrant is almost equal or have no deter entrance of new firm. These situations permits free entry and exit from the market and lead the market in to competitive market in which marginal cost equals market price.

If $\beta_5 > 0$ and significant government incentive gives a leverage for all incumbents and new entrants profitability. That means government incentive has a positive and significant impact on profitability, if the existing firms having a tax and input duty incentive and use the incentive for advertisement, research and development for product innovation and expansion of their industry towards product differentiation and cost minimization (efficiency) the firms will become competitive and profitable. Even the more efficient



firm will create market concentration and will get almost equal monopoly profit by producing a more than monopoly outputs.

$\beta_5 \leq 0$ and significant, firms use the incentive not for efficiency improvement. They may use it for extraordinary private purpose or purchase of inputs. This is a loss for government and the society as whole due either they are not getting new design product at an appropriate price or have not get additional job due to expansion of production.

$\beta_6 > 0$ and significant, on average private owned firms are more profitable than government owned which encourages privatization if there is no social concerns for public firms. And if $\beta_6 \leq 0$ shows disincentive of privatization and private ownership promoting of profitability. However, it is difficult to interpret if negative significant parameter hold as a dummy parameter.

World Bank and International Monetary Fund's publications show that in operating such industry, private owners will be more efficient than government.

4.3. The Data

Knowing the nature of the data helps to understand the probability of problem happenings, expected results and strength of the estimated parameter. The study is primarily based on secondary data source collected from central statistics agency and different publications of ministry of trade, ministry of industry, ministry of finance and economic development and Ethiopian leather industry association. The data set is a panel data collected from 2001-2010 leather industry profile of finance and development by CSA. The dependent variable, profitability (performance of firm), is calculated by subtracting of all accounting costs from total domestic sales value but before depreciation cost, tax and interest pay to be consistent with the theory of price cost margin and profitability. Finally the result is divided by total revenue generated from the domestic sales as Bass (1978) described the appropriateness of the variable

calculation in estimating performance. The efficiency indicator variable which is market share is calculated by taking the ratio of each year domestic market sale of firm's to the respected year total domestic market sale amount. Whereas the concentration variable CH4 comes from the sum of the market share of the top four firms in the given year after the firm sorted out ascending based on market share and the HHI is the sum of the square of the market share of the yearly firms in the industry. ADSR, advertising sales ratio, is the ratio of adverting expense including banner costs and different promotion related expenses like publications targeted to market search to domestic sale value where government incentive is derived from governments forgiven import duty for those industries and direct tax exemption. Dummy variable is created based on ownership of the company. Private owned firms given one while government owned takes zero. The number of observations in the panel data set was originally 491 and number of firms was 103. But 114 were closed before 2010 or stop producing and are excluded from the data set. Then the observation is reduced to 346 panel data set. This data set used for estimation after it was checked for outliers and found to be free from that.

Chapter five

Results and discussion

5.1. Static panel data and model specification tests.

5.1.1. Model specification test: Hausman test

Theoretically, model specification test in the panel data mainly depends on the interest of the researcher on the individual fixed effect (η_i) or arbitrary individuals that have certain characteristics where the error term is randomly distributed and allows to have an inference based on population character. Hence the first reason why one may prefer fixed effect estimator is when there are an interest in η_i , that is identification of individual unit is important (Verbeek, 2004). Therefore the fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics like management skill in production efficiency and this variable is mostly correlated with the included variables. The rationale behind random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model. "...the crucial distinction between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not" (Greene, 2008, p. 183). If one has a reason to believe that differences across entities have some influence on the dependent variable then one should use random effects; otherwise fixed effect is more efficient. An advantage of random effects is that you can include time invariant variables like location. Random effects assume that the entity's error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables.

But the difficulty is you need to specify those individual characteristics that may or may not influence the predictor variables. The problem with this is that some variables may not be available therefore leading to omitted variable bias in the model.

RE allows generalizing the inferences beyond the sample used in the model. In the fixed effects model these variables are absorbed by the intercept and eliminated by the within difference processes. But this model is very important if η_i and explanatory variables (x_{it}) are correlated, where random effect model approach ignores this correlation leads inconsistent estimators. The selection between fixed and random effect technique of estimation depends on the formal Hausman test procedure as follows.

Hausman test: The general idea of a Hausman test is comparing of the two estimators which one consistent under both the null and the alternative hypothesis and one which is consistent and efficient under the null hypothesis only (Verbeek, 2004). To decide between fixed or random effects you can run a Hausman test where the null hypothesis is that the preferred model is random effects versus the alternative the fixed effects model is appropriate (Greene, 2008, chapter 9). Alternatively, the null hypothesis is that x_{it} and η_i are uncorrelated with the alternative they are correlated. That is $E\{\eta_i | x_{it}\} = 0$ with the alternative which may differ from zero. If $E\{x_{is}\varepsilon_{it}\} = 0$ for all s and t the fixed effect estimator, β_{FE} , is consistent for all β irrespective of the question whether x_{it} and η_i are uncorrelated, while the random effect estimator, β_{RE} , consistent and efficient under only whether x_{it} and η_i are not correlated.

Therefore Hausman test basically tests whether the unique errors (ε_i) are correlated with the regressors, the null hypothesis is they are not. The technique is as follows: Run a fixed effects model and save the estimates, then run a random model and save the estimates, then perform the test

H_0 : Random effect model is efficient (difference in coefficients is not systematic)

H_1 : H_0 holds not, Fixed effect is the appropriate one (difference in coefficients systematic) so that fixed effect estimator is consistent and efficient under both

H_0 and H_1 . Based on the Hausman test principle, it is chi-square test; with 60 degree of freedom the statistical result comes 0.5069 leads to fail to accept the null hypothesis that random effect is consistent.

Then fixed effect estimation technique is our preferred model based on Hausman statistics (See Appendix A).

5.1.2. Static panel data test statistics

Heteroskedasticity (non-constant error variance) and autocorrelation (serial correlations) should be tested in order to have unbiased and efficient estimators. Test of autocorrelation in the simple fixed effect model is tested based on Durbin-Watson test procedure as the whole rule of test described by Verbeek (2004).

5.1.2.1. Test of Autocorrelation

The test is whether the error term is serially correlated across individual and time or not in the model:

$\varepsilon_{it} = \rho\varepsilon_{i,t-1} + v_{it}$, which originates from the main fixed effect model specified in chapter four of this paper. Depending on this model the basic thinking is where v_{it} is i.i.d. across individuals and time. This allows for autocorrelation over time with the restriction that each individual has the same autocorrelation coefficient ρ . The null hypothesis under test is $H_0: \rho = 0$ (which say that the conditional distribution of the errors given the matrix of explanatory variables has zero means, constant variances and zero covariance. In particular this means that each error has the same variance and the two different error terms are uncorrelated. These assumptions imply that $E\{\varepsilon_i | x_i\} = 0$, and the estimate is best linear unbiased) against the one-sided alternative negative ($\rho < 0$) or positive ($\rho > 0$) autocorrelations. Assume $\hat{\varepsilon}_{it}$ represents the residuals from the fixed

effect regression, Bhargava et al cited in (Verbeek, 2004) suggest the following modified Durbin-Watson statistics to test autocorrelation.

$$dw_p = \frac{\sum_{i=1}^N \sum_{t=2}^T (\hat{\varepsilon}_{it} - \hat{\varepsilon}_{i,t-1})^2}{\sum_{i=1}^N \sum_{t=1}^T \hat{\varepsilon}_{it}^2}$$

The computed value of dw_p statistics is compared with the upper and lower limit (bound) table value as Bhargava et al developed it based on the number of observation or cross-sections (N), time dimension (T) and number of explanatory variables (k). Therefore since the calculated dw_p is 1.887 which under the null hypothesis acceptable region and we are forced to accept the null hypothesis of no serial correlation (Appendix B).

5.1.2.2. Test of Heteroskedasticity

Heteroskedasticity arises if different error terms (ε_{it}) do not have identical variances, so that the diagonal elements of the covariance matrix are not identical. The auxiliary regression of the Breusch-Pagan test regression, the squared within residuals $\hat{\varepsilon}_{it}^2$ up on a constant and j variables ρ_{it} that we think may affect heteroskedasticity. The null hypothesis is presence of homoskedastic errors with an alternative: $var(\varepsilon_{it}) = \sigma^2 h(p_{it} \gamma)$ where h is unknown continuously differentiable function with $h(0) = 1$ so that the null hypothesis will be: $H_0: \gamma = 0$. That is under the null hypothesis the test statistics is computed as follows and the decision criteria is based on chi-square distributional statistics.

$\xi = N(T - 1)R^2 \sim \chi_{j=6}^2$, R^2 is the goodness-of-fit of the auxiliary regression. From the auxiliary regression we have $R^2 = 0.0049$, N (cross section) = 347, T = 10 and finally $\xi = 15.2586$ and the tabulated value at six degree of freedom is **18.4926** which supports the null hypothesis that the error term doesn't violate the classical assumption of constant or

identical variance across entity and time. We are failing to reject the null hypothesis of homoscedasticity shown in (Appendix C). So that it is no need of using the robust standard error fixed effect regression technique to reduce the problem of heterogeneity.

5.1.2.3. Test of fixed time effect and Endogeneity

The other issue to be tested in econometric regression model specification is **identification** of Parameters and endogeneity problems. However panel data avoids the problem of omitted variable bias by including fixed time effect that is constant over time. Additionally, in many cases panel data will provide internal instruments for regressors that are endogenous or subjected to measurement error as (Verbeek, 2004) described it briefly. Therefore transformation of the original variables in the model is usually uncorrelated with model error term. That is if η_i and x_{it} are correlated, it can be argued that $(x_{it} - \bar{x}_i)$ is uncorrelated with x_{it} . So that estimation of model using the fixed effect assumption eliminates η_i from the error term and hence avoid problem of endogeneity and omitted variable bias. Due to this trick we will not face problem of identification and endogeneity problem in using fixed effect estimation technique even if the selection between fixed and random effect technique of estimation depends on the formal Hausman test procedure depicted above but we need time fixed effect test. The test is the support of the fixed effect model assumption of time invariant variables and all the dummy is collectively (jointly) zero against the alternative that there is no time fixed effect so that we need least square dummy variable (LSDV) estimation technique. But the result (Appendix D) shows the existence of fixed effect or time invariant variables in the industry and which favors fixed effect model in turn this model help us to come over problem of endogeneity and omitted variable bias too.

5.1.2.4. Test of multicollinearity

There is nothing wrong in the correlation between variables in the specified model. But high correlation between variables will create multicollinearity problem and will lead larger standard error of the estimated coefficients, which has problem in the accuracy of the estimator (Gujarati, 2004). The remedies for such problem is dropping of one of the variables that has large correlation coefficient (most of the time index above 0.5) as it is shown in (Baltagi, 2001) is better to be dropped from the model will give accurate or precise result. Based on this principle CR4 and HHI have almost perfect correlation above 0.94 and we are dropped HHI from the model in favor of accuracy (Appendix E) and use the other. One may be afraid of omitted variable bias due to exclusion of HHI from the model. But both variables have the same purpose of measuring concentration and monopoly power in the market so that no problem of omission will arise.

5.2. Econometric Results and Discussion

These estimation results will help us to identify which industrial organization theory (hypothesis) is prevailing in the Ethiopian leather industry so as to design regulatory and competition policies in right manner considering efficient use of resources and not to be hindrance for the industry. Based on the test statistic in (ANNEX A) fixed effect estimation technique after dropping HHI variable to avoid collinearity effect is more convenient and the results are presented in table 5.1.

Joint significance of the coefficients of the parameters are tested by using the F-test statistics under the assumption $H_0: \beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$ against the alternative $H_1: \beta_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$ or each independently different from zero. As shown in table 5.1 the null hypothesis holds true. R^2 in panel data estimation is not used as measurement of goodness of fit as in other model we explain. But it helps us either within, between or over all estimator is better. So it is a comparison tool to



choose among the within (fixed effect) variation, between (the random effect) between firms variation or the overall (OLS) estimation result. Based on the result the within R^2 is relatively high and fixed effect estimator is efficient than the other for the specific data employed in this model. As it can be seen from table 5.1 except the market monopoly power and entry, exit barrier variables, the other variables are insignificant at any level of significance.

Table 5.1: Regression result of the fixed effect model

Dependent variable: profit revenue ratio (PR)				
Independent Variables	coefficients	t-ratio	p-values	
CR ₄	3.959*	1.76	0.079	
MSH	0.422	0.04	0.966	
LNASSET	0.464**	2.62	0.009	
GOVIN	0.000	0.39	0.695	
ADSR	-0.0001	-0.27	0.786	
DUMOWN	0.012	0.01	0.990	
CONS	4.760	1.57	0.117	
<hr/>				
R^2 within = 0.0396				
R^2 between = 0.0089				
R^2 overall = 0.0095				
Joint significant F-test: F (66, 273)= 1.47				
prob > F = 0.0017				

** and * show the coefficient is significant at 5% and 10% significance level respectively.

In this study, concentration is measured by the share in four-digit industries' sales of the three leading firms. Actually, we found a distinctly positive relationship between the degree of concentration and profitability. The higher the degree of concentration in an industry shows the greater the rate of return of firms of this industry.

As it is depicted in table 5.1; if concentration ratio of the largest four firms increased by a unit, it is 90% true that firms' average profitability will increase by 3.959. So the result suggest that the structural conduct performance (SCP) paradigm or the Harvard school of industrial organization thought holds true in the Ethiopia leather industry market. The power of market decision is highly influenced by the top largest firms but the smaller firms will take the same price even though the largest share of profit goes to the top four firms due to higher market share. Therefore there is a monopoly power in the market as long as no contestable firms that are pulled by the higher profit rate due to monopolization of the price decision. This profit rate may be deteriorated if there exists free entry and exist in the long run.

One may be interested in the source of this monopoly power and tempted to ask whether concentration is an inevitable consequence of technological forces or whether it is the result of efforts of firms to obtain market power. Because people may think that these larger firms would achieved larger market share due to product innovation and price reduction due to cost advantage comes from technological advancement or illegal acts and efforts of the strongest firm to achieve this level of concentration either through vertical exclusionary agreement or horizontal cartel and cartel like tacit deals. In order to shed some light on these questions we first tried to explain the degree of concentration by a series of economic and technological variables. The long-run market share of the dominant group, CR4, depends in general on entry conditions and in particular on the growth rate of sales and the significance of these variables have a major impact on the sustainability of this market monopoly power. In particular these variables are product differentiation proxied by advertising to sales ratio and market barrier or growth variable like fixed asset. However whether these variables are

significant or not, or even whether they are included in the model or not, it doesn't reverse the conclusion of the monopoly power in the market as Bain's (1953) work was without considering these variables. However to be sure about the existence of sustainable monopoly power it is better to consider these variables.

In this particular study the source of concentration may arise from two things. One is from vertical integration and the other may be because all the larger firms are participating in the export market. The first reason why we can hypothesize these alternative variables as a source of concentration is that these four firms are relatively old firms and have experience in the market since and before 2001. They were in the hands of the government and privatized recently. Therefore they may have exclusive agreement with the tannery industry for raw material or may own the tannery industry by themselves in group or independently (vertically or/and horizontally integrated). Second, all four firms are exporting part of their product to foreign market which may give them technological efficiency due to foreign multi-dimension competition. But these technological advancement and collusion variables are not independently regressed against concentration ratio before the full model has done. So it is difficult to say the source of concentration due to limitation of data. But we can say that concentration has pronounced impact on profitability in the study period.

According to wide spread theories of profit analysis, laterally big firms enjoy economies of large scale and are thus able to earn higher profits than smaller firms due to cost advantage. Additionally, asset is the sunk cost for both entry and exit in/from the market. Therefore, the higher the asset cost required for investment will be the higher the barrier to entry and gives first mover advantage for existing firms so as to take monopoly profit. Our regression results also reveal such superiority of big firms. LNASSET is highly significant in the model as it is clearly seen in table 5.1 which can be interpreted as, if the log of the inverse asset increased by unit, profitability will increase by 0.464% due to economies of scale or if asset cost increased by one unit entry in to the market will be decreased by 0.464% due to increment of sunk cost and which in

turn raises profitability by the same amount, 0.464%. The significance of this variable will farther increase concentration in the industry by creating a shed for the existing firms and make the structural conduct performance (SCP) paradigm determine profitability of the Ethiopian leather industries than efficiency.

The reasons for the inverse relationship between size and profitability are not yet clear. One cannot, without further supporting evidence, infer from the findings that big firms are subject to diseconomies of firm size that might be traced to either diseconomies of scale or X-inefficiency or both. It can also be argued those bigger firms, being more diversified and thus having a lower covariance with the market portfolio's rate of return are to a lesser extent exposed to risk than smaller firms and can therefore content them with a lower rate of return as compared to the total asset. In relation of the higher average ratio of four-firm concentration within the industry suggests that the higher rate of return of the big firms can be explained by market power. Finally, the adverse impact of diseconomies of firms' size has been over- compensated by the effects of market power enjoyed by large firms.

The other variables included in the model are insignificant to explain the firms' performance. However this is not a unique result for this study. Such results are experienced in the industrial organization literature. The efficiency structure hypothesis proxy variable, MSH, is insignificant in favor of the SCP approach. GOVIN, government incentive is supposed to be significant but not here. Because as long as the purpose of incentive is for encouragement and to help efficiency maximization effort of individual firm, it should significantly affect profitability. But unless this incentive is used for the targeted purpose not only insignificant but also may negatively affect the public. Because if the firm uses it out of this industry efficiency maximization either through investing the incentive in research and development to reduce cost or quality improvement, it will no longer be significant. ADSR, advertising sales ratio, also has insignificant impact on firms' profitability. This variable is a proxy for product

differentiation, good-will and entry barrier but it has dynamic nature. Therefore, in most studies it holds significant in producer goods than convenient consumable goods. However in this particular study it holds insignificant. This may be due to accessibility problem of advertising to final consumer or due to the nature of the third world countries consumer behavior of not much dependent on advertisement in the short run. The other explanatory variable expected to have significant effect was the private ownership dummy. But this variable is not significant in the model. This suggested that ownership either government or private doesn't matter in affecting firm's performance.

Chapter six

Conclusion and policy implication

6.1. Conclusion

Ethiopia has a comparative advantage to develop the leather industry in general as the country is endowed with large numbers of cattle, sheep, goats and grazer. But the sector faces different problems to be at its expected level. Among problems the paradox of input shortage and low competitiveness of the finished leather product in the international market and forgotten attention to the domestic market is the notable problems. The input access depends on the slaughtering rate, the quality of hide and skins (most skins are unusable due to traditional slaughtering), the percentage of hides and skins supplied to the correct market and other socio-economic and infrastructural accessibility. Most of the source of hides and skins are the peripheral areas of the country (pastoralist sites) which are infrastructurally and physically far from the market and some may not be interested to deliver it to the market as it may used domestically. More over the slaughtering rate depends on the economic development of the society and poverty affecting the quantity of meat eaten. Due to these and other problems the slaughtering rate in the country is 21% which is below the demand of the leather industry in the country.

The productivity and the gap between full capacity and actual product are wide and needs to be improved. Therefore, the leather industry still has room to be developed further, by optimally using this resource.

In terms of employment absorption of sector, there were 3,190 employees in 2001, 3,684 in 2005 and 4,110 employees in 2010 which are below the PASDEP estimation of 8,000 and leather industry association's estimate of 17,000 employees in 2010. Employee absorption has shown insignificant change within ten years

The other bottleneck for the development of the sector is the international price difference. Finished leather price at the international market is 30%-45% below the unfinished (semi-finished) ones. This is due to Ethiopia leather industries low quality design and rigidity in adaptability of international models and designs to meet world standards

However, there are different obstacles which, the government of Ethiopia is aware of. The sector is believed to be one of the strong sectors to transform the country in to industrialization next to textile sector. Following the government's focus on the sector during the PASDEP program, it is also paid attention to in the government's growth and transformation plan (GTP). Now a day's infrastructure development on the pastoralist area has shown an improvement. Different livestock markets exist in different parts of Ethiopia parallel with animal transmitted disease protection by vaccination. Even if its primary goal is to improve the living condition of the pastoralists, it has a positive impact on the development of leather industry in the country.

Concerning the market, 85% of the leather product is sold in the domestic market. As the country has huge market due to the large population, more attention should be given to the domestic market and market structure. The visible marketing strategy for the time is repeated trade fairs in the capital only. So compatible design to each region should develop and presented at the appropriate price. But there are some industries, small in number but have better market share, who have been reaching different segments of the market and try to monopolize. The econometric results show that the structure-conduct-performance hypothesis holds in the industry. This means there is monopoly power in the domestic market as nominally we have observed in the market. This monopoly power will continue due to the existence of economic entry barrier. This barrier is asset cost seems a sunk cost for newly entering firms which is considered as a shield for top firms to sustain their profit in long time and may lead to collusion among firms. But as it is seen in the dynamics of concentration, the concentration decreases over time due to new firms entry in to the market and the development of small firms to

medium and take proportional market share from the top firms. The difficulty that will hamper the competitive market is the vertical integration between the top firms and the tannery industries. This difficulty becomes harming the small firms' survival after some tanneries owe by the largest firms during privatization and strengthen the vertical integration. But in case of Ethiopia since the competition law didn't set the threshold level in relation to market share, it is possible to specific measures that help to de-integrate at least the management system to reduce their market share in favor of competitive market promotion.

Based on the Harvard school assumption, all small and top firms price is equal and monopoly price in the domestic market. This affects the society and the market in three ways. The first victim is the society who uses such products due to payment of higher price above marginal cost due to existence of monopoly power and the other problem to the society is low quality product in the market because of absence of competition. Lastly the severe problem will come if Ethiopia becomes member of world trade organization and let the foreign efficient firms join the market at low price with better quality. If it happens, the domestic leather industry will be no more in the market and we will lose national industry which is a bad thing to the national economy. So the top, industries especially have to improve efficiency using their market share advantage to cope up international competition in the coming three or four years. The firms should use the government incentives properly for efficiency maximization. Private ownership is not significantly different from government ownership in profitability. This is not in line with the theory that private firms are more efficient than government ones and is also contrary to results of numbers of other studies.

6.2. Policy implications

Development of the leather industry is expected to play an important role to foster the transformation process as it has better comparative advantage. But in order to deal with leather industry, we should first care about the input development, especially hides and skin. Equal attention should be given to the livestock market and the slaughtering process.

Ethiopia has unstructured market system and it is difficult to speculate the price of one industry independently. Such problems can be minimized by market structure studies and this study is expected to help policy makers to look in to the industrial policy in this connection.

The finding of this study indicates the existence of monopoly power. This monopoly power will affect the industry and the consumer due to long run efficiency problem. This monopoly power is expected to be sustaining if the barrier to entry, asset variable, is significant and there exists either vertical or horizontal integration with in the industry either to fix price or production. Even if vertical integration was not independently included in the regression, the top firms are, not all, vertically integrated with the tanneries which has an exclusionary impact and illegal per se in the completion law. So measures in this connection (use of monopoly power for excessive pricing or exclusionary acts) should be taken. The measure may include prison penalty with compensation and damage fee to the customer.

Government incentive to promote the industry is recommended. But the government should have set a direction to which purpose the incentive should used. That means incentive should be used directly for efficiency improvement issues than for purchase of inputs or other asset related or unrelated to the production process. Otherwise the incentive is loss for the public like found in the study. We find that the government



incentives do not explain profitability of the leather industry even if government allocated billions of birr for the incentive. Asset cost has larger impact to sustain monopoly power in the market as it is seen in the studied period. But there is possibility to reduce the cost and percentage of barrier by excluding additional asset costs like interest paid for assets, percentage of full insurance cost and increasing time of loan repayment for asset loan in addition to duty free importation merit.

The efficiency explained by market share is insignificant. Therefore, the firms need technical and managerial efficiency. This can be improved by on job training delivered by experts and short term training schemes.

Based on the result, the competition authority can take measures to correct the monopoly power especially since it is exclusionary through vertical integration. The level of measurement (from serious like cancelation of license to completion and consumer damage fee as describe in the law) should take in to account the dynamics of concentration. But before taking such action the authority should set threshold level to be used for defining monopoly in a defined geographic and product market.

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Appendixes

Appendix A: Model specification test

Hausman fixed random test:

	— Coefficients —		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
cr4	3.959465	3.831052	.1284122	.7178998
msh	.4216907	6.125541	-5.70385	7.137572
ln_asset	.4643792	.3078425	.1565367	.0909389
govin	3.34e-08	8.13e-09	2.53e-08	3.28e-08
adsr	-.0001157	.0000536	-.0001693	.0002805
dumownersh~2	.0124224	-.070494	.0829165	.5474059

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(4) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 3.31 \\ \text{Prob}>\text{chi2} &= 0.5069 \end{aligned}$$

Appendix B: Test of autocorrelation

pr	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cr4	11.16557	3.607035	3.10	0.002	4.054133	18.27701
govin	2.35e-08	8.78e-08	0.27	0.789	-1.50e-07	1.96e-07
msh	13.96355	18.51859	0.75	0.452	-22.54671	50.47381
adsr	5.652372	5.61433	1.01	0.315	-5.416542	16.72129
ln_asset	.8152119	.2079062	3.92	0.000	.405315	1.225109
dumownersh~2	.6377908	1.089414	0.59	0.559	-1.51004	2.785622
_cons	100.0154	64.88394	1.54	0.125	-27.90628	227.9371
rho_ar	.30716131					
sigma_u	3.1105739					
sigma_e	3.0680926					
rho_fov	.50687515	(fraction of variance because of u_i)				

F test that all $u_i=0$: $F(66,206) = 2.07$ Prob > F = 0.0001
 modified Bhargava et al. Durbin-Watson = 1.388782
 Baltagi-Wu LBI = 2.2494246

Appendix C: Test of heteroskedacity

Source	SS	df	MS	
Model	670.768147	6	111.794691	Number of obs = 346
Residual	137135.965	339	404.530871	F(6, 339) = 0.28
Total	137806.733	345	399.439807	Prob > F = 0.9479
				R-squared = 0.0049
				Adj R-squared = -0.0127
				Root MSE = 20.113

uifixed2	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cr4	-8.881024	13.24575	-0.67	0.503	-34.93523	17.17318
msh	-2.162223	33.24427	-0.07	0.948	-67.55326	63.22881
ln_asset	.6610527	.8891702	0.74	0.458	-1.087933	2.410039
govin	-7.44e-08	4.79e-07	-0.16	0.877	-1.02e-06	8.67e-07
adsr	-.0000882	.0019284	-0.05	0.964	-.0038812	.0037049
dumownersh~2	.313506	4.600182	0.07	0.946	-8.734989	9.362001
_cons	16.4717	15.25747	1.08	0.281	-13.53954	46.48294



Appendix D: Test of time fixed effect

pr	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cr4	(omitted)					
msh	2.428666	9.728221	0.25	0.803	-16.72578	21.58311
ln_asset	.4936422	.1756599	2.81	0.005	.1477756	.8395088
govin	4.93e-08	8.59e-08	0.57	0.566	-1.20e-07	2.18e-07
adsr	-.0002496	.000423	-0.59	0.556	-.0010826	.0005833
dumownersh~2	.2753975	1.010377	0.27	0.785	-1.713992	2.264787
year						
2002	-.5461916	1.015073	-0.54	0.591	-2.544826	1.452443
2003	-.2598661	.9944697	-0.26	0.794	-2.217933	1.698201
2004	-.0328959	.99534	-0.03	0.974	-1.992677	1.926885
2005	.0861967	1.004263	0.09	0.932	-1.891154	2.063547
2006	-.1630514	.9897599	-0.16	0.869	-2.111845	1.785743
2007	.0265836	.9638155	0.03	0.978	-1.871127	1.924294
2008	.1152845	.936127	0.12	0.902	-1.727909	1.958478
2009	-.4798641	.9183638	-0.52	0.602	-2.288082	1.328354
2010	-2.14403	.9193823	-2.33	0.020	-3.954254	-.3338064
_cons	7.165511	2.835537	2.53	0.012	1.582464	12.74856
sigma_u	2.2366021					
sigma_e	3.0817612					
rho	.34500088	(fraction of variance due to u_i)				

F test that all u_i=0: F(66, 265) = 1.52 Prob > F = 0.0116

. testparm i.year

- (1) 2002.year = 0
- (2) 2003.year = 0
- (3) 2004.year = 0
- (4) 2005.year = 0
- (5) 2006.year = 0
- (6) 2007.year = 0
- (7) 2008.year = 0
- (8) 2009.year = 0
- (9) 2010.year = 0

F(9, 265) = 2.17
 Prob > F = 0.0246

Appendix E: Test of multicollinearity/ correlations

	cr4	hhi	msh	ln_asset	govin	adsr	dumown~2
cr4	1.0000						
hhi	0.9417	1.0000					
msh	0.1916	0.1846	1.0000				
ln_asset	-0.0302	-0.0365	-0.5227	1.0000			
govin	-0.0076	-0.0142	0.4595	-0.3829	1.0000		
adsr	-0.0026	-0.0104	-0.0303	0.0356	-0.0232	1.0000	
dumownersh~2	-0.1342	-0.1245	-0.4756	0.2759	-0.1749	0.0157	1.0000

Note: The correlation between concentration ratio (CH4) and HHI is so high and so that HHI is dropped from the regression.



Declaration

I, the undersigned author of the project, declare that this project is original work and has not been presented for a degree in any other university, and that all sorts of materials used for the project have been duly acknowledged.

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