

# Determinants of private investment in the manufacturing sector of Ethiopia: Evidence from Ambo town, Oromia regional state

Tadele Melaku Chala\* and Amanuel Fufa Uka

Department of Economics, Ambo University, Ambo, Ethiopia

\*Corresponding Author: Email: [tadumch@gmail.com](mailto:tadumch@gmail.com)

## Abstract

Ethiopia has recently implemented policies aimed at rebalancing the roles of the public and private sectors in the economy, with a particular focus on developing the private sector. Private manufacturing investment is crucial for both local and national economic growth. However, private investment in Ethiopia faces several significant challenges. This paper examines the determinants of private investment in the manufacturing sector specifically in Ambo town. Using cross-sectional data collected from 266 randomly selected private investors and workers in private firms, this study employs descriptive and econometric analyses, utilizing the Ordinary Least Squares (OLS) regression model in STATA software version 12. Descriptive analysis is used to characterize the socioeconomic and demographic profiles of respondents, while the OLS regression identifies significant determinants of private manufacturing investment. The results indicate that education level, and land size, have significant effects on manufacturing private investment at 5% significance levels. The findings reveal that both education level and land size significantly influence private investment decisions in the manufacturing sector of Ethiopia. Higher levels of education among investors are associated with increased private investment in manufacturing. Education equips investors with the necessary skills and knowledge to navigate the complexities of the manufacturing sector, thereby enhancing their confidence and willingness to invest. Furthermore, access to land plays a critical role in attracting private investment in manufacturing. Investors with larger land holdings are more likely to allocate resources towards establishing or expanding manufacturing facilities, benefiting from economies of scale and operational efficiencies. The study concludes that these determinants of private manufacturing investment have varying impacts on the local economy and provide a foundation for further research in this area.

**Keywords:** Determinants, private manufacturing investment, multiple linear regression models

## Introduction

Private investment plays a pivotal role in fostering economic growth, driving innovation, and creating employment opportunities, particularly in developing countries like Ethiopia. The manufacturing sector, in particular, serves as a key engine of economic development by transforming raw materials into value-added products, enhancing productivity, and promoting industrialization (World Bank, 2019).

Ethiopia, Africa's second-most populous country, has prioritized industrialization as a central pillar of its economic development strategy (FDRE, 2010). With a burgeoning population and abundant natural resources, Ethiopia offers significant potential for private investment in the manufacturing sector (World Bank, 2020). However, despite the government's efforts to attract investment through various policy initiatives and incentives (Aragie and Bulte, 2019), private investment in manufacturing remains below its full potential.

Understanding the determinants of private investment in the manufacturing sector is critical for policymakers, investors, and development practitioners seeking to promote sustainable economic growth and industrialization in Ethiopia. Ambo Town, located in the Oromia region, represents a microcosm of Ethiopia's manufacturing landscape, offering valuable insights into the factors influencing private investment decisions at the local level.

Investment is widely acknowledged as a crucial element in economic development and poverty alleviation efforts (Wolfenson, 2007). Private investment, a significant subset of overall investment, plays a vital role in fostering economic growth and improving living standards (Bayai and Nyangara, 2013). It is recognized globally as a primary driver of economic growth, contributing to capital formation and sustainable growth rates (UNCTAD, 2008). Private investment, particularly in manufacturing, enhances a nation's production capacity and long-term economic prospects (Frimpong & Marbuah, 2010).

In many developing countries, including Fiji, Ghana, and Pakistan, private investment has been instrumental in addressing economic challenges such as poverty and unemployment (Bayai and Nyangara, 2013). Although Africa's manufacturing sector has faced challenges, it is seen as a potential engine of growth due to its capacity to create skilled jobs and modernize economies (Bigsten and Soderbom, 2006).

Ethiopia has long recognized the importance of industrialization for economic development, with initiatives dating back to the 1940s (UNDP, 2016). Despite past efforts, private investment in manufacturing has not met expectations, prompting the government to prioritize private sector development (MoFED, 2014). While private investment in Ethiopia has increased in recent years, it remains below levels seen in other sub-Saharan African countries.

Private investment is crucial for long-term economic growth in Ethiopia (Adugna, 2013).

However, it has exhibited fluctuating trends, even following economic reforms in 1996 (Alemayehu, 2004). Low investment levels not only impede economic growth but also increase the economy's vulnerability (Oshikoya, 2001). Challenges such as a lack of awareness among investors about modern business practices hinder private sector growth (Adugna, 2013).

Empirical studies have examined various factors influencing private investment in manufacturing sectors globally (PIMS) (Frimpong and Marbuah, 2010). However, research on Ethiopia's private investment determinants is limited by time constraints and changes in investment laws (Woldemeskel, 2008). Despite government support, many approved investment projects remain unrealized, particularly in the manufacturing sector.

The current study addresses gaps in understanding the determinants of private investment in manufacturing sectors in Ethiopia, specifically in Ambo, Oromia. While private investments in manufacturing contribute to economic growth and poverty reduction, they face challenges in transitioning to larger enterprises (Haile and Assefa, 2005). Identifying these challenges is essential for policymakers to formulate effective strategies to support private sector growth (Bigsten and Gebreyesus, 2009).

Despite the growing interest in private investment and industrialization in Ethiopia, there is a dearth of empirical research examining the specific determinants driving private investment in the manufacturing sector, particularly at the subnational level (Tefera and Seid, 2019). Existing studies have largely focused on macro-level analyses or have been limited to specific industries or regions, overlooking the nuanced dynamics shaping investment decisions in local contexts (Aragie and Bulte, 2019).

By focusing on Ambo Town, this study seeks to fill this gap in the literature by providing empirical evidence on the determinants of private investment in the manufacturing sector at the local level. By examining factors such as

education level and land size, which have been identified as significant determinants of private investment in previous studies (Tefera & Seid, 2019; Asiedu, 2002), this research aims to contribute to a deeper understanding of the drivers of investment decisions among local entrepreneurs and investors in Ethiopia.

## Materials and methods

### Study Area

Ambo town, situated in the western part of the Oromia regional state, serves as the administrative hub of the East Shewa Zone in Ethiopia. Established in 1889, it spans an area of 8,587 hectares, making it one of Ethiopia's oldest urban centers. The name "Ambo" is linked to its progenitor, "Ambo Tseble" (Ambo Town Municipality, 2010).

During the reign of Haile Selassie, the town was renamed Hager Hiwot, only to revert to its original name in 1974 under the Dergue regime. Historically, Ambo has enjoyed prominence, evident from the substantial administrative infrastructure and the formulation of a master plan in 1931. Its strategic position has solidified its status as a pivotal center for administration, transportation, and commerce in the West Shewa Zone. With expansion underway, the town now encompasses additional kebeles, such as Awwaro and Illamu Muja, towards the east (Ambo Town Municipality, 2010).

### Geographical Location

Ambo town is situated at 08°59'N latitude and 37°51'E longitude, with an average elevation of 2,090 meters above sea level, fluctuating between 2,060 to 2,140 meters. The region experiences an average annual precipitation of 912 millimeters and maintains a mean annual temperature of approximately 17.6 degrees Celsius. Serving as the administrative capital for the West Shewa Zone, Ambo town adheres to a comprehensive township plan devised by the national planning institution. This master plan encompasses various facets, including

development initiatives, road networks, drainage systems, and land utilization strategies (Ambo Town Municipality, 2021).

### Sampling procedures and method of data collection

To calculate the sample size using the Yamane formula, we'll use the following information:

- Total population size  $N=788$  (total number of investors in the manufacturing sector).

- Desired level of precision (e): This is not explicitly provided, but typically it's predetermined based on the researcher's preference or standard practice. Let's assume a precision of 5%, So ( $e = 0.05$ ).

Now, we'll use the Yamane formula:

$$n = N / (1 + N (e^2))$$

Where:

- n is the desired sample size
- N is the size of the population
- e is the desired level of precision or margin of error (expressed as a decimal) Substituting the given values:

$$788 / (1 + 788 \times (0.05)^2)$$

$$788 / (1 + 788 \times 0.0025)$$

$$788 / (1 + 1.97)$$

$$788 / (2.97)$$

$$n \approx 265.32$$

Since, we can't have a fraction of a person in our sample, we round up to the nearest whole number. Therefore, the sample size ( $n$ ) using the Yamane formula is approximately 266.

### Stratified Random Sampling Technique

Since the population is heterogeneous (different sub-sectors), using stratified random sampling is appropriate. This technique ensures that each sub-sector is adequately represented in the sample, leading to more precise estimates for each subgroup. In this case, the proportion of investors in each sub-sector is used to determine the sample size for each stratum, ensuring proportional representation in the final sample.

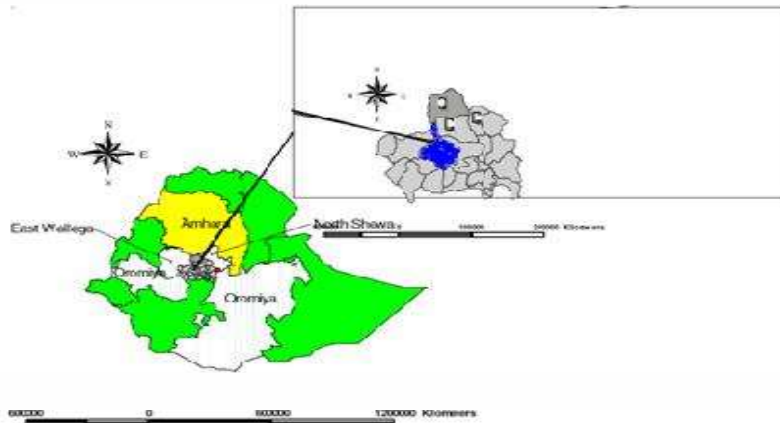


Figure 1. The map of the study area.

### Data Analysis Method

This study employed a mixed-methods approach, incorporating both qualitative and quantitative data to address the research inquiries comprehensively. Qualitative data were gathered through a qualitative methodology, while quantitative data, earmarked for statistical scrutiny, were amassed using quantitative techniques. The determination of the sample size was facilitated by the Yamane Taro Formula of 1967, ensuring a representative sample from the heterogeneous population. Employing a Stratified Random Sampling technique, the private investment landscape within the manufacturing sector was categorized into seven distinct sectors.

A total of 266 investors were randomly selected from the 788 investors constituting the population, forming the sample pool for primary data collection and information gathering. To ensure robustness and reliability, pre-tested and semi-structured interview questionnaires were deployed, designed following a pilot survey conducted within the study area and incorporating feedback from investors. Primary data were meticulously collected through face-to-face interviews with investors.

The validity and reliability of the collected data and information were fortified through triangulation, where findings were cross-Table 1. Expected Signs of Variables

examined and corroborated through focus group discussions with key informants, employing comprehensive checklists. This methodological approach upheld the rigor and integrity of the research, enhancing the credibility and trustworthiness of the study outcomes.

### Econometric model specification

Multiple linear regression models were employed to analyze the multifaceted interplay of demographic, socioeconomic, and environmental factors influencing private investment in the manufacturing sector at the micro level. This model was chosen for its effectiveness in identifying the determinants of private manufacturing investment.

The model equation can be expressed as follows:

$$Y = \beta_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_k X_{ki} + \epsilon_i$$

Where:

**Y** = Quantity of private investment made by investors.

**$\beta$**  = (Beta) Estimated coefficient of explanatory variables.

**X** = Vector of explanatory variables.

**$\epsilon_i$**  = Error term.

Variable	Short name	Expected sign	Measurement and types of variables
Private Invested in manufacturing	Pim	Dependent variable	Continuous (in capital)
Education level of the investor	Edu	+	Continuous (in years of schooling)
Loan given by bank in the last 10 years	Loan	+	Continuous (in monetary terms)
Average power blackout in weeks per hour	Blackout	+	continuous (number of powers off outages per weeks)
Total area of the firm	Area	+	Continuous (Measured in
Interest rate	intr	-	Categorical (1=high,0 otherwise)

## Definition of Variables and Hypotheses

In exploring the factors influencing private investment in the manufacturing sector, the study undertook the task of identifying potential influencers and delineating their directional relationships with the dependent variable. Determinants of private investment in manufacturing were derived from a review of related literature and the study's datasets. Subsequently, five explanatory variables were selected for model estimation and defined as follows:

### Dependent Variable

**Private Investment:** Represents the amount of capital held by investors and is measured in terms of capital.

### Independent Variables

**Education Level:** This continuous variable indicates the formal schooling attained by respondents during the survey period, measured by the years of education gained. It is expected to positively impact investment in the manufacturing sector due to the sector's technological demands and perceived riskiness, which educated investors are better equipped to manage.

**Loan:** As manufacturing sectors typically require substantial financing, access to finance is crucial. The frequency of loans granted by banks to investors in the last decade serves as a proxy for access to finance. This variable is anticipated to positively correlate with investment in manufacturing, as better financial access tends to attract investors to sectors with higher profit margins, such as manufacturing.

**Electricity:** Reliable access to electricity is essential for manufacturing investments. The variable "blackout" quantifies average power outages per week for a random firm and is expected to have a positive coefficient, indicating that higher power outages deter investors from the manufacturing sector.

**Land:** Access to land is a significant constraint for investors, particularly in the manufacturing sector. The variable "area" measures the total area of a firm's production plant or storage facilities and is expected to have a positive relationship with investment in manufacturing, as increased provision of land enhances the probability of investment.

**Interest Rate:** Interest rates play a pivotal role in economic decisions, influencing saving and investment behaviors. A lower interest rate incentivizes borrowing for investments. Thus, private investment is negatively related to the interest rate, with lower rates stimulating investment.

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## **Results and Discussion**

### **Socio-demographic characteristics of sample households**

This section presents the descriptive analysis of the survey conducted to assess the determinants of private investment in the manufacturing sector in Ambo town. Although the introduction stated that 266 samples were used, it's now clarified that the sample size is 266. Respondents were interviewed about their personal information, including age, gender, marital status, and education level, to understand their demographic profile and its implications on investment behavior.

### **Gender Distribution**

Among the total respondents, 62 (68.8%) were male investors, while 28 (31.2%) were female investors. This gender disparity suggests that males currently dominate investment activities in Ambo town, although females also play a significant role. It is anticipated that female participation in investment will continue to rise, contributing to a more egalitarian society.

### **Marital Status**

Regarding marital status, the majority of respondents were single (43.3%), followed by married (37.7%), divorced (14.4%), and widowed (4.4%). The data indicates that

married individuals constitute a significant portion of active investors, comprising over 39% of the total respondents.

Table 2. Marital Status of Respondents

Marital	Frequency	Percentage (%)
Married	100	37.59%
Single	82	30.82%
Divorced	55	20.67%
Widowed	29	10.9%
Total	266	100%

Source: Own survey in Ambo, 2024

Table 3. Age Distribution

Age	Frequency	Percentage (%)
18-30	122	45.86%
30-45	83	31.2%
>45	61	22.9%
Total	266	100%

Source: Own survey in Ambo, 2024

The age distribution of respondents is relatively evenly distributed across different age groups. The 18-30 and 30-45 age groups constitute the majority, comprising approximately 43.3% and 42.2% of the total sample, respectively.

## Result of MLRM

Multiple linear regression results of determinants of private investment in the manufacturing sector

Variables	Coefficient	Std .err	t	p>/-Z/
Education	.123899	.0147201	8.42	0.000***
Area of land	.1549544	.0265822	5.83	0.000***
Loan	.2856952	.1036395	32.76	0.007***
Blackout	.1029821	.1194309	0.86	0.390
Interest rate	-669.4683	7096.231	-0.09	0.92
Cons	6.54211	1.151892	5.68	0.000

**Note:** The dependent variable -is private investment in the manufacturing sector. \*\*\* at 1% SL.

The regression result shows that education and area of land are statistically significant at a 5%, level respectively.

Number of obs = 266 Prob > F = 0.0000  
R-squared = 0.4814, Adj R-squared = 0.4686

Source: Authors' computation using MLR (2024)

The regression result showed that the coefficient of education of investors was positively related to the investment. When the education of investors increases in years of schooling, the investment also increases, while other things remain constant. It is also significant at a 5% level of significance. Both tertiary and primary level of education is positively associated with private investment. However, the coefficient of tertiary level of education is significant implying that a higher level of education increases the ability to invest in different private investment of manufacturing sectors in the local economy.

According to the regression result, the loan affects the investment positively. This means that increasing the loan for investors also leads to an increase in the investment in manufacturing sectors actively, while other things remain unchanged. As regression result implied that the blackout of electricity has positively related to investment in the manufacturing sector. When the blackout of electricity increases the investment in the manufacturing sector also increases, while other variables remain unchanged. Generally, the result shows that electricity is highly correlated with investment in the manufacturing sector.

## **Conclusions**

In conclusion, this study has provided valuable insights into the determinants of private investment in the manufacturing sector of Ethiopia, with a specific focus on evidence from Ambo Town. By examining the significance of education level and land size as key explanatory variables, the research has shed light on the factors shaping investment decisions among local entrepreneurs and investors.

The findings of this study indicate that both education level and land size significantly influence private investment in the manufacturing sector. Higher levels of education among investors are associated with increased investment in manufacturing, highlighting the importance of human capital in driving investment decisions. Furthermore, access to land emerges as a critical

The result of regression shows that the area is also positively related to the investment in the manufacturing sector. As a better land size is available for the investors the investment opportunity also increases, while the other things are constant. According to the result of the regression, the interest rate is affected negatively, and it is insignificant. That means an increasing interest rate in investment leads to decreases in private investment in the manufacturing sector, while other factors remain constant.

The findings reveal that both education level and land size significantly influence private investment decisions in the manufacturing sector of Ethiopia. Higher levels of education among investors are associated with increased private investment in manufacturing. Education equips investors with the necessary skills and knowledge to navigate the complexities of the manufacturing sector, thereby enhancing their confidence and willingness to invest. Furthermore, access to land plays a critical role in attracting private investment in manufacturing. Investors with larger land holdings are more likely to allocate resources towards establishing or expanding manufacturing facilities, benefiting from economies of scale and operational efficiencies.

determinant, with investors possessing larger land holdings being more likely to allocate resources towards manufacturing activities.

These findings have important implications for policymakers, investors, and development practitioners seeking to promote private investment and industrialization in Ethiopia. By recognizing the significance of education and land availability, policymakers can design targeted interventions and policy reforms aimed at creating a conducive environment for investment in the manufacturing sector. Investments in education and skills development can enhance the capacity of local entrepreneurs and attract more investment to the manufacturing sector. Additionally, measures to improve land access and streamline land administration processes can unlock the investment potential and facilitate the expansion of manufacturing activities in Ethiopia.



## Policy Recommendations

Based on the findings of this study, the following policy recommendations are proposed to promote private investment in the manufacturing sector of Ethiopia:

□ **Investment in Education and Skills Development:** Policymakers should prioritize investments in education and skills development programs aimed at equipping local entrepreneurs with the necessary knowledge and capabilities to engage in manufacturing activities. This could include expanding access to vocational training programs and technical education, as well as promoting entrepreneurship education initiatives.

□ **Land Reform and Access:** Efforts should be made to streamline land administration processes and improve land access for potential investors in the manufacturing sector. This may involve implementing land reform policies to address issues related to land ownership, registration, and transfer, as well as facilitating the provision of land for industrial purposes through targeted land allocation schemes.

□ **Infrastructure Development:** Infrastructure development plays a crucial role in supporting manufacturing activities and attracting private investment. Therefore, policymakers should prioritize investments in infrastructure, including transportation networks, energy supply, and industrial parks, to enhance the competitiveness of the manufacturing sector and create an enabling environment for investment.

□ **Promotion of Public-Private Partnerships:** Encouraging collaboration between the public and private sectors can help leverage resources and expertise to support investment in the manufacturing sector. Policymakers should explore opportunities for public-private partnerships (PPPs) in infrastructure development, technology transfer, and skills training initiatives to foster a conducive environment for private investment.

□ **Policy Stability and Institutional Support:** Finally, ensuring policy stability and providing institutional support are essential for promoting private investment in the manufacturing sector. Policymakers should prioritize regulatory reforms aimed at improving the business environment, reducing bureaucratic hurdles, and enhancing investor confidence. Additionally, strengthening institutional capacity and providing targeted support services to potential investors can help facilitate investment decision-making and implementation.

□ **By implementing these policy recommendations, Ethiopia can create an enabling environment for private investment in the manufacturing sector, driving sustainable economic growth, job creation, and industrial development in the country.**

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## Author Contributions

All authors contributed to the study conception and design. Material preparation, data collection and formal analysis were performed by all. The original draft of the manuscript was written by all authors and commented on previous versions of the manuscript. All authors read and approved the final manuscript.

**Conflicts of Interest:** The authors declare that they have no competing interest

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