Addis Ababa University School of Commerce

THE IMPACT OF FOREIGN CURRENCY RESERVE ON ETHIOPIAN MANUFACTURING SECTOR PERFORMANCE

By

Abrham Geremew Yigzaw

Advisor

Tenkir Seifu (PhD)

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Corporate Finance, with a specialization in Investment Management.

May 2025

Addis Ababa, Ethiopia

Declaration

I, the undersigned, hereby declare that this study is the result of my own independent work. It has not been submitted, either in whole or in part, to any other institution for the purpose of obtaining a degree, diploma, or other academic or professional qualification. All sources of information and materials consulted have been duly acknowledged through appropriate in-text citations and a comprehensive list of references.

Declared By:

Name	Signature	Date
Abrham Geremew	_____	March, 2025

APPROVED BY THE BOARD OF EXAMINERS

Tenkir Seifu (PhD)	_____	_____
Advisor	Signature	Date
Birhanu Beza (PhD)	_____	_____
Internal examiner	Signature	Date
Tesfa Nega (PhD)	_____	_____
External examiner	Signature	Date

Table of Contents

Acronyms

ADF - Augmented Dickey-Fuller

ARDL - Autoregressive Distributed Lag

CSA - Central Statistics Agency

CPI - Consumer Price Index

ERCM - Error Correction Mechanism

FDI - Foreign Direct Investment

FMOLS - Fully Modified Ordinary Least Squares

GDP - Gross Domestic Product

GFCF - Gross Fixed Capital Formation

IMF - International Monetary Fund

LMICs - Low- and Middle-Income Countries

MVA - Manufacturing Value Added

NBE - National Bank of Ethiopia

OLS - Ordinary Least Squares

PP - Phillips-Perron

ROA - Return on Assets

ROE - Return on Equity

TOP - Trade Openness

UNDP - United Nations Development Programme

UNCTAD - United Nations Conference on Trade and Development

VECM - Vector Error Correction Model

WDI - World Development Indicator

Acknowledgment

My sincere gratitude, in addition to that of the almighty God, is extended to my advisor Tenkir Seifu (PhD) for his cooperation, advice and assistance in getting this thesis finished on time.

Lastly, to all who have contributed to this journey in one way or another, I am truly thankful.

ABSTRACT

This study investigates the impact of foreign currency reserves on Ethiopia's manufacturing sector performance from 1984 to 2023. It follows a quantitative research approach and adopts an explanatory design to assess causal relationships. A comprehensive time-series dataset from the World Bank and the National Bank of Ethiopia is analyzed using the Autoregressive Distributed Lag (ARDL) model to capture both long- and short-term dynamics between foreign currency reserves and manufacturing value-added.

Key findings reveal that stable foreign reserves significantly enhance manufacturing output in the long run, while short-term volatility in reserves has contractionary effects. Inflation is identified as a major long-term obstacle to manufacturing growth, despite temporary positive effects in the short term. Additionally, the relationship between foreign direct investment (FDI) and manufacturing output is positive but weak, whereas imports show no statistically significant impact.

The study suggests that policymakers focus on building optimal reserve levels and mitigating inflationary pressures to foster a resilient and competitive manufacturing sector in Ethiopia.

Key words: foreign currency reserve, foreign direct investment, inflation, manufacturing sector performance, manufacturing value added, total import

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Globally, the manufacturing sector has been crucial in strengthening economic growth and development due to a multitude of attributes that have the potential to foster synergies and enhance productivity, characterized by scalability, tradability, modernization, experiential learning, and job creation. This approach has significantly contributed to development by improving the productivity of large, unskilled labor forces (Hallward-Dreamier & Nayar, 2017).

Even for low- and middle-income countries (LMICs) like Ethiopia, recent studies reveal that the rise of manufacturing production or output and overall GDP growth are positively correlated (Szirmai & Verspagen, 2015).

Considering its unmatched importance for economic development government of Ethiopia has been encouraging and prioritizing the manufacturing sector to generate employment and export through tax exemptions for key sectors, duty-free importation of capital equipment, and allocation of land with affordable lease rates, investment credit support, duty exemption of raw materials used as inputs for exports and income tax holidays.

Nevertheless, Ethiopia's economy and jobs creation have not been greatly impacted by the manufacturing sector, despite numerous initiatives to improve its performance. Compared to 5.9 percent of GDP in 2022, the manufacturing sector is still in its infancy, contributing only 4.6 percent of GDP and 5 percent of total employment in 2023. Different factors like external shocks, foreign currency shortage, security issues, and macroeconomic pressures have caused almost 450 businesses (out of nearly 5000) to stop production nationally. Only 38% of domestic demand is met by Ethiopian manufacturing industries; the remaining 62% is met by imports (UNDP, 2023).

Particularly, acute shortage of foreign currency to import raw material, intermediary goods and machinery spare parts have been the main problem of the manufacturing firms in Ethiopia.

Foreign currency is a currency other than a country's own currency (Reda, 2016).

Foreign currency refers to any means of exchange, other than the Ethiopian official currency, that is considered legal tender in another country and is deemed acceptable for payment in Ethiopia by the National Bank of Ethiopia (National Bank of Ethiopia, 2020).

Foreign currency reserve is one of central bank's toolkit for implementing policy to protect against shocks and work in tandem with monetary policy to maintain price and financial stability. A nation's foreign currency reserves are a crucial component of its self-insurance. This is particularly true in low-income nations, where the government typically offers protection against shortages of foreign currency (Schanz, 2019).

Historical records indicate that Ethiopia's gross reserves were nearly depleted in 1991/92, capable of covering only 1.3 weeks of imports. However, by June 1994 and 1996, the reserves had surged to cover 28.3 and 33.1 weeks of imports, respectively, due to the forex inflow pertaining to foreign aid and increased exports. The years 2005, 2006, and 2007 saw the reserves drop to levels covering 3.6, 2.3, and 2.2 months of imports, respectively. Throughout its history, Ethiopia has experienced significant fluctuations in its foreign currency reserves.

According to the United Nations Development Programme (UNDP, 2023), the country's foreign exchange reserves have significantly dwindled. By February 2023, the reserves had decreased to less than one month's worth of import.

From 1960 to 2020, Ethiopia's average gross reserves stood at 0.88 billion U.S. dollars. The minimum value of 0.06 billion U.S. dollars was recorded in 1960, whereas the reserves peaked at 3.99 billion U.S. dollars in 2018.

Ethiopia's foreign exchange reserves are critically low in comparison to major global currencies. Its balance of payments has worsened, and foreign currency reserves have been drained from time to time. The primary sources of foreign currency in the nation include exports, remittances, loans, aid, foreign direct investment, and privatization earnings. Nevertheless, these sources have proven inadequate to cover the growing demand for imports (Merhatsidk, 2019; Alam & Sewenet, 2020).

The manufacturing sector's dependency on imported raw material had been assessed by First Consult (2024) and 61.6% of the manufacturing firms confirmed to be dependent on usage of imported materials.

Ethiopia's manufacturing entities are highly reliant on importing raw materials, supplies and spare parts. Therefore, foreign currency shortage and related crisis results in a direct disruption to the production operations, which further leads to employee layoffs and exacerbates the unemployment issue (Dessalegn, 2021).

Hence, the objective of this thesis is, therefore, to examine the relationship between foreign currency reserve and its Ethiopian manufacturing sector performance.

1.2. Statement of the Problem

Manufacturing firms in Ethiopia are highly relied on imported goods. According to Oqubay (2018), the proportion of imported raw materials used in Ethiopia's manufacturing sector accounted for 50% of the total raw material input from 1995/96 to 2015/16. However, this dependency varied across sub-sectors. For instance, the leather industry relied on imports for 75% of its raw materials, while the food and beverage sector had a 57% dependency, and the textile industry sourced 38% of its raw materials from imports.

A significant portion (61.6 %) of manufacturing firms confirmed their dependency on imported goods usage while only 44.6% of the service sector stated usage of same. However, due to government import policies or currency shortages, many businesses find their primary imported inputs to be scarce or unavailable locally. 72.2% of manufacturing firms attributed unavailability or rarity of their main imported input

in the local market to a shortage of foreign currency this lack of availability has an impact on demand and production costs and can result in operational consequences like higher input prices, an inability to meet demand, and decreased output (First Consult, 2024).

Lack of foreign exchange resulting from poor export performance and strong demand would continue to pose serious problems for the market, especially for prospective Ethiopian consumers of products and services from the United States (U.S. Commercial Service, 2019)

In their study which assessed manufacturing industries development and economic role in Ethiopia, Sheaba Rani and Mahammoud (2017) noted that Ethiopia's manufacturing sector which contributed 4.8% to GDP in 2014/2015, has struggled with several challenges that hinder its performance. Among the key obstacles are low worker productivity, reliance on outdated technologies, and limitations in physical infrastructure. Additionally, inadequate access to finance, insufficient research and development efforts, poor institutional frameworks, and a lack of managerial and technical expertise have further exacerbated the sector's difficulties.

Despite the significant impact of foreign currency on Ethiopia's manufacturing sector, there is a noticeable gap in research examining how foreign currency reserves impact the sector's performance.

To the best of the researcher's knowledge, there are only a limited number of studies addressing the influence of foreign currency, and these studies are relatively narrow in scope

Desalegn (2021) remarks the Ethiopian import sector has been highly impacted by shortage of foreign currency which led it to be characterized by poor performance and cancellation of expansion plans.

In their study which assessed Ethiopian foreign currency reserve crisis, Alam & Yigzaw (2020) have also pointed the nation's foreign exchange crisis has made the country economically vulnerable, and its severe debt problem is making the vicious cycle of high unemployment and poverty worse.

Belete (2020) studied the impact of foreign currency reserve and exchange rate on manufacturing sector performance in Ethiopia, Reda (2016) conducted a study assessing the implications of foreign currency shortages on the Ethiopian economy.

With the exception of Belete (2020), all these research studies have assessed the impact of foreign currency reserves on total imports or the overall economy at a national level. However, the direct relationship between foreign reserve levels and the performance outcomes of the manufacturing sector in Ethiopia has not received special emphasis.

Hence, there remains a need for further empirical investigation into the foreign currency reserve and its impact on the Ethiopian manufacturing sector performance, which continues to grapple with this issue. Therefore, this study aims to provide additional empirical insights by analyzing the impact of foreign currency shortages specifically on the Ethiopian manufacturing sector.

1.3. Research Questions

This research aimed to seek answer to the following question

i. What are the historical trends in foreign currency reserves in Ethiopia over the past four decades?
ii. How do changes in foreign currency reserves affect the output levels of the manufacturing sector in Ethiopia?
iii. What policy measures can be implemented to optimize the impact of foreign currency reserves on the Ethiopian manufacturing sector?

1.4. Objectives of the Study

1.4.1. General objective

The primary objective of this research is to examine the impact of foreign currency reserves on the performance of the Ethiopian manufacturing sector. This study aimed to provide empirical evidence on how fluctuations in foreign currency reserves influence the overall contribution of the manufacturing sector in Ethiopia.

1.4.2. Specific Objectives

i. To analyze the trends in foreign currency reserves in Ethiopia over the past 40 years.
ii. To investigate the relationship between foreign currency reserves and manufacturing output in Ethiopia.
iii. To evaluate policy measures and recommendations for optimizing the impact of foreign currency reserves on the Ethiopian manufacturing sector.

1.5. Significance of the Study

The findings of this study will make several critical contributions. Firstly, it will enrich the existing literature on foreign currency reserves' impact on the manufacturing sector, providing empirical evidence on the extent to which foreign currency reserves influence manufacturing sector performance. This study is expected to offer new insights into the dynamics between foreign currency reserves and manufacturing output, its contribution to GDP, and overall sectoral growth in Ethiopia.

Secondly, this research will serve as a valuable reference for other scholars and researchers, offering a comprehensive understanding of the relationship between foreign currency reserves and the performance of the Ethiopian manufacturing sector. The study's findings will contribute to a more nuanced picture of the economic mechanisms at play, thereby informing future research and fostering a deeper understanding of this crucial topic.

Finally, the study will provide practical implications for policymakers and governmental bodies. By identifying the optimal level of foreign currency reserves needed to enhance the performance of the domestic manufacturing sector and boost exports, this research can inform policy measures and strategic decisions. Consequently, the study will assist in formulating policies that promote sustainable economic growth and improve the competitive edge of Ethiopia's manufacturing sector in the global market.

1.6. Scope of the Study

This study methodically examined the impact of foreign currency reserves on the performance of the manufacturing sector in Ethiopia. By utilizing sector-level data, the research analyzed a comprehensive data spanning a significant period of 40 years, from 1984 to 2023.

The research focused on Ethiopia's manufacturing sector, assessing how foreign currency constraints influence the sector's performance.

The study relied on secondary data obtained from credible sources such as the World Bank, United Nations organizations, and the National Bank of Ethiopia.

1.7. Limitations of the Study

The study focused solely on the manufacturing sector, potentially neglecting other sectors that may also be affected by the trend of foreign currency reserve in Ethiopia. This narrow scope could limit the generalizability of the findings to the broader economic landscape.

The study is limited to macro-level analysis, meaning it does not analyze firm-specific strategies, management decisions, or operational efficiencies.

1.8. Definition of Terms

To ensure consistency and comprehension of these concepts along the course of the study, the following definition of terms are given.

*"**Foreign currency** - refers to any currency that is not Ethiopia's official legal tender but is accepted for transactions within Ethiopia as approved by the National Bank of Ethiopia."*

*"**Foreign currency reserve** - represents the assets held by a country's central bank that are denominated in foreign currencies (Hargrave, 2022)."*

*"**Foreign direct investment** - involves a company from one country investing in a business operation in another country (the host country), with the investing company maintaining significant control or ownership."*

*"**Manufacturing value added** - is the net output of the manufacturing sector, calculated by subtracting the cost of intermediate goods and services used in the production process."*

1.9. Organization of the Paper

This research paper is structured into five chapters to comprehensively address the topic at hand.

Chapter One is an introductory overview of the foreign currency reserve and manufacturing sector performance, followed by a concise statement of the problem. This section also contains the description of the research of objectives, research questions, significance of the study, as well as its scope and limitations.

Chapter Two covered an extensive review of pertinent literature, aiming to elucidate key concepts and expound upon theoretical frameworks relevant to the research problem.

Chapter Three explains the methodological approach adopted for the study. It encompasses discussions on research design, data types and sources, sampling techniques and size, as well as data collection and analysis methodologies employed.

Chapter Four presented the findings and subsequent discussions derived from the study's analysis.

Finally, Chapter Five draws' conclusions based on the findings and offer recommendations for future research and practical applications.

CHAPTER TWO

REVIEW OF LITERATURE

2. Introduction

Building on the research questions and objectives outlined in the previous chapter, this chapter explores relevant literature to provide a strong foundation for the study. It begins with a review of theoretical perspectives on Ethiopia's foreign currency reserves and their connection to the performance of the manufacturing sector. This is followed by an examination of empirical studies that have investigated similar areas. Finally, the chapter highlights key insights and observations from the literature, identifies gaps in existing research, and sets the stage for how this study aims to contribute to the field.

2.1. Theoretical Literature

2.1.1. Definitions and concepts of foreign currency and foreign currency generation

Any foreign money that is an officially recognized means of exchange and the foundation for that nation's record-keeping system is considered foreign currency. Banks trade foreign exchange through two methods: either they handle currency or cheques directly, or they build foreign exchange balances with banks abroad. (Dictionary of International Trade).

2.1.2. Major Sources of Supply of Foreign Currency

Foreign exchange supply (inflow) originates from those who receive it for the reasons discussed below.

Exports - Exports refer to goods and services produced in one country and sold to customers in another. To enhance revenue and expand trade opportunities, nations actively seek international markets rather than confining commerce within their own borders. (Segal, 2024).

Remittance - Diverse authors possess varying opinions concerning the notion of remittances. Geda (2011) characterizes remittances as transactions related to

migration that are originate from people who live or work outside of their home country. Employee compensation, worker remittances, and migrant transfers are the three parts of remittances.

Remittances are person-to-person transfers that are carefully tailored to the needs of the recipients, many of whom are impoverished and do not generally experience the governance issues associated with official aid flows. Remittances, the financial transfers made by migrant workers from their host country to their country of origin, are a crucial pillar of many labor-exporting economies. They have become a central topic in the ongoing discourse on the economic implications of international labor migration, highlighting both its benefits and challenges (Tzema, 1999).

Foreign debt - Economies with underdeveloped domestic debt markets often depend on external borrowing to meet their substantial financial needs. The limited capacity of these markets makes it difficult for governments to secure sufficient funding locally, leading to a reliance on foreign debt. While many African nations have made progress in expanding their domestic debt markets, a significant share of their external borrowing remains denominated in foreign currencies (Agyapong & Bedjabeng, 2020). Gabriel (2019) asserts that the extent of a country's external borrowing is influenced by the interplay between domestic and international savings, investment, and also economic growth.

Foreign Aid - The transfer of funds, goods, or services from one country or international organization (such UNICEF, USAID, WHO, or UNCTAD) to another country for the population's benefit is referred to as "foreign aid." Assistance in the forms of economic, social, educational, military, and emergency humanitarian aid are all included in the category of foreign aid. Foreign aid that is concessional in nature is often allocated toward poor countries, either directly or indirectly through private voluntary groups or multilateral institutions. Supporting social and economic development is the aim of this type of aid. Foreign aid is an essential factor in promoting economic development (Rojík, Maitah, Malec, & Abdullahi, 2024).

To bridge the persistent gap between developed and developing nations—marked by a continuous flow of capital from wealthier countries to the Global South,

particularly Africa—developed nations have provided financial assistance to support economic growth and address developmental challenges. However, despite decades of foreign aid, many African nations continue to experience modest growth, raising questions about the long-term effectiveness of such assistance (Andrews, 2009).

Government credit constraints can be alleviated by foreign assistance. Resources from foreign aid are utilized by recipient nations to address the disparity between domestic savings and investment needs, as well as the imbalance in international trade and foreign currency availability (Ayhan, 2018). A variety of forms of assistance could have a variety of effects on it. As aid typically rises substantially at the same time that growth declines after an economic shock, emergency and humanitarian aid are likely to have a negative relationship with growth. When it comes to health, education, and environmental help, growth may not be impacted at all or only after a significant delay. Growth may be directly boosted by funding for the construction of ports, roads, and other infrastructure, as well as for agricultural support (Garonna, 2007).

Foreign direct investment (FDI) - According to Mwesigye and Mulyungi (2019), foreign direct investment (FDI) refers to an investment aimed at acquiring a substantial, long-term ownership stake—typically at least 10% of voting stock—in a company operating outside the investor's home country. FDI can be categorized into two main types: mergers and acquisitions (M&A), which involve acquiring existing ownership stakes rather than initiating new ventures, and greenfield investments, commonly referred to as 'mortar-and-brick' projects, which entail establishing entirely new operations.

The characterization of foreign direct investment (FDI) is when a citizen of one country owns assets in another (Bagchi-Sen, 2001). According to Espana (2003), the term 'lasting interest' signifies a durable connection between the direct investor and the enterprise receiving the investment. FDI involves the transfer of capital across borders, granting foreign investors substantial ownership stakes in assets and businesses within the host country. Such investment denotes an equity position

sufficiently significant to allow investors to influence corporate strategies or actively participate in management decisions as part of their involvement (Chen, 2020).

It is claimed that foreign direct investment (FDI) is an essential source of capital formation, expertise, job creation, and trade opportunities for least developed countries (LDCs), and that FDI inflows into these nations should be accelerated. The classification of direct investment is guided by three core dimensions: (1) the orientation of the investment, specifying whether it involves assets or liabilities; (2) the type of financial instrument employed, including equity shares, loans, and other vehicles; and (3) the allocation of the investment across distinct economic sectors (Espana, 2003).

Tourism - The definition of tourism is subject to numerous criteria and conditions. The reason for this is because scientists cannot agree upon a common definition because of the nature of tourism and how people perceive it (Donyadideh, 2010). Traveling is implied by the term "tourism," which refers to travel that lasts less than a day (day tripper/visitor); travel that occurs within a country, making it a domestic tourist trip; or travel that crosses an international border, making it an international tourist trip (Carson, 1997).

Tourism has grown to be a vital component of the economies of numerous towns, states, and nations. In the past, both the number of participants and the amount of money generated by tourism have generally increased. Few industries are as resilient to fluctuations in the economy as the tourism sector, which also recovers swiftly from adverse effects on the environment or the economy. The impact on foreign tourists was relatively milder compared to the disruptions faced by foreign trade and industrial production, even amid a catastrophic credit crunch, severe economic depression, and prevailing political instability (Twain, n.d.).

When visitor usage exceeds the capacity of the environment to manage this use within allowable boundaries of change, tourism has a negative influence. Unrestrained conventional tourism poses significant threats to many natural areas worldwide. It can lead to the destruction of natural habitats, placing additional strain on endangered species and increasing the likelihood of forest fires. Furthermore, it

contributes to a range of environmental issues, including soil erosion, heightened pollution levels, and harmful discharges into the ocean. As Sunlu (2003) highlights, the competition among local communities for essential resources, particularly water, often intensifies under such circumstances, exacerbating resource scarcity.

Grants and donations - Gifts, including donations and grants, play a pivotal role in externally funded activities. A grant or contract represents a formal agreement through which funds or property are transferred from the sponsor in exchange for specific services. Such agreements often confer rights to the outcomes or materials generated from these services, while requiring the institute to provide formal financial and technical accountability regarding the utilization of the resources provided. As noted by Anon. (n.d.), these agreements are legally binding, with performance typically concluded within a defined timeframe, and support subject to revocation for justified reasons.

Foreign exchange reserves

The foreign exchange assets that national central banks hold is known as forex reserves. These assets consist of reserve positions in the IMF, foreign marketable securities, monetary gold, and special drawing rights (SDRs). Maintaining foreign exchange reserves is primarily done to facilitate international payments and protect against exchange rate fluctuations (The economic times, 2024).

As a means of achieving price and financial stability, foreign exchange (FX) reserves are a crucial component of the policy toolbox since they act as a buffer against shocks and boost monetary policy. Building and maintaining FX reserves is not cost-free, either. In order to achieve their primary goals, foreign exchange reserves need to be placed in low-yielding, safe, and liquid assets (Schanz, 2019).

A reserve currency refers to a substantial amount of money that central banks and other big financial institutions hold in order to affect their domestic exchange rate or be ready for investments, transactions, and international debt commitments. The reserve currency is used to price a significant portion of commodities, including gold

and oil, which forces other nations to hoard it in order to pay for these things (Chen, 2018).

According to Merhatsidk (2019), reserve currencies are kept in substantial amounts as part of foreign exchange reserves by several governments and central banks. These currencies are employed in international trade as price currencies, especially for commodities like coffee, gold, and oil.

In recent years, the public sector in various countries, particularly in emerging market economies, has accumulated significant cross-border financial assets, primarily consisting of internationally held reserves, such as foreign exchange reserves (International Relations Committee).

In countries with fixed exchange rates and unrestricted cross border capital flows, maintaining substantial reserve holdings is often essential to sustain the desired exchange rate. These reserves play a crucial role in mitigating the risks associated with foreign exchange rate volatility and ensuring the availability of foreign currency to facilitate cross border transactions (Reddell, 2012).

Generally, a significantly lower reserve stock is needed for an advanced nation with a flexible exchange rate. The main justification for keeping reserves may be related to the possibility that severe market disorder could impair the foreign exchange markets' ability to function, thereby posing a risk to the overall financial system's economy. Exchange market intervention is rare in these economies. A modest amount of reserve is present in most mature floating exchange rate economies, but not all of them (Reddell, 2012).

In order to comprehend the role that foreign exchange reserves play in macroeconomics in a globalized society, it is first and foremost imperative to evaluate the nature of international trade. Every transaction in international trade requires the exchange of currencies since real transfers of goods and services, financial instruments, and currencies between countries or economic unions no longer occur and since each country or currency union has its own currency. It is evident from the foregoing that in order for a non-resident vendor of goods, services,

or financial instruments to obtain them, a country, or more specifically its citizens, must own a certain foreign currency. A country is therefore free to make unlimited purchases if it has sufficient reserves of the desired foreign currency. Nonetheless, a government cannot make infinite purchases abroad if reserves are inadequate and earning of these highly sought-after currencies don't appear to be prepared to satisfy needs (Zurpel, 2014).

In order to guarantee that all foreign import demands and desires are met, reserves must be accumulated. According to the IMF, foreign currency reserves are those external assets that are easily accessible to and under the control of monetary authorities for the purposes of financing the balance of payments, intervening in exchange markets to influence the exchange rate, and achieving other related goals (like preserving confidence in the currency and the economy and providing a foundation for borrowing from abroad) (Zurpel, 2014).

The amount of foreign exchange required by a nation depends on how much of its essence it produced in comparison to its exports. Hard currency values are more reliant on the conversion rates applied to them (Zurpel, 2014).

A country needs access to imported machinery that boosts productivity in order to compete effectively in fiercely competitive international marketplaces, which could be challenging if FOREX reserves are insufficient (Chand, n.d.).

2.1.3. Source of foreign currency for Ethiopian Manufacturing firms.

Export earning – According to world bank data, Ethiopia's over all export earning was USD 10.79 billion for the year 2023. However, despite its economic significance, the manufacturing industry contributes minimally to exports and job creation, accounting for less than 13% of total exports (Oqubay, 2018).

Bank letter of credit - Letters of credit are widely regarded as an essential payment mechanism for facilitating international trade. They are especially preferred for single time cross border business deals between parties who are either unfamiliar with each other or at the initial stages of a potential long-term business relationship,

where trust and established relational norms have yet to develop (Krazovska D., 2008).

The NBE, in its directive "Foreign Currency Allocation and Management" (FXD/77/2021), emphasizes that foreign currency is a scarce resource requiring careful management. The directive outlines priority sectors for foreign currency allocation, with pharmaceuticals, inputs for the manufacturing of edible oil, and liquefied petroleum gas listed as top priorities. Inputs for agriculture and manufacturing are designated as second-tier priorities.

Head office injection - Subsidiaries operating in countries with foreign currency shortages (like Ethiopia) may struggle to obtain the foreign currency needed for critical operations, such as paying for imports, servicing foreign debt, or repatriating profits to the parent company. These shortages arise due to factors like government regulations, currency depreciation, or a lack of foreign exchange reserves in the local economy. To help subsidiaries cope with such challenges, the parent company injects funds from the head office, often in the form of foreign currency (e.g., USD, EUR). This can be done via intercompany loans, equity injections, or cash transfers. These funds enable the subsidiary to meet its foreign currency obligations, maintain operations, and avoid disruption to its supply chain or debt repayments.

2.2. Foreign Direct Investment

Foreign Direct Investment (FDI) encompasses investments made by a company in one country to establish and sustain ownership control of a comparable enterprise in another nation, referred to as the host country. It entails the transfer of capital, enabling the establishment of new overseas production facilities, the acquisition of existing operations abroad, or the formation of joint ventures through mergers. Foreign investors have the flexibility to select their investment approach based on the specific circumstances of the host country and their strategic objectives (Baci, Mulla et al., 2022).

Manufacturing sector growth is the rapidest path for Africa to advance to the next chapter of economic development and accelerate overall growth. Consequently,

governments in Sub-Saharan Africa (SSA) are actively seeking modern and dynamic strategies to attract FDI and strengthen manufacturing industries.

Nsofor, Obani, and Agu (2024) investigated the influence of Foreign Direct Investment (FDI) on the growth trajectory of the manufacturing sector in Sub-Saharan Africa, utilizing data spanning from 1985 to 2021. Their analysis reveals that while both FDI and trade openness contribute positively to the sector's growth over the long term, these impacts are not observable in the short term.

2.3. Total Import

Imports play a vital role in international trade, encompassing goods or services procured by one country that are produced in another. Nations often import items that they are either unable to produce domestically or cannot produce as efficiently or economically as the exporting country (Segal, 2021).

2.4. Inflation

The term “inflation” has evolved in meaning throughout economic history, with three general interpretations. Initially, in the mid-1800s, it referred to an increase in the money supply or the circulation of currency not backed by metallic reserves. Later, the definition shifted to emphasize an increase in the money supply that was not matched by a corresponding increase in money demand, resulting in a general increase in prices. Following the Keynesian revolution, inflation came to be understood primarily as an increase in the overall price level (Bryan, 1997).

2.5. Manufacturing firms in Ethiopia

Manufacturing encompasses processes carried out in facilities that transform raw materials, substances, or components into new products through mechanical, physical, or chemical methods. It also includes the assembly of individual components into fully finished goods (CSA, 2018).

Manufacturing encompasses a range of activities, from traditional craftsmanship to advanced technology, but it is primarily associated with industrial production. This process involves transforming raw materials into new products or finished goods on a large scale. The products produced may be ready for use or consumption, or they may be semi-finished items intended for further manufacturing. These products are then distributed to wholesalers, retailers, and consumers.

According to the FDRE Central Statistics Agency bulletin (2018), the total number of large and medium-scale manufacturing industries recorded in 2016 was 3,596. Approximately 37% of these industries were concentrated in Addis Ababa, followed by Oromia, which accounted for over 27%, and Tigray, with roughly 14%

According to the UNDP (2023), Ethiopia's manufacturing sector remains in its nascent stages, accounting for just 4.6% of GDP and 5% of total employment in 2023 - a decline from its 5.9% contribution to GDP in 2022. Nationwide, nearly 450 out of approximately 5,000 manufacturing firms have suspended operations due to various shocks. The sector satisfies only 38% of domestic demand, with the remaining 62% reliant on imports. Moreover, the export participation of Ethiopian manufacturing firms is notably limited, with only 5% of firms engaging in export activities between 1995 and 2020.

The national average operational capacity of firms ranges between 50% and 55%. However, a significant number of manufacturing firms operate at just 20% to 30% of their capacity, with minimal diversification in their product offerings. Notably, food products, beverages, non-metallic minerals, and apparel collectively contribute to over 50% of the sector's total output (UNDP, 2023).

According to Oqubay (2018), Ethiopia's manufacturing sector is undergoing continuous development with the aim of becoming a crucial driver of economic growth. However, in spite of its growing influence to the country’s economy, the sector has not seen a corresponding increase in manufacturing exports or significant job creation. Its primary focus remains on producing low-value products, particularly in the textile and leather industries. The manufacturing sector’s export contribution has stagnated at under 13% of the country’s total annual exports. Moreover, the

sector's employment growth is modest, averaging 4.8% annually, with the construction industry accounting for the largest share of this growth.

A notable feature of Ethiopia's manufacturing sector is its heavy reliance on imported raw materials, with 50% of the total raw materials used for manufacturing coming from foreign sources, a ratio that persisted from 1995/96 to 2015/16. The level of dependency on imported inputs varies by sub-sector: the leather industry relies on imports for 75% of its raw materials, food and beverage manufacturing for 57%, and the textile sector for 38% (Oqubay, 2018). This dependency on foreign inputs poses challenges, particularly in the context of foreign currency shortages, further complicating the sector's growth trajectory.

2.6. Empirical Literature Review

Maasho (2018) claims that over the previous ten years, the economy of Ethiopia has grown at the highest rate on the African continent, at almost 10% annually. However, local companies and foreign investors have expressed dissatisfaction about how severely the shortage of hard currency has hindered the private sector.

In January 2018, the International Monetary Fund (IMF) reported that foreign currency reserve of Ethiopia at the end of the 2016-2017 fiscal year stood at US$3.2 billion, an amount insufficient to cover more than two months of imports (International Monetary Fund, 2018). The African Development Bank (2019) also noted that Ethiopia's gross official foreign currency reserves continued low, covering only 2.5 months value of imports in 2016-2017 and decreasing to 2.1 months in 2017-2018. The IMF highlighted the insufficient reserves as a downside risk to the country's economic growth, which was projected at 8.5% for 2017-2018. Despite experiencing high economic growth, Ethiopia remains heavily reliant on imports. According to the IMF, Ethiopia's export earnings remained largely unchanged in the preceding year despite some volume improvement, as global agricultural commodity prices remained low and exports from manufacturing were inconsistent (International Monetary Fund, 2018). As Africa's largest coffee exporter, Ethiopia

has consistently fallen short of its export revenue targets in recent years due to weaker commodity prices.

According to Alam and Yigzaw (2020) Ethiopia's balance of payments has worsened, leading to periodic depletion of foreign currency reserves. The current study identifies pervasive corruption in key government economic sectors and a weak export capacity as the primary causes of the ongoing foreign currency reserve crisis in Ethiopia.

Reda (2016) carried out a study on the foreign currency shortage and its implications for the Ethiopian economy, addressing how this shortage affects the economy in general and the import sector specifically. The study utilized both primary and secondary data, which were examined and presented in a tabular form and figures. The findings revealed a severe shortage of foreign currency, primarily due to the sluggish growth of exports compared to imports, and an increase in government imports related to extensive infrastructure projects. Based on the results, the researcher recommended enhancing export activities and supporting the manufacturing sector to produce export and import substitute items.

According to UNDP (2023), despite various efforts to enhance the performance of Ethiopia's manufacturing industry, its contribution to the economy and employment remains limited. After 2000, an industrial-park strategy was implemented to attract foreign direct investment (FDI), create jobs, and generate foreign exchange by establishing industrial parks. Presently, Ethiopia has 13 public and 5 private operational parks. Over the past decade, this strategy has attracted $740 million in FDI from over 60 foreign investors, increased employment by 150,000, particularly benefiting women, and contributed $500 million in exports by 2023. Notably, the parks have achieved high occupancy rates, surpassing 80 percent, particularly in Bole Lemi, Kilinto, and Hawassa. The textile and garment sectors dominate, accounting for approximately 95 percent of exports from publicly owned industrial parks.

Several factors contribute to the underdevelopment of Ethiopia's manufacturing sector. Firstly, traditional issues persist, including excessive regulation, shortages of foreign exchange (which hinder access to essential inputs and profit repatriation),

lack of incentives, and a private sector hesitant to venture beyond trading, services, and construction. Secondly, industrial parks have not fully met expectations, due in part to logistical challenges, conflicts, and design flaws. Thirdly, microeconomic issues—such as problems in land, credit, and input markets—have undermined macroeconomic progress. Fourthly, policy fragmentation across regional markets, involving disparities in taxes, subsidies, and licenses, has deterred manufacturing growth and hindered the realization of economies of scale. Fifthly, administrative procedures are often cumbersome. Lastly, security crises pose significant barriers to the development of the manufacturing sector (UNDP, 2023).

According to Tadesse (2024), The Ethiopian birr has experienced substantial depreciation against the US dollar and other major currencies recently. Studies have identified several key factors contributing to this depreciation. These include increased imports, high and rising demand for foreign currency (particularly the US dollar) , an acute shortage of foreign currency, depletion of foreign exchange reserves, loose monetary policy, and the monetization of deficits (printing money). Collectively, these factors have weakened the birr's value against major foreign currencies.

Although Ethiopia has long struggled with foreign exchange shortages, the situation has deteriorated in recent years due to a marked decline in foreign financial inflows, including remittances, foreign aid, and export earnings. A significant factor exacerbating the foreign exchange crisis is the sharp drop in remittance inflows through official channels. Many remittance providers operate outside the formal banking system, where Ethiopians living abroad send foreign currency to intermediaries who then pay recipients in Ethiopia in local currency at black-market rates (Tadesse, 2024).

Several factors contribute to the foreign exchange shortage, many of which are linked to reduced external financial flows. The conflict that erupted in northern Ethiopia in 2020 has significantly decreased foreign aid and loans from bilateral and multilateral sources, as well as foreign direct investment (FDI) and tourism. The decline in FDI is likely related to both internal conflicts and foreign exchange shortages, particularly

due to difficulties in converting the Ethiopian birr. Additionally, the foreign exchange shortage is tied to poor export performance, characterized by minimal and slow growth in export earnings, a continuous rise in import expenditure, and an expanding trade deficit. The current account deficit has widened from $4.5 billion in 2021 to an estimated $5.9 billion in 2023 (Deloitte, 2023).

According to World Bank data, Ethiopia's total reserves were sufficient to cover two months of imports in 2020. However, recent evidence indicates that the country's foreign currency reserves have dwindled to approximately $0.9 billion, enough to cover only 0.7 months (21 days) of imports. This is significantly below the commonly accepted benchmark for foreign exchange reserves, which is typically set at three months of imports (Deloitte, 2023).

Kebede (2024) analyzed the impact of foreign exchange availability and the devaluation of the Ethiopian Birr on company performance using both primary and secondary data. The study found that increased demand from new businesses, informal foreign currency access channels, rapid population growth, and corruption contribute to a persistent shortage of foreign exchange. This scarcity negatively affects import and export companies, particularly retailers and wholesalers, by increasing operational costs, reducing profitability, and encouraging practices such as under-invoicing and tax evasion. Furthermore, the study highlighted that foreign exchange shortages discourage new investments and lead to workforce reductions, ultimately hindering overall business performance.

Oke and Olaiya (2021) investigated the impact of foreign reserves on the performance of Nigeria’s manufacturing sector from 1991 to 2021. Using foreign reserves, trade openness, foreign direct investment, and exchange rate as independent variables, the study measured manufacturing performance through its contribution to real GDP. Data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin were analyzed using the Augmented Dickey-Fuller unit root test, Johansen Co-Integration, and the Error Correction Mechanism (ECM). The findings indicated that all explanatory variables, except exchange rate, had a positive relationship with manufacturing sector performance. However, foreign reserves had an insignificant

positive effect, with a p-value of 0.070 and an adjusted R^2 of 60%. The study concluded that while foreign reserves contribute to manufacturing growth, their impact remains statistically insignificant.

Belete (2020) examined the impact of foreign currency reserves and exchange rates on Ethiopia's manufacturing sector performance using 40 years of data (1980–2019). Employing a quantitative approach with an explanatory design, the study utilized secondary time series data sourced from the National Bank of Ethiopia (NBE), the World Development Indicator (WDI), and the Ministry of Industry. Stationarity was tested using the Phillips–Perron test, and the data were analyzed through the Autoregressive Distributed Lag (ARDL) model. The findings revealed that foreign currency reserves had a positive and significant effect on manufacturing sector performance in the long run, while their first lag also showed a significant positive impact in the short run. Conversely, exchange rate had a negative and insignificant effect in the long run and no effect in the short run. The study concluded that foreign currency reserves play a more effective role than exchange rate adjustments in enhancing Ethiopia's manufacturing sector performance.

Nsofor, Obani, and Agu (2024) examined the impact of Foreign Direct Investment (FDI) on the growth of the manufacturing sector in Sub-Saharan Africa using panel data from 1985 to 2021. The study employed the panel Autoregressive Distributed Lag (ARDL) estimation technique to analyze long-run and short-run effects. The findings indicated that FDI and trade openness (TOP) positively influenced manufacturing sector growth in the long run, while gross fixed capital formation (GFCF) had a negative impact. However, these effects were not significant in the short run. The study concluded that policies aimed at improving the investment climate and fostering trade openness are essential for sustaining manufacturing sector growth in the region.

Oduor et al. (2021) examined the effect of inflation on the growth of Kenya's manufacturing sector using secondary data from 2008 to 2017. The study employed descriptive, correlational, and inferential research designs, utilizing data from institutions such as the World Bank, UNCTAD, IMF, CBK, and KNBS. Time series

data were analyzed quarterly using EViews software, with pre-tests including the Augmented Dickey-Fuller (ADF) unit root test, Bai-Perron Multiple Breakpoint test, and Bounds Cointegration test. Post-estimation diagnostics were conducted for autocorrelation, heteroscedasticity, multicollinearity, normality, and model stability. The regression analysis indicated that inflation had a statistically significant negative effect on manufacturing value-added, with a coefficient of -0.19269 ($p<0.05$). The study concluded that inflation hinders manufacturing sector growth and recommended policies to stabilize inflation for sustained industrial expansion.

Belete (2020) further examined the relationship between imports and manufacturing sector performance in Ethiopia, revealing a statistically significant negative long-run impact. The study found that a one-unit increase in total imports reduces manufacturing performance by 0.54845 units (P-value = 0.0031) at the 5% significance level. This negative effect was attributed to Ethiopia's high dependence on finished industrial product imports, which limit the market share and competitiveness of domestic manufacturers. In the short run, although imports also exhibited a negative coefficient (-0.074055), the effect was statistically insignificant (P-value = 0.3821). These findings align with previous studies by Abdul-Mumuni (2016) and Ayobami (2019), reinforcing the argument that excessive reliance on imported industrial goods undermines local manufacturing growth. The study underscored the need for policy interventions to promote domestic production and reduce import dependency to strengthen the manufacturing sector.

2.7. The Hypothesis of the Study

Empirical studies across different developing countries suggest that foreign currency reserves play a vital role in macroeconomic stability, investment facilitation, and overall industrial performance.

In the context of Ethiopia, the manufacturing sector is highly dependent on imported capital goods, raw materials, and spare parts. Persistent foreign currency shortages often lead to production delays, capacity underutilization, and increased costs. Despite this, there is limited empirical evidence that quantifies the effect of foreign

currency reserve levels—measured in months of import cover—on manufacturing sector performance, as represented by manufacturing value added.

To address this gap and test whether a statistically significant relationship exists between foreign reserves and manufacturing output, the following hypothesis is formulated:

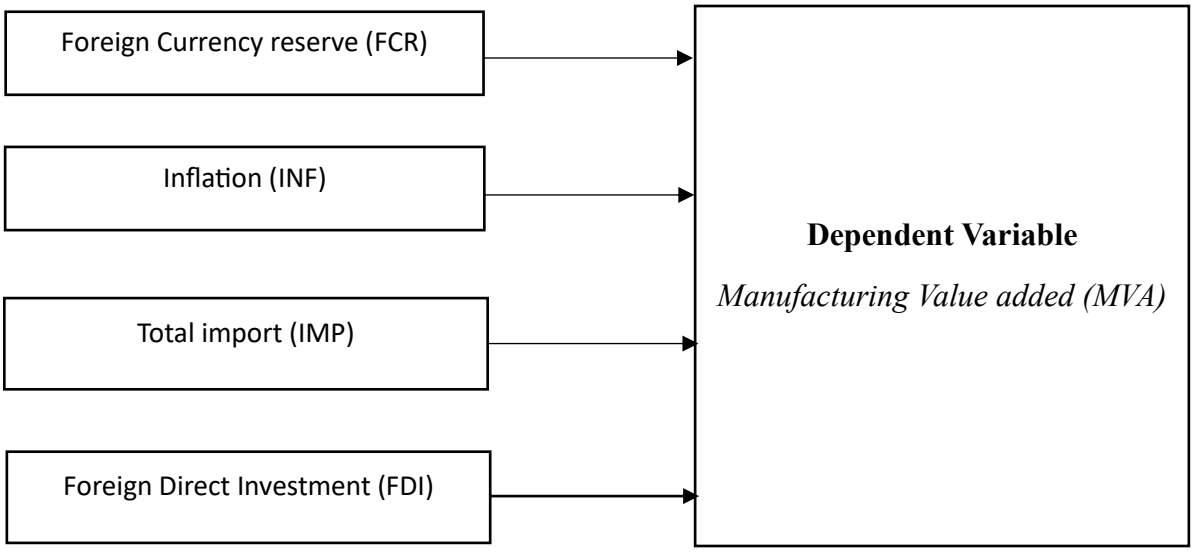
H_0: *There is no significant relationship between foreign currency reserves and manufacturing value added in Ethiopia.*

H_1: *There is a significant relationship between foreign currency reserves and manufacturing value added in Ethiopia.*

2.8. Conceptual Framework and Conclusions to the Literature Review

Foreign currency crisis is a pressing issue for developing countries. The empirical studies reviewed in the previous section examined the various causes of this crisis and its impact on the economy.

To the best of the researcher's knowledge, there is no sufficient study that examined the impact of the foreign currency reserve on Ethiopian manufacturing sector performance, aside from quarterly bulletins and reviews issued by the Ethiopian Economic Association (2024) and Deloitte (2023) that focuses on the overall economy. The working papers published by the World Bank and UNDP have evaluated the Ethiopian economy more broadly, addressing the various challenges faced by the manufacturing sector. Therefore, it is crucial to conduct a focused study on the foreign currency reserve and its impact on Ethiopia’s manufacturing sector performance.



Source: Researcher's compilation

2.9. Variable Identification

2.9.1. Dependent variable

- Manufacturing value added: Manufacturing value added (MVA) serves as a widely accepted indicator for assessing the performance of the manufacturing sector. It reflects the sector's net contribution to the economy, derived by deducting the value of intermediate goods and services from total output. This metric is particularly useful because it addresses the shortcomings of conventional financial indicators such as return on equity (ROE), return on assets (ROA), and profitability ratios which may not adequately reflect a firm's or sector's long-term earnings potential (Carini et al., 2017). In line with this approach, Ayobami (2019) also adopted MVA as a benchmark to evaluate performance of manufacturing sector in his research.

2.9.2. Independent variables

Beyond foreign currency reserves and exchange rates, the study also integrates additional macroeconomic indicators that are likely to impact the performance of the manufacturing sector.

- A. Foreign currency reserve: Foreign currency reserves, held by the National Bank of Ethiopia, are maintained to support foreign trade and are primarily allocated to essential imports. The level of these reserves at the national level can significantly

influence the manufacturing sector's ability to import raw materials, thereby affecting overall production capacity and performance.

- B. Import: Imports have been used as an independent variable to assess their impact on the performance of the manufacturing sector. Oqubay (2018) highlighted the significant role of imports in manufacturing operations, noting that imported raw materials accounted for approximately 50% of the total materials used in production. This ratio remained consistent between 1995/96 and 2015/16, underscoring the sector's reliance on external inputs. Similarly, Ayobami (2019) included imports as an independent variable in his analysis and found a negative relationship with manufacturing sector performance—indicating that as import levels increase, the sector's contribution to GDP tends to decline.

- C. Foreign direct investment: higher inflows of FDI are generally expected to contribute positively to the performance of the manufacturing sector. Eza et al. (2019) argue that FDI enhances manufacturing output by introducing firms with competitive advantages and advanced technologies, which in turn foster learning effects that help domestic firms improve their operational capabilities. However, contrasting evidence is presented by Abdul-Mumuni (2016), whose empirical study using FDI as an independent variable found a negative relationship between FDI inflows and performance of manufacturing sector.
- D. Inflation: Inflation is another crucial factor influencing the performance of the manufacturing sector. Higher inflation can complicate transactions by driving up the cost of materials used in the manufacturing process, thereby reducing profitability and operational efficiency. Ayobami (2019) provides empirical evidence showing that inflation has a significant negative effect on manufacturing sector performance.

2.10. Econometric Model Specification

Abdul-Mumuni's (2016) model served as the foundation for the one used in this study, with modifications made to the variables to better suit the context of this research.

$MVAt = \alpha_0 + \alpha 1FCRt + \alpha 2INFt + \alpha 3FDIt + \alpha 4IMP + \mu t$

Dependent variable:

- MVA - manufacturing value added represents the manufacturing sector's contribution to the economy as a percentage of total value-added. It serves as an indicator of the manufacturing output relative to the overall economic activity of the country.

Independent variables:

- FCR - foreign currency reserve refers to the holdings of foreign currency controlled by the National Bank of Ethiopia. These reserves are managed by the central bank to facilitate international trade, stabilize the national currency, and meet other external financial obligations.
- INF- inflation rate
- FDI- foreign direct investment and
- IMP - total imports
- μ - the error term

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter presents the methodological approach employed to examine the impact of foreign currency reserves on Ethiopia's manufacturing sector performance. It outlines the research design, justifies the use of a quantitative explanatory approach, and describes the data sources, variables, and time frame. The chapter also details the ARDL model specification used for analysis and addresses data reliability, validity, and ethical considerations.

3.1. Research Design

Research design serves as a foundation for assessing knowledge claims by outlining the methodical and scientific techniques used to produce a study's conclusions and findings (Kotler P., 2002).

This study used an explanatory research design to investigate and quantify the foreign reserves impact on the performance of Ethiopia's manufacturing sector in order to meet the objective outlined in section 1.

The explanatory research design, utilizing inferential statistics, allows for the examination of the relationships between various independent variables and the dependent variable. This approach also permits the manipulation of one or more independent variables to uncover causal effects and patterns (Malhotra & Birks, 2007).

3.2. Research Approach

This study used a quantitative approach to explain how the foreign currency reserve affected the performance of Ethiopia's manufacturing sector in order to meet the research objectives and provide answers to the specific research questions. Quantitative research is a technique for testing objective theories by looking at the relationships between variables using numerical data that can be analyzed statistically (Creswell, 2014).

3.3. Sampling Design and Population

A precise strategy for selecting a sample from the sampling frame is known as a sample design. It describes the method or processes a researcher employs to choose specific sampling units from which conclusions about the population are drawn; this method is decided upon prior to data collection (Kothari, 2004).

The population consists of all items from which information is desired and can be classified as finite or infinite. A finite population has a fixed number of elements, allowing for complete enumeration. To represent the population in a study, a sample is taken. A sample is a subset of the population that reflects its characteristics and makes the research more economically efficient (Kothari, 2004).

This study examines the impact of foreign currency reserves on the performance of Ethiopian manufacturing firms using a time-series approach. The population of this specific study comprises the Ethiopian manufacturing sector, with a specific focus on macroeconomic indicators influencing its performance. Given the study's nature, secondary data was selected to capture long-term trends and economic relationships. A total of 40 years of annual time-series data (1984–2023) was used, obtained from two primary sources: the World Development Indicator (WDI) database of the World Bank and the National Bank of Ethiopia (NBE). These sources were chosen because they were trustworthy, covered a wide range of data, and were pertinent to the variables in the study. The selection of the 40-year period was based on data availability from these institutions. While a longer dataset could potentially enhance the robustness of the findings, this period provides a sufficient historical perspective to analyze the long-term effects of foreign currency reserves on manufacturing sector performance in Ethiopia.

3.4. Data Collection Method and Sources

The researcher utilized secondary data obtained from the World Development Indicator (WDI) database of the World Bank and the National Bank of Ethiopia (NBE) to get the time series data for both dependent and independent variables.

3.5. Data Analysis Method

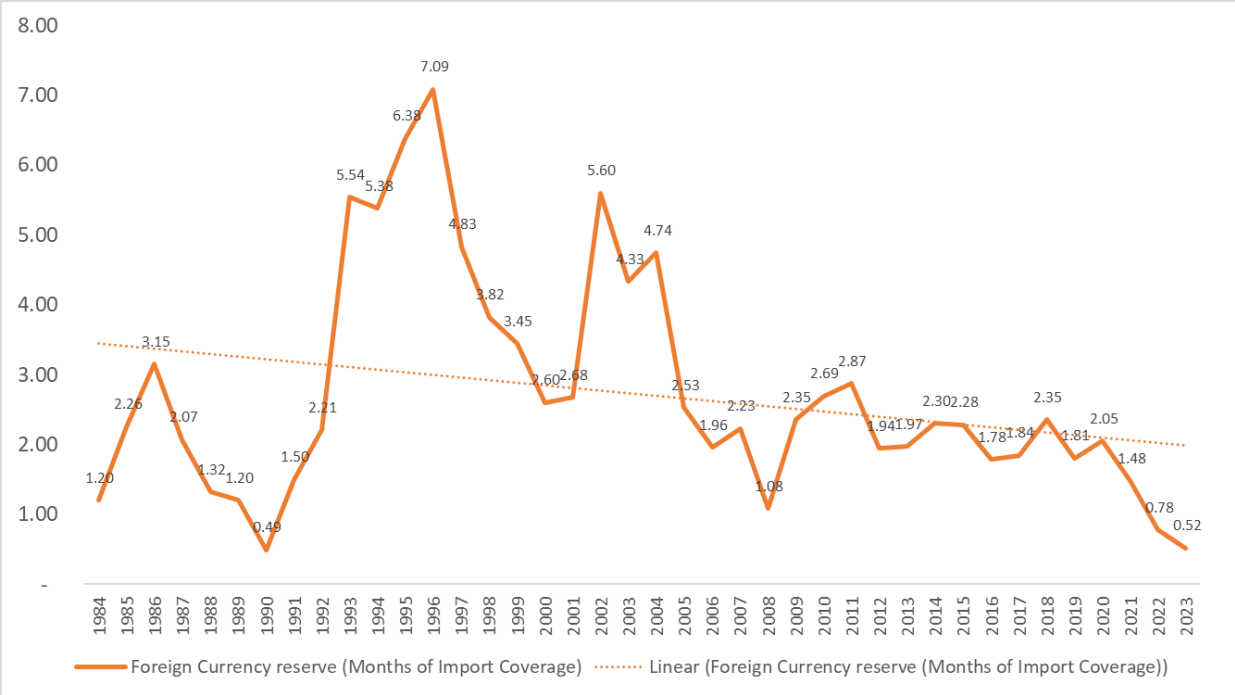
To address the research objectives, data obtained from various organizational publications and websites were collected and analyzed according to their respective characteristics. The primary aim of this study is to examine the impact of foreign currency crisis and its implication on Ethiopian manufacturing sector performance over the period 1984–2023. To achieve this objective, an autoregressive distributed lag (ARDL) model was employed.

CHAPTER 4

RESULTS AND DISCUSSION

4.1. The Results of a Structured Review of Records

Figure 1: Trend of Foreign Currency Reserves (Months of Import Coverage) (1984–2023)



Source: Researcher's graph basis world bank data

Ethiopia's foreign currency reserves (FCR), measured in months of import coverage, have exhibited significant volatility over the past four decades. The early period (1984–1993) saw fluctuations between 1.2 and 5.5 months, with a sharp decline to 0.49 months in 1990, reflecting the lowest reserve of this data coverage. A period of relative stability followed, with reserves peaking at 7.09 months in 1996, but a slight decline observed in the late 1990s, with FCR falling below 4 months by 1999. The 2000s marked a transition where reserve accumulation failed to keep pace with import growth, as evidenced by the decline from 4.74 months in 2004 to 1.08 months

in 2008. Despite moderate recoveries in subsequent years, the general trend has been downward, with import coverage struggling to exceed 2.5 months post-2010.

The period from 2014 onward, reserves still remained under pressure despite periodic rebounds. The 2018–2020 period, maintained coverage around 2 months, but post-pandemic disruptions, global inflationary pressures, and Ethiopia's macroeconomic imbalances accelerated the decline. The most concerning trend is observed in 2022–2023, where import coverage fell to a record low of 0.52 months of import coverage requiring urgent policy interventions to stabilize reserves and enhance foreign exchange resilience.

4.2. Unit Root Test

Before utilizing the ARDL model to estimate the long-term connection between the dependent and independent variables, it's essential to first test for stationarity. For this, we applied the Phillips-Perron unit root test. While the measurement, interpretation, and asymptotic distribution of the Phillips-Perron test are similar to those of the Augmented Dickey-Fuller (ADF) test, the Phillips-Perron test offers an advantage. It helps address a key limitation of the ADF test, specifically its inability to effectively detect autocorrelation in the error process (Nkoro & Aham, 2016).

In simpler terms, It is not necessary to define the form of serial correlation for Δyt under the null hypothesis because the Phillips-Perron (PP) test is non-parametric (Min & Guna, 2018). Table 4.1 below displays the unit root test results using the Phillips-Perron (PP) test.

Table 1: Unit root test using Philips-perron (pp) test

Variable	Test Statistic (Z(t))	Critical Value (1%)	Critical Value (5%)	Critical Value (10%)	p-value	stationarity
MVA	-6.631	-3.662	-2.964	-2.614	0.0861	Non-stationary

FCR	-6.151	-3.662	-2.964	-2.614	0.1480	Non-stationary
FDI	-5.545	-3.662	-2.964	-2.614	0.8746	Non-stationary
IMP	-5.591	-3.662	-2.964	-2.614	0.9960	Non-stationary
INF	-3.965	-3.655	-2.961	-2.613	0.0016	Stationary

Source: researcher compilation from Stata 17.

Based on the above summarized test results, all variables are either integrated at order (0) (stationary at level) or order (1) (stationary at first difference) at the 5% significance level, ensuring their suitability for ARDL modeling.

The dependent variable, MANVAD, along with the independent variables' foreign currency reserve, foreign direct investment, and imports, are all stationary at first difference. In contrast, inflation is stationary at level. Since none of the variables are stationary at order 2, it confirms that an ARDL model can be applied to analyze both the long-run and short-run relationships between the variables.

4.3. ARDL Bound Test for Co-integration

According to Kuranga (2020), the stationarity properties of variables dictate the appropriate econometric modeling approach:

- All variables stationary at level (I(0)): The variables exhibit constant mean and variance over time. In this scenario, applying Ordinary Least Squares (OLS) regression is suitable, yielding valid estimations.
- All variables stationary at first difference (I(1)): The variables become stationary after differencing once. Here, the Fully Modified Ordinary Least Squares (FMOLS) method is recommended to account for potential cointegration among variables.
- Mixed stationarity (some variables I(0), others I(1)): When variables display different orders of integration, the Autoregressive Distributed Lag (ARDL) bounds testing approach is appropriate. This method effectively handles the combination of

stationary and non-stationary variables, facilitating robust long-term relationship modeling.

In our analysis, given that some variables are stationary at level (I(0)) and others at first difference (I(1)), we will employ the ARDL bounds testing methodology to estimate our model accurately.

4.3.1. Bounds test result

Table 2: Bounds test result

Test Statistic	Value	10% Critical Values	5% Critical Values	1% Critical Values	p-value
F-statistic	9.9	2.646 (I (0)) - 3.915 (I (1))	3.216 (I (0)) - 4.658 (I (1))	4.584 (I (0)) - 6.423 (I (1))	0.000 (I (0)) - 0.001 (I (1))
t-statistic	-5.62	-2.527 (I (0)) - -3.639 (I (1))	-2.885 (I (0)) - -4.057 (I (1))	-3.617 (I (0)) - -4.905 (I (1))	0.000 (I (0)) - 0.002 (I (1))

Source: researcher compilation from Stata 17.

As shown in the table above, both the F-statistic and t-statistic exceed the upper bound (I(1)) critical values, leading to the rejection of the null hypothesis (H_0) of no level relationship at the 5% significance level. This provides strong evidence of a long-run cointegration (level relationship) amongst the variables.

4.3.2. Long-run ARDL coefficients

Table 3: Long run ARDL coefficients

Variable	Coefficient	Std. Error	t-Statistic	P-value	95% Confidence Interval
Adjustment (ECM term)					
MVAt−1	-0.6334	0.1127	-5.62	0	(-0.864, -0.403)
Long-run coefficients					
FCR	0.2348	0.1004	2.34	0.026	(0.030, 0.440)
INF	-6.3761	1.7925	-3.56	0.001	(-10.042, -2.710)
FDI	0.4253	0.2426	1.75	0.09	(-0.071, 0.921)

IMP	0.0065	0.0499	0.13	0.897	(-0.095, 0.108)
Short-run coefficients					
ΔFCR	-0.2227	0.0803	-2.78	0.01	(-0.387, -0.059)
ΔINF	1.8348	0.8072	2.27	0.031	(0.184, 3.486)
ΔFDI	-0.2389	0.1742	-1.37	0.181	(-0.595, 0.117)
ΔIMP	-0.0941	0.0728	-1.29	0.207	(-0.243, 0.055)
Constant	2.8095	0.6138	4.58	0	(1.554, 4.065)

Source: researcher compilation from Stata 17.

Error Correction Model (ECM):

The error correction term (ECM), represented by the coefficient of MVAt−1, is negative and statistically significant even at the 1% level (−0.6334, $p < 0.01$). This confirms the presence of a long-run relationship among the variables. The magnitude of -0.6334 suggests that approximately 63.34% of the instability from the previous period is corrected in the current period, indicating a relatively fast adjustment speed toward long-run equilibrium.

Long-Run Relationships:

In the long run, foreign currency reserves (FCR) have a positive and statistically significant effect on manufacturing value-added (MVA), with a coefficient of 0.23480 (p= 0.026), indicating that an increase in FCR enhances manufacturing performance. Inflation (INF) negatively affects MVA, with a coefficient of -6.3761 (p=0.001), suggesting that higher inflation significantly reduces manufacturing output. Foreign direct investment (FDI) has a positive but statistically weak effect (0.4253, p=0.090), while imports (IMP) show no significant impact on MVA (p=0.897).

Short-Run Dynamics:

In the short run, changes in foreign currency reserves (ΔFCR) negatively impact manufacturing value-added (−0.2227, p=0.01), implying that a temporary increase in reserves might divert resources from productive activities. Inflation (ΔINF) has a

positive short-run effect (1.8348, p=0.031), which contrasts with its long-run negative impact, possibly reflecting short-term cost-push effects. Changes in FDI (ΔFDI) and imports (ΔIMP) are not statistically significant, suggesting that their effects on manufacturing performance materialize mainly in the long run.

Model Fit:

R^2 = 65.99%, suggests the model relatively explains a good portion of the variation in manufacturing firm performance. **AdjR^2** of 55.43% still indicates a reasonably strong fit.

4.4. Diagnostics Tests

The diagnostic tests for autocorrelation and heteroskedasticity were conducted using the Breusch-Godfrey test and the Breusch-Pagan/Cook-Weisberg test, respectively. The results are summarized as follows:

4.4.1. Autocorrelation

Table 4. Breusch-Godfrey LM Test

Diagnostic Test	Null Hypothesis (H_0)	Test Statistic	p-value	Decision (5% level)	Conclusion
Breusch-Godfrey LM Test	No autocorrelation	χ^2= 3.125	0.0771	Fail to reject H_0	No autocorrelation

SOURCE: researcher compilation from Stata17

The result indicates that at 5% significance level (α = 0.05), we do not have an autocorrelation issue because the p-value is 0.0771 which is greater than 0.05. This means we fail to reject the null hypothesis (H_0) that there is no serial correlation.

4.4.2. Heteroskedasticity test

Table 5. Heteroskedasticity (Breusch-Pagan) test result

Diagnostic Test	Null Hypothesis (H_0)	Test Statistic	p-value	Decision (5% level)	Conclusion
Heteroskedasticity (Breusch-Pagan)	Residuals have constant variance	χ^2= 0.01	0.9078	Fail to reject H_0	No heteroskedasticity

Source: researcher compilation from Stata17

The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity assesses whether the residuals from the regression model exhibit constant variance (homoskedasticity). The test results are as follows:

Chi-squared statistic = 0.01

p-value = 0.9078

Null hypothesis (H_0): Constant variance (no heteroskedasticity)

Since the p-value (0.9078) is much greater than the 5% significance level (0.05), we fail to reject the null hypothesis. This indicates that there is no evidence of heteroskedasticity in the model, meaning that the variance of the errors (residuals) remains constant across all levels of the independent variables, ensuring that the model's estimates are reliable and efficient.

4.5. Discussion

The previous section outlined the analytical steps and summarized the overall study results. This section provides a detailed discussion and interpretation of the findings. Additionally, it evaluates the statistical results in relation to the proposed hypotheses.

Foreign currency reserve:

The impact of foreign currency reserves (FCR) on the performance of the manufacturing sector, as measured by manufacturing value added (MVA), is statistically significant at the 5% level in the long run. The estimated coefficient of 0.2348 ($p = 0.026$) suggests that a 1-unit increase in FCR is associated with a 0.2348-unit increase in MVA, holding other factors constant. The confidence interval (0.030, 0.440) further supports the positive effect, indicating that higher foreign currency reserves contribute to enhanced manufacturing sector performance. However, in the short run, the impact of FCR is negative and statistically significant (Δ FCR = -0.2227, $p = 0.01$), implying that short-term fluctuations in foreign currency reserves may have a contractionary effect on manufacturing value added. This contrasting short-run and long-run relationship highlights the importance of stable and sufficient foreign currency reserves for sustaining long-term growth in the manufacturing sector.

The long-run impact of foreign currency reserves in this study aligns with the findings of Belete (2020), indicating a strong positive relationship with manufacturing sector performance. However, a key difference emerges in the short-run dynamics. While Belete (2020) reported a positive but statistically insignificant short-run effect, this study finds a significant negative relationship.

Oke and Olaiya (2024), in their study on foreign reserves and manufacturing sector performance in Nigeria (1991–2021), concluded that foreign currency reserves are a significant determinant of manufacturing sector performance. Similarly, the findings of this study align with their results, reinforcing the positive relationship between foreign currency reserves and manufacturing sector growth. This consistency across studies highlights the critical role of foreign reserves in supporting manufacturing sector performance.

Based on these findings, the null hypothesis (H_0), stating that there is no significant relationship between foreign currency reserves and manufacturing sector performance in Ethiopia, is rejected.

Inflation:

The ECM result shows that inflation has a statistically significant negative impact on the performance of the manufacturing sector in the long run. The coefficient of inflation (-6.3761, p = 0.001) indicates that a one-unit increase in inflation leads to a 6.3761-unit decline in manufacturing value added (MVA), holding other factors constant. The 95% confidence interval (-10.042, -2.710) confirms the robustness of this negative relationship. However, in the short run, inflation exhibits a positive and significant effect on MVA (Δ INF = 1.8348, p = 0.031), suggesting that temporary price increases may initially boost manufacturing performance. Nonetheless, the overall findings highlight the detrimental long-term impact of inflation on the manufacturing sector, emphasizing the need for stable price levels to support sustainable industrial growth.

This result aligns with the findings of Belete (2020) and Ayobami (2016), who concluded that inflation has a significant negative impact on manufacturing sector performance. The consistency between these studies reinforces the idea that rising inflation erodes the manufacturing sector's growth by increasing production costs, reducing investment incentives, and diminishing consumer purchasing power. This further underscore the importance of effective inflation control policies to sustain manufacturing sector development and ensure long-term economic stability.

Foreign direct investment:

The findings regarding Foreign Direct Investment (FDI) in this study diverge from those of Belete (2020) and Ayobami (2016), who found a positive and significant relationship between FDI and manufacturing sector performance. In contrast, the results here show that FDI has a positive but statistically insignificant impact on the sector's performance in the long run, with a coefficient of 0.4253 (p-value = 0.09), suggesting a weak relationship.

Import:

Similarly, the long-run relationship between imports and manufacturing sector performance in this study is statistically insignificant, as indicated by the coefficient of 0.0065 (p-value = 0.897). This suggests that imports do not have a meaningful

impact on the performance of the manufacturing sector in the long run. The short-run analysis also reveals a negative but insignificant relationship, with a coefficient of -0.0941 (p-value = 0.207), indicating that changes in imports do not significantly influence the manufacturing sector's performance in the short term. This result contrasts with some previous studies like Belete (2020) who suggested that imports have significant influence on manufacturing performance.

CHAPTER FIVE

CONCLUSION AND POLICY IMPLICATION

5.1. Conclusion

This research explores foreign currency reserves' impact on the performance of Ethiopia's manufacturing sector, utilizing annual time series data obtained from the World Bank's World Development Indicators and the National Bank of Ethiopia (NBE). To assess the stationarity of the variables, the Phillips-Perron unit root test was applied. Following the stationarity analysis, a bounds test for co-integration was carried out, revealing the existence of a long-term relationship among key variables: manufacturing value-added, foreign currency reserves, total imports, foreign direct investment, and inflation. The results offer valuable insights into both short- and long-term dynamics, carrying important implications for policymakers and stakeholders within the manufacturing industry.

The results confirm that foreign currency reserves (FCR) play a crucial role in driving long-term manufacturing sector performance, as evidenced by the statistically significant positive relationship between FCR and manufacturing value added (MVA). However, short-run fluctuations in FCR exhibit a contractionary effect, emphasizing the importance of maintaining stable reserves to avoid short-term economic shocks. These findings align with previous studies, reinforcing the role of foreign reserves in supporting manufacturing sector performance.

Inflation, on the other hand, has a substantial negative long-run impact on the manufacturing sector, confirming the detrimental effects of rising price levels on production costs, investment decisions, and consumer demand. While a temporary boost in manufacturing activity is observed in response to short-term inflationary pressures, the overall negative effect underscores the necessity of maintaining price stability for sustainable manufacturing sector development.

The relationship between FDI and manufacturing performance is found to be positive but statistically insignificant in the long run, suggesting that while FDI may

contribute to sectoral growth, its impact is not strong enough to drive significant improvements. This finding deviates from prior research that reported a strong positive influence of FDI on manufacturing growth, highlighting potential structural or regulatory challenges that may limit the effectiveness of foreign investment in Ethiopia's manufacturing sector.

Similarly, the study finds no significant long-run or short-run impact of imports on the performance of the manufacturing sector. This contrasts with some previous studies that identified imports as a key driver of industrial growth. The insignificance of imports in this study may indicate that the sector's reliance on imported inputs does not necessarily translate into enhanced overall performance.

Overall, these findings emphasize the critical need for well-calibrated economic policies to support Ethiopia's manufacturing sector.

5.2. Policy Recommendations

Based on the findings of this study, foreign currency reserves (FCR) play a crucial role in driving the long-term performance of Ethiopia's manufacturing sector. However, short-run fluctuations in FCR can have contractionary effects, highlighting the need for stable and sustainable foreign reserve management. To enhance foreign currency reserves and support the growth of Ethiopian manufacturing sector, the following policy recommendations are suggested:

- Boost Export-Led Growth – Prioritize finished and value-added manufacturing exports through trade incentives and market expansion.
- Curb Illegal Remittances – Strengthen formal remittance channels with better exchange rates and incentives while enforcing stricter controls on illegal flows.
- Reduce Import Dependency – Invest in domestic innovation, R&D, and local supply chains to minimize reliance on imported materials and machinery.
- Diversify Foreign Currency Sources
- Stabilize Forex reserves – Implement better reserve accumulation strategies to mitigate short-run fluctuations.

- Improve Governance & Utilization – ensure transparent and efficient foreign reserve management to support manufacturing growth.

  To sustain Ethiopia's manufacturing sector, inflation must be kept at a single-digit level through sound monetary and fiscal policies. Promoting local sourcing to reduce import dependency, improving supply chain efficiency and implementing other effective inflation control measures can help mitigate cost pressures. Strengthening policy coordination across fiscal, trade, and monetary frameworks is also essential to ensure price stability and long-term sustainable manufacturing sector performance.

References

Abdul-Mumuni, A. (2016). Exchange rate variability and manufacturing sector performance in Ghana: Evidence from cointegration analysis. *Issues in Economics and Business, 2*(1).

Agyapong, D., & Bedjabeng, K. A. (2020). External debt stock, foreign direct investment and financial development: Evidence from African economies. *Journal of Asian Business and Economic Studies, 27*(1), 81–98. https://doi.org/10.1108/JABES-11-2018-0087

Alam, M., & Yigzaw, G. S. (2020). Causes and impacts of foreign currency reserve crises in Ethiopia. *Üniversitepark Bülten, 9*(1), 15–27.

Andrews, N. (2009). Foreign aid and development in Africa: What the literature says and what the reality is. *ResearchGate*. https://www.researchgate.net/publication/228352366

Ayhan, A. F., & M.O., A. E. (2018). How foreign aid affects developing countries: The case of Ethiopia. *ResearchGate*. https://www.researchgate.net/publication/324808703

Ayobami, O. T. (2019). Exchange rate volatility and the performance of manufacturing sector in Nigeria (1981–2016). *African Journal of Economic Review, 7*(2).

Belete, T. (2020). The impact of foreign currency reserve and exchange rate on manufacturing sector performance in Ethiopia (Unpublished MSc thesis). Addis Ababa University, Ethiopia.

Bryan, M. F. (1997). On the origin and evolution of the word "inflation". *Economic Commentary*. Federal Reserve Bank of Cleveland.

Carson, L. J. L. (1997). *An introduction to tourism* (1st ed.). Reed Educational and Professional Publishing Ltd.

Chen, J. (2020). Foreign investment. *Investopedia*. https://www.investopedia.com

Cooper, D. R., & Schindler, P. S. (2003). *Business research methods* (8th ed.). McGraw-Hill Irwin.

Central Statistics Agency of Ethiopia. (2018). *Large and medium manufacturing industry survey report*.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approach* (2nd ed.). Sage.

Deloitte. (2023). *East Africa economic outlook, February 2024*. Deloitte Insights.

Dessalegn, Y. (2021). Foreign currency shortage in Ethiopia and its implications for imports (Unpublished MSc thesis). Addis Ababa University, Ethiopia.

Donyadideh, A. (2010). The obstacles impeding the development of Iran's tourism industry with emphasis on marketing. *Journal Name, 4*(3), 60.

Espana, M. D., & De B., B. (2003). Definitions of foreign direct investment (FDI): A methodological note (p. 2).

First Consult. (2024). *The Blue Book: An annual economic publication*. First Consult.

Garonna, A. C., & Paci, P. (2007). Effective foreign aid, economic integration and subsidiarity: Lessons from Europe. *United Nations Economic Commission for Europe (UNECE)*. https://www.unece.org

Geda, A., & Irving, J. (2011). Remittance and remittance service providers in Ethiopia. In S. Mohapatra & D. Ratha (Eds.), *Remittance markets in Africa*. The World Bank.

Greenaway, D., Girma, S., & Keller, W. (2003). Does exporting lead to better performance? A micro econometric analysis of matched firms. *The Review of World Economics, 139*(4), 582-604.

Hallward-Driemeier, M., & Nayar, G. (2017). *Trouble in the making? The future of manufacturing-led development*. World Bank Publications.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.

Kotler, P., & Armstrong, G. (2002). *Principles of marketing*. Prentice Hall.

Krazovska, D. (2008). Impact of the doctrine of strict compliance on a letter of credit transaction. *University of Aarhus*.

Maasho, A. (2018, April 16). Ethiopian foreign exchange shortage will last years: New premier. *Reuters*. https://www.reuters.com/article/ethiopiaeconomy/update-2-ethiopian-foreign-exchange-shortage-will-last-years-newpremier-idUSL8N1RT61K

Malhotra, N., & Birks, D. (2007). *Marketing research: An applied approach* (3rd European ed.). Pearson Education.

Merhatsidk, M. (2019, April 12). Foreign currency crunch: Why is it happening every now and then? *Ethiopian Business Review*. Retrieved from https://www.ethiopianbusinessreview.net

Mwesiigye, P. M. (2019). The contribution of foreign direct investment on economic growth in Rwanda.

Nsofor, E. S., Obani, C. D., & Agu, C. I. (2024). Impact of foreign direct investment on manufacturing sector growth in Sub-Saharan Africa. *World Journal of Advanced Research and Reviews, 21*(1), 2521–2528. https://doi.org/10.30574/wjarr.2024.21.1.2581

Oqubay, A. (2019). The structure and performance of the Ethiopian manufacturing sector (Working paper series No. 299). African Development Bank Group.

Reda, H.Z. (2016). Assessment of foreign currency shortage and its implication on Ethiopian economy: A case study of the import sector. (Unpublished master's thesis). Jimma University, Ethiopia.

Rojík, S., Maitah, M., Malec, K., & Abdullahi, K. T. (2024). Impact of foreign aid on the Nigerian economy. *Cogent Social Sciences, 10*(1). https://doi.org/10.1080/23311886.2024.2316585

Reddell, A. M., & M., M. (2012). Foreign currency reserves: Why we hold them influences how we fund them. *Semantic Scholar*. http://www.semanticscholar.org.

Schanz, J. F. (2019). Foreign exchange reserves in Africa: Benefits, costs and political economy considerations. ERN: *Trade & Foreign Exchange Policies in Developing Economies* (Topic).

Segal, T., (2020). Dotdash Publishing Family. [Online] Available at: http://www.investopedia.com

Sheaba Rani, D. M., & Mahammoud, B. A. (2017). Manufacturing industries development and economic role in Ethiopia. *Department of Commerce and Management Studies, Andhra University*.

Szirmai, A., & Verspagen, B. (2015). Manufacturing and economic growth in developing countries. *Structural Change and Economic Dynamics*. https://www.sciencedirect.com/journal/structural-change-and-economic-dynamics

Szirmai, A., & Verspagen, B. (2015). Manufacturing and economic growth in developing countries, 1950–2005. *Structural Change and Economic Dynamics, 34*, 46–59.

Sunlu, U. (2003). Environmental impacts of tourism. [Online].

Tadesse, T. (2024). Quarterly macroeconomic update: Volume 9, Number 1, April 2024. *Ethiopian Economics Association*.

Tzema, S. P. A. T. (1999). Migrant worker remittances, micro-finance, and the informal economy: Prospects and issues. *International Labour Organization*.

United Nations Development Programme (UNDP). (2023). *Can Ethiopia become a manufacturing powerhouse?* (Working Paper Series No. 4). UNDP.

U.S. Commercial Service. (2019). *Ethiopia - Foreign exchange controls*. Privacy Shield. Retrieved from https://www.privacyshield.gov/Ethiopia-foreign-exchange-controls

Zurpel, C. (2014). Banking under a condition of chronic shortage in foreign currency reserves: The example of the People's Republic of Bangladesh. *ResearchGate*. https://www.researchgate.net/publication/273447083