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***“Unlocking Sustainable Development in Developing Countries: A Framework of Green Field Investment, Fintech, and Financial Inclusion”***



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## **Abstract**

This research explores the complex relationships among fintech, financial inclusion, and greenfield investment as drivers of sustainable development in developing countries. The study aims to fill a noticeable research gap by thoroughly examining these factors and their impact on sustainable development. The thesis starts with an introduction that highlights the significance of the research and identifies the existing gap in knowledge. Following that, research questions, objectives, and the problem statement are articulated to guide the study. It provides a comprehensive review of the current literature, laying the groundwork for the hypotheses and research framework discussed in the subsequent sections. The hypotheses presented in Chapter 2 aim to assess the connections between fintech, financial inclusion, greenfield investment, and sustainable development in developing countries. Furthermore, it clarifies the research methodology, providing a detailed explanation of the selected approach, population, and sampling methods. The research strategy, encompassing data collection procedures and the measurement of variables such as fintech, financial inclusion, greenfield investment, and sustainable development, is outlined. Additionally, the chapter introduces controlled variables, including population, etc. Then in result section, unveils the results and interpretations of the study, providing detailed insights derived from statistical analyses. Tables and figures illustrate correlations between variables, regression results, and outcomes of panel regression. The interpretation of essential coefficients, constants, and overall statistics contributes to a comprehensive understanding of the relationships explored in the research. In the conclusion section encapsulates the findings, highlighting the roles of fintech, financial inclusion, and green field investment in sustainable development in developing countries. An assessment of the overall model fit is conducted to measure the robustness of the study's framework. This thesis adds to the current body of knowledge by providing a nuanced comprehension of the factors influencing sustainable development in developing countries. The results offer valuable insights for policymakers, researchers, and practitioners working to formulate effective strategies for achieving sustainable development.

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# Chapter 1

## Introduction

### 1.1. Background

The pursuit of sustainable Development is now a global imperative that calls for a balance between economic development, environmental preservation, and social well-being. In this context, the pivotal role of green field investment, fintech, and financial inclusion has gained recognition as potential drivers of sustainable economic development. This work explores the significance of these three components and their interconnectedness in fostering sustainable Development. Traditional growth models often neglected the long-term consequences of resource depletion, environmental degradation, and social inequalities. However, the concept of sustainable development has emerged, emphasizing the need for an integrated approach that harmonizes economic progress, environmental preservation, and social wellbeing.

Green field investment, fintech, and financial inclusion are the three key factors that play a significant role in unlocking the potential for sustainable social and economic development. Green field investment involves deploying financial resources into new and undeveloped projects or businesses, with a specific emphasis on generating positive social and environmental impacts. This form of financing aims to support initiatives that promote inclusive economic growth and social progress by directing capital towards socially responsible ventures. Green field investment facilitates the funding of projects dedicated to social welfare, affordable housing, healthcare, education, and sustainable infrastructure, thereby contributing to the overall well-being and development of communities. Furthermore, the integration of fintech and financial inclusion in green field investment enhances accessibility to financial services and resources. This empowerment enables individuals and businesses to actively participate in economic activities. Through an inclusive approach, green field investment fosters entrepreneurship, job creation, and economic stability, ultimately leading to sustainable development that encompasses both the social and economic dimensions.

Green field investment, alternatively known as sustainable or environmental investment, assumes a crucial role in advancing sustainable development. It revolves around financial endeavors dedicated to safeguarding the environment and bridging the divide between the financial sector and environmental conservation. Green field investment stands as a financial innovation tailored to tackle environmental challenges, such as pollution and climate change, while concurrently fostering economic growth. This entails the creation and endorsement of financial instruments, products, and services that facilitate investments in environmentally responsible projects, the adoption of low-carbon technologies, and the implementation of sustainable business practices. Through the allocation of financial resources to sustainable projects and policies, green field investment actively contributes to the realization of cohesive economic and societal objectives. The emphasis on long-term environmental and social well-being is a hallmark of green field investment, underscoring its commitment to fostering sustainable practices and mitigating the impact of environmental challenges on future generations.

The essence of green field investment lies in its ability to achieve three pivotal objectives. Firstly, it facilitates sustainable development by directing financial resources towards endeavors that support sustainable business

models, investments, and policies. This enables the initiation of environmentally and socially responsible projects, fostering economic growth while addressing urgent environmental challenges. Secondly, green field investment motivates banks and financial institutions to innovate and incorporate environmental considerations into their operations. This proactive approach helps them mitigate risks associated with noncompliance with environmental regulations, safeguarding both profitability and reputation. Lastly, post the 2008 financial crisis, there has been an increased focus on attaining economic, environmental, and social goals beyond just shareholder value creation. Green field investment aligns with the broader objectives of companies and institutions, ensuring the integration of environmental concerns into decision-making processes and strategies.

Fintech is the fusion of technology and financial services that has revolutionized the financial landscape. This offers enhanced efficiency, accessibility, and transparency. In the context of sustainable development, fintech plays a crucial role in facilitating financial inclusion, reducing transaction costs, and expanding access to financial services for underserved populations. By leveraging digital banking, mobile payments, and online investment platforms, fintech solutions bridge the gap between traditional financial systems and marginalized individuals and businesses, promoting economic participation and sustainable development.

Fintech has emerged as a transformative force driving sustainable development in developing countries. By leveraging innovative technologies and digital platforms, Fintech enables the development of conventional financial operations with enhanced efficiency, security, and accessibility. This includes the uses of new software applications, methods, products, and corporate models in the financial service industries delivered through end-to-end processes via the Internet (Schueffel, 2017). The integration of Fintech in developing countries holds significant potential for promoting financial inclusion, facilitating green financing, and achieving sustainable economic and social objectives.

Financial inclusion aims to provide affordable and accessible services to underserved individuals and communities. By addressing barriers such as limited banking infrastructure, high costs, and inadequate documentation, financial inclusion empowers marginalized populations, reduces poverty, and enhances economic opportunities. In pursuit of sustainable development, financial inclusion is closely intertwined with green financing and fintech. It not only extends access to financial services, but also supports the uptake of green financing options, fostering sustainable businesses, and overall sustainable development.

Financial inclusion is a critical component of sustainable development, aiming to provide underserved and financially excluded populations with access to affordable and appropriate financial services. The use of digital platforms and mobile technology has revolutionized financial inclusion efforts, enabling secure, transparent, and cost-effective access to a wide range of financial services and products (Central Bank of Egypt, 2018). Through financial inclusion, individuals and businesses gain opportunities for economic participation, poverty alleviation, and social empowerment, contributing to overall financial and social stability (Beck et al., 2018).

The integration of green field investment, fintech, and financial inclusion presents a powerful opportunity to unlock sustainable economic and social developments. Combining these elements generates synergies that concurrently address the multiple dimensions of sustainability. The adoption of green field investment and fintech expands access to environmentally responsible financial services, promoting sustainable consumption and production patterns, while advancing financial inclusion. Furthermore, the adoption of these components supports social development goals by reducing inequalities and empowering marginalized communities.



Fintech stands to benefit from the development of green field investment by addressing the existing challenges in its implementation. The Equator Principles (EPs), a risk-management framework for banks to assess and manage environmental and social risks in loan projects, can be difficult to execute, particularly for smaller banks and institutions (Ba et al., 2018). These organizations often face limitations in terms of resources and patience for the lengthy and costly process of financing environmentally friendly projects. Stricter adherence to EPs may result in missed, profitable investment opportunities. Furthermore, green field investment currently faces trade costs, limited coverage, and insufficient product offering. In this context, Fintech has the potential to drive innovation and overcome these challenges by expanding the scope and availability of green field investment (Ba et al., 2018). By leveraging technology and developing innovative financial solutions, FinTech can facilitate the growth and accessibility of green field investment and support sustainable development objectives on a larger scale.

The role of fintech in promoting financial inclusion has gained recognition in international platforms. Conferences such as the G20 in Seoul (Goodwin-Groen et al., 2010) and the Maya Declaration (2014) highlighted the significance of financial inclusion in poverty alleviation and initiated global efforts to promote financial inclusion partnerships. The 2016 G20 Summit in Hangzhou emphasized the importance of financial inclusion in non-G20 countries, leading to the establishment of financial inclusion units within central banks and ministries of finance, along with specific targets to promote financial inclusion (Demirgüç-Kunt et al., 2017). The expansion of digital financial services facilitated by fintech has been a key focus in promoting financial inclusion. Surveys conducted by international organizations (Demirgüç-Kunt et al., 2017) have provided valuable insights into global financial inclusion trends. These studies have emphasized the use of financial technology, including mobile phones and the Internet, to enhance access to financial services for unbanked individuals and promote digital financial service adoption among those already banked. The establishment of comprehensive financial inclusion databases has garnered global support and contributed to the promotion of financial inclusion targets aligned with the United Nations Sustainable Development Goals (SDGs) for 2030 (Goran Amidžić et al., 2014).

In parallel, the growth of fintech startups worldwide has presented opportunities for sustainable economic development. (Feller et al., 2017) highlights the rise of FinTech sectors in regions such as the Middle East and North Africa (MENA), where startups offer various financial services to different institutional partners, including private, corporate, and governmental entities. Payment Service Providers (PSPs) have emerged as a mature sector within the Fintech landscape, offering a wide array of services such as bill payments, mobile and online payment solutions, and digital wallets. Understanding the challenges faced by Fintech startups and harnessing the potential of Fintech in various regions is crucial for policymakers and stakeholders to capitalize on the opportunities presented by FinTech (Feller et al., 2017).

Fintech and green field investment have the potential to contribute significantly to sustainable development in developing countries, as various researchers have suggested. In (Dorfleitner and Braun (2019)), argue that fintech can play a crucial role in mobilizing green field investment by providing easier access to new sources of finance and investment. Through the use of technologies such as big data and artificial intelligence, fintech can accelerate the transition to a green economy (Wang et al., 2021a, b). Moreover, (Cen and He (2018)) assert that fintech contributes to green field investment. In the context of green field investment, the author of this study (Tu and Rasoulinezhad (2021)) highlighted the importance of green bonds in augmenting capital flows for energy efficiency. Fintech can facilitate the issuance and management of green bonds, thus making them

more accessible to investors. This, in turn, promotes sustainable energy projects and initiatives. Additionally, Fintech solutions, including blockchain technology, can address market barriers and improve energy system designs, enabling more effective energy efficiency interventions (Schletz et al., 2020). The significance of fintech in unlocking green field investment and its potential in developing countries are supported by Nassiry (2018). While the adoption of fintech may have been slower in some developing countries than in more developed nations, there is increasing recognition of its importance. Fintech can enhance financial systems, increase financial inclusion, and provide innovative solutions tailored to the specific needs of developing countries. By leveraging fintech in green field investment initiatives, these countries can advance their sustainable development goals, promote environmentally friendly investments, and address energy efficiency challenges. In conclusion, the collaboration between fintech and green field investment holds promise for sustainable development in developing countries. Fintech can facilitate access to finance, harness advanced technologies, promote green bonds, and overcome market barriers, all of which can contribute to the advancement of green field investment and sustainable development. Policymakers and financial institutions in developing countries should embrace and harness the potential of fintech to promote green field investment, address energy efficiency dilemmas, and foster sustainable economic growth.

As a developing country, Egypt faces significant challenges in its financial sector, including inefficient governance systems and inadequate resource allocation. However, there is immense potential for sustainable development through the intersection of fintech, green financing, and financial inclusion. With a large population of tech-savvy millennials and a growing number of mobile users, Egypt is experiencing a fast-growing fintech scene. Start-ups leverage digital platforms to offer innovative solutions in areas such as digital payments, savings, investments, and mobile money.

At the same time, Egypt recognizes the importance of financial inclusion and the role of digital platforms in reaching underserved populations. With 84% of Egyptians unbanked, the Central Bank of Egypt (CBE) aims to promote financial inclusion by focusing on two main pillars. First, there is a need to establish robust banking infrastructure supported by an appropriate regulatory framework. This ensures the provision of secure, transparent, and cost-efficient financial services that meet the diverse needs of the population (Bank of Alexandria 2015). Second, embracing new technologies and innovative electronic provision networks can significantly enhance financial inclusion by expanding access to financial services for the underserved population.

To facilitate fintech growth in Egypt, the CBE is taking proactive measures, such as establishing an innovation fund to finance innovative ideas and projects in the financial technology sector. The government has also introduced policies, including the adoption of non-cash financial transactions laws, aimed at reducing cash usage outside the banking sector and promoting digital financial services as the primary payment method (Bank of Egypt report 2018). These initiatives contribute to sustainable development by driving financial inclusion, reducing reliance on inefficient cash-based systems, and fostering the growth of innovative technology.

Furthermore, promoting green field investment in Egypt is crucial to address environmental challenges and advance sustainable development. While the focus on fintech and financial inclusion is primarily driven by access to financial services, integrating environmental considerations into these efforts can contribute to a greener economy. By incorporating environmental factors into loan decisions, risk management, and

investment strategies, financial institutions can promote environmentally responsible investment, low-carbon technologies, and sustainable business practices. This alignment between fintech, financial inclusion, and green field investment supports Egypt's pursuit of sustainable development goals and the transition to a more sustainable and inclusive economy.

In summary, Egypt's journey towards sustainable development in the financial sector involves leveraging fintech innovation, promoting financial inclusion, and embracing green field investment. Egypt can unlock opportunities for financial inclusion, drive sustainable economic growth, and address environmental challenges by harnessing digital platforms, enhancing regulatory frameworks, and investing in innovative ideas and projects. This multifaceted approach will help shape a more inclusive, environmentally conscious, and prosperous future for the country.

Overall, in a nutshell, the integration of green field investment, fintech, and financial inclusion has significant potential for unlocking sustainable economic and social development. By aligning these components and implementing a comprehensive framework, economies can drive sustainable development, promote environmental responsibility, enhance financial accessibility, and empower marginalized communities. The synergy of green field investment, fintech, and financial inclusion creates a pathway toward a sustainable future, where economic development, environmental preservation, and social well-being can thrive.

## **1.2. Research Gap**

A research gap refers to an unexplored or insufficiently addressed area within existing literature or knowledge where further research is needed. It represents a space or void in the current understanding of a particular topic, issue, or phenomenon. Identifying a research gap is a crucial step in the research process, as it highlights areas that have not been adequately studied or where the existing literature falls short.

In the provided text, the research gap is mentioned in the context of developing countries, specifically in the integration of financial technology (fintech), green field investment, and financial inclusion to achieve sustainable development. The existing literature is noted to predominantly focus on case studies of fintech and financial inclusion in specific countries or developed economies, leaving a gap in understanding the collective roles of these components in driving sustainable economic development in developing countries, particularly in emerging E7 countries (Brazil, India, China, Indonesia, Mexico, Russia, and Turkey).

The identified research gap implies that there is limited information or analysis regarding how the integration of fintech, green field investment, and financial inclusion operates in the context of energy efficiency initiatives within developing countries. To address this gap, the proposed research aims to develop an integrated framework that comprehensively explores these components and provides valuable insights for policymakers and stakeholders to achieve sustainable development goals in developing countries. In summary, the research gap is the unexplored or under-explored territory within the research landscape, signaling the need for further investigation and scholarly attention in that specific area.

### **1.3. Problem Statement**

In developing countries, bridging the gap between financial technology, green field investment, and financial inclusion to achieve sustainable development is challenging. The existing literature predominantly focuses on case studies of fintech and financial inclusion in specific countries or developed economies [i.e., United Nations], with limited research on the integration of these components in energy efficiency initiatives within emerging E7 countries [i.e., Brazil, India, China, Indonesia, Mexico, Russia, and Turkey]. This creates a significant research gap in the understanding of the interconnectedness and collective roles of financial technology, green field investment, and financial inclusion in driving sustainable economic development in developing countries. To bridge this gap, there is a dire need to develop an integrated framework that combines these components to unlock the potential for sustainable development, technological infrastructure gaps, global challenges, and academic coordination collectively. The proposed framework provides a comprehensive understanding of sustainable development for financial technology, financial inclusion, and green field investment, and valuable insights for policymakers and stakeholders to achieve development goals in developing countries.

### **1.4. Research Question**

The list of research questions of current work is as follows:

- What is the impact of green field investment on sustainable development?
- What is the impact of fintech on sustainable development?
- What is the impact of financial inclusion on sustainable development?

These refined research questions specifically address developing countries, emphasizing the significance of sustainable development in the areas of fintech, green field investment, and financial inclusion. They provide a focused framework for investigating the impacts within the unique context of developing countries sustainable development efforts.

### **1.5. Research Objectives**

- The research paper employs a systematic review methodology to thoroughly examine the impact of fintech, financial inclusion, and green field investment on sustainable economic growth in developing countries. This involves a meticulous and structured approach, aiming to provide a nuanced interpretation of the complex interrelationships among these factors.
- The study's results are expected to help us understand things better by combining information from existing studies, carefully looking at how these studies were done, and coming up with important conclusions. The systematic way we're doing this ensures a thorough look at all the available evidence, helping us understand the big picture beyond just individual studies.
- The importance of this research lies in its ability to offer valuable insights to policymakers, researchers, and financial institutions in the areas of fintech, financial inclusion, green field investment, and sustainable development. Through presenting a comprehensive overview, the paper seeks to provide essential knowledge that can guide decision-making and interventions to promote sustainable development in developing countries. The systematic review methodology utilized is crafted to

untangle the intricate connections between fintech, financial inclusion, green field investment, and sustainable development. The expected results are positioned to be a vital resource for stakeholders involved in these fields.

## **1.6. Scope of Study**

This research paper holds significant significance for various stakeholders and the broader research community, particularly in the context of developing countries. By focusing on the interplay between sustainable development, green field investment, fintech, and financial inclusion, the paper addresses a timely and critical issue faced by these countries. Given the increasing global concerns about climate change and the need for inclusive economic development, understanding the role of these factors in unlocking sustainable development is of paramount importance for their sustainable development goals.

One of the key contributions of this research paper is bridging existing research gaps specific to developing countries. By exploring the specific role of green field investment, fintech, and financial inclusion in these contexts, the paper provides a comprehensive analysis of how these factors can interact and influence each other. This analysis sheds light on their combined potential to drive positive economic, social, and environmental outcomes, thereby offering practical insights for developing countries seeking sustainable development pathways.

Furthermore, the findings and insights from this research paper have practical implications for policymakers, financial institutions, and relevant stakeholders in developing countries. These stakeholders can leverage the paper's recommendations and evidence-based insights to inform policy and decision-making processes. By highlighting the opportunities, challenges, and best practices related to green field investment, fintech, and financial inclusion, the paper facilitates the development of sustainable development strategies and interventions tailored to the specific needs of developing countries.

Moreover, the research paper contributes to guiding sustainable investment practices in developing countries. Investors, including financial institutions and impact investors, can rely on the paper's analysis of green field investment and fintech to make informed decisions regarding sustainable investment opportunities in these contexts. By identifying viable investment avenues and contributing to the development of sustainable finance practices, the research paper supports the growth of sustainable investment and promotes economic development in developing countries.

Furthermore, this research paper promotes interdisciplinary collaboration, particularly in the context of developing countries. By bringing together concepts and practices from finance, technology, sustainability, and social development, the paper encourages the exchange of ideas, knowledge, and expertise across these fields. This interdisciplinary approach stimulates holistic and innovative solutions for achieving sustainable development in developing countries, fostering collaboration among stakeholders and facilitating the transfer of best practices and lessons learned.

Lastly, the research paper advances academic research by providing empirical evidence, conceptual frameworks, and theoretical insights specific to the context of developing countries in relation to green field

investment, fintech, financial inclusion, and sustainable development. It adds to the existing literature on sustainable development in these areas, facilitates further research on the specific challenges and opportunities faced by developing countries, and stimulates discussions and debates on the topic. The paper's findings contribute to the academic understanding of these key areas in the context of developing countries and provide a foundation for future studies in the field, aiming to support the sustainable development efforts of these countries.

## 1.7. Significance of Study

This research aims to develop a comprehensive framework that integrates the findings and insights to support sustainable development in developing countries. This framework will provide a practical and holistic approach to address the following aspects:

- **Interdisciplinary Integration:** The framework will outline how to integrate the concepts of fintech, green field investment, financial inclusion, and sustainable development, considering their interdependencies and the potential for synergies and trade-offs.
- **Policy Formulation:** The framework will guide policymakers in developing effective strategies and policies that promote sustainable development and address environmental and social challenges. It will provide recommendations on how to leverage fintech, green field investment, and financial inclusion to achieve sustainable development objectives.
- **Investment Decision-Making:** The framework will offer guidelines for investors, financial institutions, and businesses to make sustainable investment decisions. It will highlight the importance of considering environmental and social factors in investment practices and provide tools to assess the sustainability of investment opportunities.
- **Collaboration and Innovation:** The framework will emphasize the need for collaboration among stakeholders from different sectors, such as government, academia, financial institutions, and technology providers. It will promote the development of innovative solutions and partnerships to drive sustainable development in developing countries.
- **Monitoring and Evaluation:** The framework will include mechanisms for monitoring and evaluating the progress and impact of sustainable development initiatives. It will provide indicators and metrics to measure the effectiveness of fintech, green field investment, and financial inclusion efforts in achieving sustainable development objectives.

By developing this framework, the research aims to provide a practical and actionable roadmap for policymakers, investors, financial institutions, and other stakeholders in developing countries to effectively harness the potential of fintech, green field investment, and financial inclusion for sustainable development.

## 1.8. Organization of the Thesis

Chapter 1 is about the introduction of Unlocking the Potential of Sustainable development: The Role of Green Field Investment, Fintech, and Financial Inclusion. The remainder of the work has been organized as Chapter

two offers literature review. Chapter 3 covers the research approach. In chapter 4, the findings and analysis are explained with details, and the overall conclusion is compiled in chapter 5.

## Chapter 2

### Literature Review

#### 2.1. Introduction

This chapter is focusing on the different aspects of sustainable development in fintech, green financing, and financial inclusion in developing countries. Also, it establishes the theoretical foundations by discussing relevant theories and frameworks, reviews past research studies, identifying gaps and areas for further investigation.

##### 2.1.1. Green Field Investment for Sustainable Development

Green banking has gained traction in numerous nations, primarily in developing countries, as the trade-off between environmental preservation and economic progress and advancement becomes apparent. The aftermath of the 2008 Global Financial Crisis prompted countries worldwide to revamp their financial systems, aiming to enhance their resilience against losses. In response to the imperative of sustainable development, Green Finance has emerged as an exemplary model for the future of banking by establishing a connection between a green economy and sustainable development.

Various studies have examined the role of Green Finance (GF) in sustainable development (SD). (Wang and Zhi, 2016) highlighted the positive impact of green finance in effectively managing environmental risks and achieving a balanced approach to environmental and economic resources. (Ng, 2018) emphasized that green finance serves as an economic tool to support environmental improvement, enhance resource utilization, and address climate change. (Falcone and Sica, 2019) and (Kang et al., 2019) note that GF stands apart from conventional finance by prioritizing ecological protection, green industries, and sustainable development. (Zhou and Cui, 2019) provide evidence of the positive effect of GF on environmental improvement, showcasing its potential to enhance a company's corporate social responsibility. (Tolliver et al., 2019) underlined the importance of improved funding for environmental planning and the use of financial instruments designed for climate-friendly projects to achieve environmental, social, and governance (ESG) goals. (An et al., 2021) demonstrated that green credit, when aligned with environmental regulations, can provide valuable financial support for sustainable national development.

(Zhang and Wang, 2021) present evidence that the robust development of GF can lead to a decrease in coal consumption and significantly promote energy-related sustainable development. (Mamun et al., 2022) provide findings indicating that GF plays a substantial role in reducing carbon emissions both in the short and long term. (Zhao et al., 2022) argue for the importance of improving the planning and design of China's green financial policies to facilitate the optimal allocation of resources and address environmental externalities. However, it should be noted that the impact of green finance on sustainable development is not always universally positive. (Sachs et al., 2019) argued that the relationship between green finance participants and the benefits they derive from it exhibits heterogeneity. (Sinha et al., 2021) further revealed that the green financing mechanism may gradually have an adverse influence on environmental and social responsibility, suggesting the presence of potential challenges and unintended consequences that need to be addressed in the implementation of green finance initiatives.



(Xiao et al., 2019) reveal that government ecological regulatory policies, along with corporate green behavior and supervisory intensity, enhance the effectiveness of green finance. (Sinha et al., 2021) find that environmental and social responsibility play a vital role in promoting and sustaining the green bond market, emphasizing the importance of sustainable practices in driving green finance initiatives. (Russo et al., 2021) highlight how sustainable development incorporates environmental, social, and governance (ESG) factors, which in turn stimulate the development of green finance. (Prajapati et al., 2021) demonstrate that the inclusion of ESG considerations increases the demand for green bonds by boosting investor confidence. (Dan and Tiron-Tudor, 2021) provide evidence that investors' decisions are increasingly influenced by ESG factors, leading to a notable impact on the issuance of green bonds.

(Madaleno et al., 2022) argue that the growing demand for clean energy plays a significant role in driving investments in green finance. As sustainable development calls for the transition to cleaner and more sustainable energy sources, the demand for green finance as a means of funding such projects increases. (Xu et al., 2022) further highlight the positive impact of environmental regulations on green finance, indicating that these regulations can facilitate short- or long-term external financing for green projects.

Overall, these studies highlight the potential benefits of green finance in managing environmental risks, supporting development goals, and reducing carbon emissions. However, there is also a need to carefully consider the specific design and implementation of green finance policies to ensure their effectiveness and to avoid unintended negative impacts. Also, these studies underscore the symbiotic relationship between sustainable development and green finance. Sustainable development goals serve as catalysts for the growth and effectiveness of green finance, driving investments in environmentally friendly projects and influencing investor decisions. Furthermore, government policies and regulatory frameworks play a crucial role in shaping the landscape of green finance and ensuring its alignment with sustainable development objectives.

## **2.2. Fintech for Sustainable Development**

(Kunt et al., 2012) highlight the importance of inclusive financial systems for the sustainable development of economies. They argue that without financial services accessible to the poor, individuals rely on limited savings for their basic needs, hindering economic growth and exacerbating income inequality. In this context, fintech innovations have the potential to address financial exclusion and contribute to sustainable development by providing affordable and convenient financial services to the unbanked population. McKinnon (1973, pioneers of the Financial Liberalization School, emphasize the pivotal role of financial system development in the economic development process. Their work underscores the importance of fostering an enabling environment for financial institutions to grow and serve the needs of individuals and businesses. Fintech, with its technological advancements and innovative business models, can contribute to the development of inclusive financial systems that promote sustainable economic growth.

(Kunt et al., 2017) identify several barriers to financial inclusion, such as high costs of accessing traditional banking services, documentation requirements, high charges for financial products, and limited financial literacy. Fintech solutions have the potential to address these barriers by leveraging mobile phones and the internet to provide affordable and user-friendly financial services. By overcoming these challenges, fintech can help bank the unbanked and include the financially excluded, contributing to sustainable development. (Maurer, 2012) highlights the increasing use of digital platforms facilitated by fintech startups. The digital revolution has paved

the way for innovative solutions in the financial sector, creating opportunities to extend financial services to underserved populations. By leveraging digital platforms, fintech can reach individuals in remote areas, offering them access to finance and empowering them economically. This can have a significant impact on sustainable development by fostering inclusive growth and reducing income disparities. GSMA (2018) reports the widespread use of innovative Digital Financial Services (DFS) in numerous countries, particularly in low and lower-middle-income countries. The expansion of DFS providers and the growing number of registered accounts indicate the potential of fintech to drive financial inclusion. By providing access to finance for billions of people, fintech can contribute to poverty reduction, job creation, and economic development, aligning with the goals of sustainable development.

(Manyika et al., 2016) emphasize the transformative potential of DFS in emerging countries. They estimate that DFS can provide access to finance for over 1.6 billion people, leading to the creation of millions of new employment opportunities and a substantial boost to GDP. These findings highlight the positive impact that fintech can have on sustainable development by promoting financial inclusion and unlocking economic potential in underserved communities. (Gennaioli et al., 2012) defines financial innovation as changes in financial institutions, instruments, or practices that enhance the functioning of the financial sector. Fintech, as a form of financial innovation, has the potential to drive sustainable development by introducing new technologies, payment systems, and financial instruments. By improving efficiency, reducing costs, and expanding access to financial services, fintech can contribute to economic growth and social progress. (Tom, 2016) defines fintech as an innovation method that competes with traditional financial services to enhance financial activities in the economy. Fintech technologies, such as mobile banking, cryptocurrencies, and investment platforms, offer new avenues for individuals and businesses to engage with financial services. These innovations can contribute to sustainable development by increasing financial inclusion, promoting transparency, and fostering economic empowerment.

Overall, the literature highlights the potential of fintech to drive sustainable development by addressing financial exclusion, promoting inclusive growth, and enhancing the efficiency and accessibility of financial services. Fintech innovations offer opportunities to overcome traditional barriers and create new pathways for individuals and businesses to participate in the economy, ultimately contributing to poverty alleviation, job creation, and economic prosperity.

### **2.3. Green Financing for Sustainable Development**

- **China:** China has been a leader in the development and implementation of Green Field Investment policies. In the initial stage (2007-2010), China introduced 'green credit policies' to encourage banks to finance renewable projects. This laid the foundation for sustainable banking in the country. Subsequently, green finance guidelines and credit information systems were formulated, and the China Banking Regulatory Commission issued directives for accountability and disclosure of green investment information. The implementation phase (2015 until now) has seen the approval of numerous research proposals and the establishment of the Green Finance Committee of the China Society for Finance and Banking, promoting green finance through standards, evaluation mechanisms, and capacity building.

- **India:** Green Field Investment has gained importance in India, with efforts focused on promoting environmentally friendly practices and reducing the carbon footprint in banking activities. The State Bank of

India launched a Green Channel in 2010 to support green business activities, and environmental risk evaluation was incorporated into banking policies for assessing potential borrowers. The issuance of green bonds since 2015 has also supported green energy projects. However, there is still a need for further implementation of green policy initiatives in the banking sector.

- **Bangladesh:** In Bangladesh, the development and application of Green Field Investment policies have occurred in three phases. Banks and financial institutions are required to formulate green policies, initiate environmental risk management measures, and provide training and awareness to employees and consumers. They have also expanded their scope by formulating sector-specific environmental policies, conducting strategic planning, and implementing rigorous training programs. Additionally, the introduction of new products, reporting on green banking practices, and focusing on environmental-friendly corporate social responsibility have been emphasized.
- **Pakistan:** Pakistan started implementing green finance practices in 2017. Banks and financial institutions are currently developing their policy frameworks to comply with the guidelines set by the State Bank of Pakistan. The process of green banking is progressing slowly, but it holds the potential to address environmental issues in the country. In summary, China and India have made notable progress in developing and implementing Green Field Investment policies. However, other countries, such as Bangladesh, Nigeria, Brazil, Mongolia, Egypt, Vietnam, and Pakistan, are at various stages of development and face challenges in fully implementing green finance practices.
- **Malaysia:** Green financing in Malaysia plays a pivotal role in driving sustainable development initiatives across the nation. With a growing emphasis on environmental conservation and responsible business practices, the Malaysian government and financial institutions have increasingly turned their attention towards fostering green financing mechanisms. These initiatives aim to channel funds into environmentally friendly projects and sustainable businesses, contributing to the reduction of the ecological footprint. By encouraging investments in renewable energy, energy-efficient technologies, and environmentally sustainable ventures, Malaysia's commitment to green financing aligns with global sustainability goals, fostering a harmonious balance between economic development and ecological preservation.

### 2.3.1. Fintech in Developing Countries

(Arner et al., 2015) distinguish between fintech developments in advanced economies (FinTech 3.0) and the developing world (FinTech 3.5). They highlight that the fintech revolution in developing countries has gained momentum by leveraging technological innovation and capitalizing on the reputational damage caused by the 2008 Global Financial Crisis. However, the institutional and infrastructural landscapes differ significantly between the two contexts. (Gomber et al., 2018) provide a comprehensive survey of fintech innovations in developed economies, categorizing them into operations management, payments and transfer, lending and deposit, and investment. While some of these innovations have relevance in developing countries, such as payment and transfer innovations and lending and deposit innovations, others like cryptocurrency, blockchain, and investment innovations have limited penetration and applicability in developing regions. (Ndemo, 2022) emphasizes the smaller cryptocurrency markets in developing regions compared to North America and Western Europe, although Africa shows rapid market growth. Investment innovations like robo-advisory and online stock-market portfolio suites are deemed less relevant to financial inclusion in developing countries. However, peer-to-peer lending and crowdfunding platforms have shown potential in attracting investments in agricultural

equipment in developing countries. (Cozzens and Thakur, 2014) highlight the trend that many fintech innovations originate in and are designed for developed countries, leaving developing countries to adopt and adapt them. This disparity highlights the importance of understanding the specific needs and constraints of developing countries in order to effectively implement fintech solutions. In developing countries, the constraints to fintech adoption include inadequate digital infrastructure, such as limited access to broadband Internet connections and unreliable electricity grids (Morakinyo et al., 2019; Yermack, 2018). Regulatory frameworks for fintech are still evolving, with African governments adopting a hands-off approach in countries like Kenya and South Africa (Didenko, 2018). However, the optimal regulatory framework and legal system to promote fintech in developing countries require further analysis. Overall, the literature review indicates that while fintech innovations in developing countries aim to address supply-side and demand-side constraints, the infrastructure and regulatory challenges need to be overcome to ensure widespread adoption and impact. Understanding the specific context and tailoring fintech solutions to the needs of developing countries is crucial for sustainable and inclusive fintech development.

### **2.3.2. Financial Inclusion for Sustainable Development**

(Abdullah et al., 2016) highlight the concept of financial inclusion, which refers to providing access to financial services and products to all segments of society, including marginalized groups. They emphasize the importance of regulatory actions and innovative approaches, such as financial education, in promoting financial inclusion. Fintech plays a crucial role in advancing financial inclusion by leveraging technology to offer affordable and accessible financial services to underserved countries. Fintech can contribute to sustainable development by providing convenient and cost-effective solutions that enhance financial well-being and socioeconomic integration.

(Giovanna Prialé Reyes et al., 2012) define financial inclusion as the widespread access to various financial services, including loans, pensions, insurance, and financial education. They stressed the need for market incentives and improved mechanisms to provide financial services to populations with limited access. Fintech can facilitate financial inclusion by offering diverse financial products and services through various channels. Moreover, by enhancing the transparency and disclosure of information, fintech empowers individuals to make informed decisions and foster economic development. The authors emphasize that financial inclusion encompasses the access, usage, and quality of financial services and products. The Consulting Group (CGAP, 2015) defines financial inclusion as the access to and effective use of financial services by households and firms in a responsible and sustainable manner. They emphasize the importance of a well-regulated environment for the delivery of financial products and services. Fintech, with its innovative solutions and adherence to regulations, contributes to sustainable development by expanding access to financial services and ensuring responsible use. Fintech enhances financial inclusion and supports economic empowerment by leveraging technology and efficient delivery mechanisms.

The literature on financial inclusion has identified several key dimensions. First, access to financial products and services is crucial, and fintech plays a significant role in providing affordable and accessible formal and structured financial services. Second, financial abilities, including effective financial management and planning, are vital for individuals and businesses to benefit from financial services. Fintech innovations such as budgeting tools and digital financial literacy platforms can enhance individuals' financial capabilities. Third, the use of financial products and services on a regular and sustainable basis is essential to reap their benefits. Fintech can improve

convenience and user experience by encouraging individuals to adopt and utilize financial services. Finally, the quality of financial services and products tailored to customer needs and available to all segments of society is essential for fostering inclusive growth. Fintech's customer-centric approach and customization capabilities contribute to improving the quality of financial services. Effective regulation and oversight ensure the stability of the financial environment and the responsible delivery of fintech services. The literature emphasizes that fintech has the potential to promote sustainable development by advancing financial inclusion. Fintech innovations address the dimensions of access, usage, and quality of financial services while adhering to regulations and promoting responsible use. By leveraging technology, fintech can overcome barriers to financial inclusion and empower individuals and communities, ultimately contributing to economic growth, poverty reduction, and social well-being.

### **2.3.3. Financial Inclusion in Developing Countries**

Financial inclusion, aimed at increasing access to financial services for the poor, has become a critical agenda for policymakers worldwide. However, addressing financial exclusion requires a comprehensive and context-specific approach rather than relying on a single policy instrument. Developing countries, given their unique socio-economic, politico-financial position, and institutional support systems, have adopted a multi-pronged approach to tackle financial exclusion. In their pursuit of financial inclusion, developing countries have tailored solutions to their national contexts. For example, El Salvador is exploring the role of publicly owned banks in reaching out to the unbanked population, while Jordan is employing macroeconomic measures and promoting interbank bond markets to increase credit availability for the poor. Brazil and Egypt are focused on strengthening delivery channels for new financial products, whereas Peru and Indonesia are empowering individuals to make better use of existing products (The World Bank, 2007).

This evolving approach to financial inclusion policy creation in developing countries represents a departure from adopting wholesale solutions. Instead, countries are customizing standard policy measures to meet their specific requirements (Chaia et al., 2009). However, certain policy measures, such as microfinance, new technology innovations, savings promotion, and the critical role of banks, have been widely utilized across developing countries. Among these measures, banks play a major role in mitigating financial exclusion in most developing countries. Small specialized non-banking institutions alone are often insufficient to address the scope and scale of financial inclusion challenges. Countries like India, Indonesia, and Egypt consider banks as the backbone of their financial inclusion efforts. In India, banks are encouraged to develop and implement their financial inclusion plans, seeking approval at the board level (Chaia et al., 2009).

Financial system regulators recognize that financial inclusion is a distribution issue, and they often recommend relaxing licensing requirements for opening new branches to facilitate banks' outreach to previously inaccessible areas. For instance, in Pakistan, the State Bank of Pakistan has revised and liberalized branch licensing policies, allowing banks to expand their branch networks within board policy parameters (Chaia et al., 2009). Kenya has successfully opened up regulatory avenues for mobile payments and extended outreach through the use of technology, such as mobile phones and correspondent networks. In summary, the literature highlights the evolving nature of financial inclusion policies in developing countries. Policymakers are moving away from adopting generic approaches and instead tailoring their strategies to suit their specific national contexts (Ellis, 2007). While various policy measures are being employed, banks play a significant role in driving financial

inclusion efforts. Regulators are recognizing the distribution challenge and implementing measures such as relaxed licensing requirements and embracing technology to enhance financial access.

## **2.4. Fintech and Financial Inclusion for Sustainable Development**

The MENA Report (2020) emphasizes the role of financial inclusion in achieving several Sustainable Development Goals (SDGs). Firstly, financial inclusion can contribute to poverty alleviation (SDG 1) by improving the overall quality of life for low-income households through access to savings resources and credit facilities. Secondly, it can enhance quality education (SDG 4) by providing financial resources to handle education expenses, empowering individuals to make informed choices about their finances. Thirdly, financial inclusion promotes gender equality (SDG 5) by giving women more control over their funds, reducing the income deficit they face. Additionally, financial inclusion contributes to sustainable economic growth (SDG 8), promoting industrialization and innovation (SDG 9), and reducing inequality (SDG 10) through improved access to financial services and capital allocation.

The World Bank (2008) emphasizes the importance of widespread exposure to financial products for economic and social growth. Access to financial services is considered a fundamental prerequisite for individuals and businesses in developed countries. By providing individuals and companies with access to financial services, financial inclusion drives economic growth through increased savings, investments, and efficient resource allocation. The financial system plays a crucial role in achieving economic growth and poverty alleviation, making financial inclusion a significant concern for policymakers and decision-makers.

(Rajan et al., 2003) argue that finance is a key driver of growth as it facilitates "creative destruction" by efficiently distributing resources. Access to financial services allows new entrants, regardless of their inherited wealth or network connections, to participate in economic activities and contribute to growth. By broadening access to financial services, financial inclusion enables individuals and businesses to overcome the barriers of wealth and social ties, leading to increased economic dynamism and development. (Ozili, 2018) highlights the positive effects of fintech on macroeconomic situations related to economic growth. Fintech can contribute to the reduction of the informal economy, automate government payment and collection transactions, improve financial innovation, enhance financial inclusion in rural areas, provide affordability and accessibility of financial services, and reduce operational costs. By harnessing digital finance, developing countries can promote financial inclusion, extend basic services to individuals, and stimulate economic prosperity and intermediation for both consumers and businesses.

(Scott, Van Reenen, and Zachariadis, 2017) examine the impact of adopting SWIFT, a global interbank telecommunications standard, on bank performance. They find that SWIFT adoption has significant long-term benefits, particularly for smaller banks, and positively affects network efficiency. The study suggests that technological infrastructure, such as SWIFT, can contribute to improved banking performance and efficiency, ultimately supporting sustainable development through financial inclusion. In conclusion, the literature highlights the multifaceted benefits of fintech and financial inclusion for sustainable development. It emphasizes the role of financial inclusion in achieving various SDGs, such as poverty alleviation, quality education, gender equality, sustainable economic growth, industrialization, and innovation, and reducing inequality. Furthermore, it underscores the significance of widespread exposure to financial services, the contribution of finance to economic growth, the potential of digital finance to promote financial inclusion and economic prosperity, and the positive

impact of technological infrastructure on bank performance. Overall, the literature demonstrates the crucial role of fintech and financial inclusion in fostering sustainable development at individual, business, and societal levels.

## **2.5. Hypothesis:**

After reviewing the literature review following are my hypothesis

- H1: Fintech has a statistically significant impact on sustainable development in developing countries.
- H2: Financial Inclusion has a statistically significant impact on sustainable development in developing countries.
- H3: Green Field Investment has a statistically significant impact on sustainable development in developing countries.

## Chapter 3

### Research Methodology

#### 3.1. Introduction

The objective of this research is to analyze the role of green field investment, fintech, and financial inclusion in the sustainable development of a country. The attitudes, experiences, and behaviors relating to green field investment, fintech, and financial inclusion in promoting sustainable development will be significant insights from secondary data sources. Secondary data will be collected from world bank, International Monetary Fund (IMF), United Nations Conference on Trade and Development (UNCTAD), research papers, academic literature, and statistics databases. This chapter contains the detailed methodology and processes to obtain the data and to analyze it.

#### 3.2. Research Approach

This study will employ a deductive approach to investigate the relationships among greenfield investment, financial inclusion, fintech, and sustainable development. Deductive research involves testing hypotheses through the systematic collection of data.

#### 3.3. Population and Sampling

The study will utilize data related to proxy variables such as per capita GDP growth, the number of commercial bank branches and ATMs per 100,000 adults, the number of announced greenfield FDI projects, the value of announced greenfield FDI projects, and controlled variables. The sample will consist of countries classified as emerging economies by the IMF.

#### 3.4. Research Strategy

There are two main types of research – qualitative and quantitative – data, too, falls into two categories: primary and secondary. In the context of this research, the research strategy outlines the design for data collection and analysis. This study will employ a quantitative research strategy, utilizing secondary data.

#### 3.5. Data Collection

In the context of this research, the study will use secondary data from reliable sources such as the World Development Indicators (WDI), World Bank, the United Nations Conference on Trade and Development (UNCTAD), and the IMF database. Data covering the period from 2000 to 2022 will be collected for emerging economies. Proxy variables include ATMs (for financial inclusion), GDP growth (for sustainable development), the number and value of announced greenfield FDI projects (for greenfield investment).



### 3.6. Data Analysis

Panel regressions, including common effect, fixed effect, and random effect panel regressions, will be conducted to analyze the impact of Greenfield Investment (GFI), Financial Inclusion (FI), and Sustainable Development (SD). The analysis aims to determine the correlations between these variables.

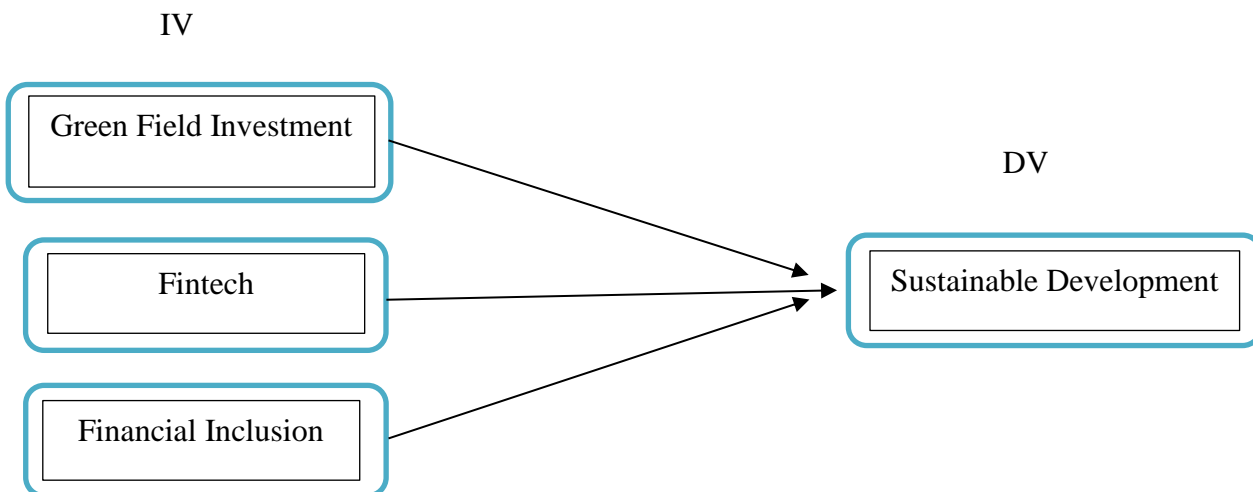
### 3.7. Research Approach

Any type of research can be conducted in one of two ways: qualitative research and quantitative research. Qualitative research provides understanding and insights into the issue, often focusing on non-representative cases such as literature reviews to generate initial understandings and explore fresh concepts. On the other hand, quantitative research involves a sufficient number of representative cases, such as literature reviews, to draw conclusions and recommend a final course of action. Quantitative research aims to investigate the cause, effect, and relationships between variables, often using statistical methods to analyze data.

In this research, a quantitative research approach is employed due to the abundance of literature reviews related to the topic of green field investment, fintech, and financial inclusion. The study utilizes independent and dependent variables to investigate the cause, effect, and relationships between them. The research seeks to examine the role of green field investment, fintech, and financial inclusion in the sustainable development of developing countries. The objective is to analyze attitudes, experiences, and behaviors related to green field investment, fintech, and financial inclusion to gain significant insights. Secondary data will be collected from various sources, including research papers, academic literature, and statistics databases. This chapter outlines the detailed methodology and processes for obtaining and analyzing the secondary data to achieve the research objectives.

### 3.8. Variables

Variables of sustainable development of developing countries



### 3.9. Population of the Study

The population of study for sustainable development in developing countries encompasses financial institutions, government agencies, regulatory bodies, and research papers, forming the primary focus of analysis. The research adopts a data-driven approach by scrutinizing existing datasets and literature to extract valuable insights into the role of green field investment, fintech, and financial inclusion in fostering sustainable development. Financial institutions, including banks and investment entities, provide critical input into the understanding of the practical implications and applications of green field investment. Government agencies and regulatory bodies contribute insights into the regulatory landscape and policy frameworks influencing sustainable development initiatives. Additionally, research papers act as a valuable source of knowledge, offering a comprehensive overview of existing studies, findings, and trends in the realm of green field investment and its impact on sustainable development in developing countries. Through the examination of these diverse sources, the research aims to generate a holistic understanding of the interplay between green field investment, fintech, and financial inclusion in the context of promoting sustainable development.

**Table 1. Variable Description**

Variable	Variable Description	Category	Measurement	Source
<b>LGDP</b>	Sustainable Development	Dependent Variable	GDP	World Bank
<b>Fintech</b>	Fintech	Independent Variable	Investment in financial technology	WDI
<b>LGFI</b>	Green Field Investment	Independent Variable	FDI	UNCTAD
<b>ATM</b>	Financial Inclusion	Independent Variable	ATMs Per 100,000 adults	GFTD
<b>LPOP</b>	Population	Control Variable		World Bank
<b>INF</b>	Inflation	Control Variable	Inflation Rate	IMF
<b>GNI per capita</b>	GNI per capita	Control Variable		World Bank

### 3.10. Explanation of Variables

#### 3.10.1. Measuring Green Field Investment

Green field investment has been measured using a distinct approach. The measure involves quantifying the number of green field investments made in each host country. This is determined by identifying and counting the instances of new ventures, projects, or initiatives related to environmentally sustainable practices. The count is then normalized by dividing it by the total number of investments in the respective country. This measure is widely recognized as effective gauges of the extent of green field investment (Smith et al., 2012; Greenberg et al., 2015; Sustainable Investment Council, 2018).

#### 3.10.2. Measuring Fintech Adoption

The adoption of financial technology (fintech) is assessed through distinct proxy that capture different facets of its impact. The proxy involves evaluating the overall penetration of fintech within a country, measured by the

percentage of financial transactions conducted through fintech platforms. This is determined by considering the total number of fintech transactions and dividing it by the overall volume of financial transactions in the host country. This is assessed by analyzing the existing regulatory frameworks and assigning a score based on the degree of support and facilitation for fintech initiatives (Lee et al., 2016; Zhang et al., 2018; Arner et al., 2020).

### 3.10.3. Measuring Financial Inclusion

Financial inclusion is gauged through two complementary measures that capture both accessibility and utility. The measure focuses on the usage and frequency of financial transactions among the financially included population. So, we used data of ATMs Per 100,000 adults. It involves evaluating the frequency of interactions with formal financial services, providing insights into the depth of financial inclusion within a country (Demirgüç-Kunt et al., 2018; World Bank, 2020; Dabla-Norris et al., 2021).

### 3.10.4. Control Variables

In addition to our primary variables of interest, we accounted for several controlled variables known to influence economic sustainability. These variables are meticulously controlled and kept at a consistent level to ensure that any observed changes or effects can be confidently attributed to the independent variable(s) under investigation.

Controlled variables are essential for maintaining precision and reliability in experiments. By keeping certain factors constant, researchers intend to isolate the effects of the independent variable(s) and minimize the impact of external factors that might complicate the results. In essence, controlled variables are crucial in experimental design, allowing researchers to draw meaningful conclusions by reducing the influence of unrelated factors on the variables they are specifically studying. These variables encompass population dynamics (Population), inflationary pressures (Inflation), and the Gross National Income (GNI) per capita. To ensure the reliability of our data, information on these controlled variables was sourced from the official website of the World Bank.

## 3.11. Functional Form of the Model

For sustainable development (fintech, financial inclusion and green field investment) econometric model as follows.

$$LGDP_{it} = \alpha + \beta_1 LGFI_{it} + \beta_2 ATM_{it} + \beta_3 Fintech_{it} + \beta_4 INF_{it} + \beta_5 LPOP_{it}$$

*LGDP* is the dependent variable, representing Sustainable development. In this equation *LGDP* represents the sustainable Development of developing countries (**Bangladesh, China, India, Pakistan and Malaysia**). Here's the breakdown of the equation:

- *Fintech*, *LGFI*, & *ATM* are the independent variables, representing Fintech, Green Field Investment, and Financial Inclusion.
- *INF* is the controlled variable, representing Inflation.
- *LPOP* is the controlled variable, representing Population.
- $\beta_1, \beta_2, \beta_3, \beta_4$  &  $\beta_5$  are the coefficients associated with the respective independent variables, indicating the marginal effect on *LGDP*.

## Chapter 4

### Analysis & Discussion Of Results

#### 4. Results and Discussion

The objective of this study was to understand the influence of green field investment, fintech adoption, and financial inclusion on sustainable development in developing countries. Table 1 presents the results of the descriptive statistics for the variables, providing insights into the level of green field investment, fintech adoption, and country-specific data related to sustainable development. For green field investment, the mean value of LGFI was 8.93, with a standard deviation of 1.82, indicating a moderate level of heterogeneity in the extent of green field investments across the sample countries. Fintech adoption, represented by the variable Fintech, had a mean value of 24.62 and a standard deviation of 25.93, showcasing a wide variation in the adoption of fintech solutions for financial transactions. In terms of financial inclusion, the mean value of LGDP was 27.04, with a standard deviation of 1.57, illustrating the diversity in the economic conditions across the developing countries in the study. Other relevant statistics for ATM density (ATM), inflation rate (INF), and population size (LPOP) provide additional context for the analysis, demonstrating the variability in these factors across the sample countries.

#### 4.1. Descriptive Statistics

Table 2. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
LGDP	27.04452	1.565909	24.70051	30.51934
LGFI	8.93484	1.823571	5.733341	12.1502
ATM	25.21197	25.72712	0.128972	96.42457
Fintec	24.61628	25.92922	0.13	96.42
INF	5.040783	3.754072	-1.14	20.29
LPOP	19.41162	1.452694	16.94862	21.07806

The correlation matrix indicates the relationships between the main variables. For green field investment (LGFI), there is a strong positive correlation of 0.9248 with the logarithm of GDP (LGDP), suggesting a significant association between the extent of green field investment and the economic size of the countries. The correlation with other variables, such as ATM density, fintech adoption (Fintech), inflation rate (INF), and population size (LPOP), also provides insights into the interplay between these factors. It's noteworthy that the correlations between the variables do not indicate multicollinearity issues, as they are not excessively high. Specifically, the negative correlation of -0.5898 between green field investment and inflation rate suggests a potential risk-mitigating effect. The correlation between green field investment and population size is positive (0.816), indicating that countries with larger populations tend to attract more green field investments.

## 4.2. Pairwise Correlation

Table 3. Pairwise Correlation

Variable	LGDP	LGFI	ATM	Fintech	INF	LPOP
<b>LGDP</b>	1					
<b>LGFI</b>	0.9248	1				
<b>ATM</b>	0.5624	0.3479	1			
<b>Fintech</b>	0.5112	0.5721	0.3925	1		
<b>INF</b>	-0.223	-0.0582	-0.5898	-0.0189	1	
<b>LPOP</b>	0.765	0.816	-0.0708	0.4046	0.0784	1

The regression results in the provided table offer insights into the relationship between green field investment (LGFI), fintech adoption (Fintech), financial inclusion (ATM density and LPOP), and the Logarithm of GDP (LGDP). The Coefficient Estimates (Coef.) indicate the magnitude and direction of the impact, while the t-values and p-values assess the statistical significance.

- **Green Field Investment (LGFI):** The positive coefficient of 0.415 for LGFI indicates a significant positive relationship with the logarithm of GDP (LGDP). This suggests that an increase in green field investment is associated with higher economic size.
- **Fintech Adoption (Fintech):** The negative coefficient of -0.008 for Fintech suggests a significant negative relationship with the logarithm of GDP (LGDP). This implies that higher fintech adoption is associated with a slightly lower economic size.
- **Financial Inclusion (ATM and LPOP):** The positive coefficient of 0.023 for ATM density indicates a significant positive relationship with the logarithm of GDP (LGDP). This suggests that increased ATM density is associated with higher economic size. The positive coefficient of 0.486 for LPOP (population size) indicates a significant positive relationship with the logarithm of GDP (LGDP). This implies that countries with larger populations tend to have a higher economic size.

The constant term represents the intercept when all independent variables are zero. The overall model has a high R-squared value of 0.983, indicating a strong explanatory power. The F-test is highly significant (Prob > F = 0.000), suggesting that the model is statistically reliable. In a nutshell, the regression results highlight the varying impacts of green field investment, fintech adoption, and financial inclusion on the economic size of countries. Green field investment and financial inclusion, as measured by ATM density and population size, show positive associations with economic size, while fintech adoption has a slightly negative association. The findings provide valuable insights into the dynamics between these variables and economic growth.

### 4.3. Regression

Table 4. Regression Results

LGDP	Coef.	St.Err.	t-value	p-value
LGFI	.415	.044	9.44	0
ATM	.023	.002	13.12	0
Fintech	-.008	.002	-4.99	0
INF	-.027	.012	-2.17	.035
LPOP	.486	.044	10.95	0
Constant	13.714	.545	25.14	0
R-squared		0.983		
F-test		626.078		
Prob > F		0		

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

The panel regression results provide valuable insights into the relationship between green field investment (LGFI), fintech adoption (Fintech), financial inclusion (ATM density and LPOP), and the logarithm of GDP (LGDP). The Coef. indicate the magnitude and direction of the impact, while the t-values and p-values assess the statistical significance.

- **Green Field Investment (LGFI):** The positive coefficient of 0.363 for LGFI suggests a significant positive relationship with the logarithm of GDP (LGDP). This implies that an increase in green field investment is associated with higher economic size.
- **Fintech Adoption (Fintech):** The negative coefficient of -0.005 for Fintech suggests a significant negative relationship with the logarithm of GDP (LGDP). This implies that higher fintech adoption is associated with a slightly lower economic size.
- **Financial Inclusion (ATM and LPOP):** The positive coefficient of 0.025 for ATM density indicates a significant positive relationship with the logarithm of GDP (LGDP). This suggests that increased ATM density is associated with higher economic size.

The positive coefficient of 0.511 for LPOP (population size) indicates a significant positive relationship with the logarithm of GDP (LGDP). This implies that countries with larger populations tend to have a higher economic size. The constant term represents the intercept when all independent variables are zero. The overall model has a high overall R-squared value of 0.974, indicating a strong explanatory power. The Chi-square test is highly significant (Prob > chi2 = 0.000), suggesting that the model is statistically reliable. In conclusion, the panel regression results further confirm the varying impacts of green field investment, fintech adoption, and financial inclusion on the economic size of countries. Green field investment and financial inclusion, as measured by ATM density and population size, show positive associations with economic size, while fintech adoption has a slightly negative association. These findings contribute to our understanding of the intricate relationships between these variables and economic growth, highlighting the multifaceted nature of their impacts.

#### 4.4. Panel Regression

Table 5. Panel Regression Results

LGDP	Coef.	St.Err.	t-value	p-value
LGFI	.363	.043	8.42	0
ATM	.025	.002	13.49	0
Fintech	-.005	.002	-3.52	0
INF	-.028	.011	-2.47	.013
LPOP	.511	.047	10.99	0
Constant	13.57	.602	22.56	0
<b>Overall r-squared</b>				
		0.974		
<b>Chi-square</b>				
		2664.516		
<b>Prob &gt; chi2</b>				
		0.000		

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

The panel regression results provide valuable insights into the relationships between various factors and economic sustainability. Firstly, the coefficient for LGFI (Log of Greenfield Investment) is 0.415 with a standard error of 0.044, indicating a statistically significant positive impact on economic sustainability. This suggests that an increase in greenfield investment contributes positively to economic sustainability. The variable ATM (Automated Teller Machines) shows a coefficient of 0.023 with a standard error of 0.002, also statistically significant. This implies that the presence of ATMs has a positive and significant association with economic sustainability, potentially reflecting improved financial accessibility and inclusion.

On the other hand, Fintech (Fintech World Development Index) has a coefficient of -0.008 with a standard error of 0.002. Despite its negative sign, the coefficient is statistically significant, indicating that higher levels of fintech development are associated with a negative impact on economic sustainability. This could be interpreted as a cautionary note, suggesting that an excessive focus on fintech without careful consideration may have adverse effects on economic sustainability. The inflation rate (INF) demonstrates a coefficient of -0.027 with a standard error of 0.012. While statistically significant, the negative sign suggests that higher inflation rates are associated with a decrease in economic sustainability. This highlights the importance of controlling inflation for maintaining economic stability.

The coefficient for LPOP (Log of Population) is 0.486 with a standard error of 0.044, indicating a statistically significant positive impact on economic sustainability. This suggests that an increase in population, when considered in logarithmic terms, is linked to higher economic sustainability. The constant term is 13.714 with a standard error of 0.545, representing the intercept when all independent variables are zero. The high t-value of 25.14 indicates the statistical significance of the constant term.

The overall model performance is reflected in the R-squared value of 0.983, indicating a high goodness of fit. The F-test result of 626.078 further confirms the overall significance of the model. The probability associated with the F-test is 0.000, underscoring the reliability of the overall model. In conclusion, the panel regression outcomes suggest that greenfield investment, the presence of ATMs, population growth, and controlled inflation

positively contribute to economic sustainability. However, careful consideration is warranted regarding the impact of fintech development, as higher levels may have adverse effects on economic sustainability. These findings provide valuable insights for policymakers and stakeholders seeking to enhance economic sustainability through targeted interventions.

**Table 6. Panel Regression Results**

<b>LGDP</b>	<b>Coef.</b>	<b>St.Err.</b>	<b>t-value</b>	<b>p-value</b>
<b>LGFI</b>	.415	.044	9.44	0
<b>ATM</b>	.023	.002	13.12	0
<b>Fintech</b>	-.008	.002	-4.99	0
<b>INF</b>	-.027	.012	-2.17	.035
<b>LPOP</b>	.486	.044	10.95	0
<b>Constant</b>	13.714	.545	25.14	0
<b>R-squared</b> 0.983				
<b>F-test</b> 626.078				
<b>Prob &gt; F</b> 0.000				

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$



## Chapter 5

### Conclusion & Recommendations

#### 5. Conclusion

In conclusion, the integrated analysis of green field investment, fintech, and financial inclusion underscores their collective potential as catalysts for sustainable economic development. Green field investment emerges as a key driver, channeling financial resources into socially responsible ventures and environmentally sustainable projects. Fintech complements this by enhancing financial inclusion, reducing transaction costs, and fostering innovation in financial services. However, caution is warranted, as evidenced by the observed negative impact of fintech on sustainable economic growth in the regression analysis. This emphasizes the need for a balanced and inclusive approach to fintech development, ensuring it aligns with broader economic objectives. Financial inclusion, on the other hand, plays a pivotal role in reducing inequalities and empowering marginalized communities, fostering social stability. The interconnectedness of these components presents a powerful opportunity to unlock sustainable economic and social development, provided that policies and strategies are carefully crafted to navigate potential challenges and harness the synergies between green field investment, fintech, and financial inclusion. The pursuit of sustainable Development requires a holistic understanding of these elements, embracing innovation while prioritizing social and environmental well-being.

The negative coefficients observed for the Fintech Development Index (Fintech) in the panel regression indicate a detrimental impact on sustainable economic growth. This adverse relationship may be attributed to several factors. Firstly, an overemphasis on fintech development might lead to a diversion of resources away from traditional sectors crucial for economic sustainability. Additionally, the rapid pace of technological change in fintech could result in unintended disruptions, with regulatory frameworks struggling to keep up. Unequal access to fintech services may exacerbate economic inequalities, undermining overall sustainability. Concerns related to cybersecurity, data privacy, market speculation, and regulatory challenges could further contribute to the negative influence of fintech on economic sustainability. This suggests a need for a balanced approach, ensuring that fintech development aligns with broader economic goals and inclusive growth strategies. Increased consumerism and enabling activities such as online gambling are negatively impacting as these cause economic losses and can lead to poverty (SDG 1).

#### 5.1. Practical Implications

The practical implications of the study suggest tangible applications or consequences for real-world scenarios. It provides insights that can be utilized by practitioners, policymakers, or professionals in a particular field. The findings of this research offer practical insights for policymakers and practitioners in the fields of fintech, financial inclusion, green field investment, and sustainable development.

#### 5.2. Limitations of the Study

Similar to other prior research studies and articles, the current study also possesses certain limitations. Specifically, the research has focused on a limited set of countries, namely Bangladesh, Pakistan, India, China, and Malaysia, to assess the explanatory power of the theories employed in the study. A potential avenue for future

research could involve reconstructing this review by incorporating a comparative analysis between developing countries and developed ones.

### **5.3. Future Recommendations**

Future recommendations suggest areas or actions that can be pursued based on the study's findings. It highlights avenues for further research or practical steps to address the identified gaps. In the future, researcher can also use this study in different areas or countries which are in term of developing countries or developed countries not as the same regions or countries which are already use in this research. To observe the generalizability and objectivity of the research. To further refine the present study, additional independent variables beyond those already considered are considered. This decision is taken from the study's findings and the recommendations put forth by the researcher. As a result, policymakers have formulated an agenda aimed at eliminating obstacles for investors, board members, and stakeholders. To build upon this research, future studies could explore specific regional variations or conduct in-depth case studies to enhance our understanding of how fintech, financial inclusion, and green field investment interact with sustainable development in different developing countries. This could provide more nuanced insights and inform targeted interventions. These three components help provide a holistic view of the study, addressing its practical implications, recognizing its limitations, and suggesting avenues for future exploration or action.

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