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## Determinants of Financial Inclusion: Evidence from the Gulf Cooperation Council Countries

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### Abstract

*This research paper provides an in-depth analysis of the primary determinants of financial inclusion in Gulf Cooperation Council countries from 2010 to 2023. Using a sound methodological framework, the study first developed a comprehensive Financial Inclusion Index for each member state, based on the multidimensional approach proposed by Sarma (2008). Furthermore, an ARDL model was estimated using the Pooled Mean Group estimator to analyze the short- and long-run relationships between the Financial Inclusion Index and its potential determinants, while accounting for cross-sectional dependence across countries. The results show significant and continuous improvements in the financial inclusion indicators across all GCC countries, with indicators now in the high financial inclusion categories. Three key long-term drivers were identified through the econometric analysis: the Human Development Index, internet penetration, and the dependency ratio. Interestingly, both the Human Development Index and internet use had a statistically significant positive impact, highlighting the fundamental roles of human capital and digital infrastructure in development. A positive nexus between the dependency ratio and financial inclusion was also observed, a finding that runs counter to conventional literature but can be explained by the region's high income levels and comprehensive social welfare systems, which route support through formal banking channels. The error-correction model confirmed a stable long-term equilibrium, with 32.7% of short-term deviations corrected each year. The policy recommendations presented in this paper conclude by calling for the adoption of integrated strategies that link financial inclusion with human development and digital transformation agendas, while enhancing regional cooperation to accelerate progress toward the desired outcomes.*

**Keywords:** Financial Inclusion, GCC Economies, Human Development, Digital Transformation, Dependency Ratio, Panel ARDL, FinTech

**JEL Classification:** G21, O16, O53, I25, C23.

### 1. Introduction

Since the 2007 global financial crisis, which exposed the underlying structural vulnerabilities of financial systems, the quest for financial inclusion has become a significant concern among policymakers and institutions worldwide (Morgan, 2014; Han and Melecky, 2013). According to the World Bank, financial inclusion is about ensuring that individuals and businesses have access to valuable and affordable financial products and services that meet their needs — such as transactions, payments, savings, credit, and insurance — in a sustainable and responsible manner (World Bank, 2014). Its main objective is to ensure equal access to and use of formal financial services for all groups in society, especially the most vulnerable, and to contribute to the

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development of small and medium-sized enterprises (Park and Mercado, 2018).

First among them was the Alliance for Financial Inclusion (AFI, 2016). Later, it joined the Global Partnership for Financial Inclusion (GPMI), a partnership formed by the G20 countries and a group of like-minded countries, to develop policies that support financial inclusion and share related experiences and best practices. Then again, the work of several international bodies, such as the World Bank, IFC, and IMF, has also advanced financial inclusion by defining its scope and developing indicators to measure it. Sarma, 2008; Demirgüç-Kunt and Klapper, 2012

Indeed, national central banks and supervisory institutions should take a leading role in promoting financial inclusion. Accordingly, they established an enabling policy and regulatory environment for various types of banking transactions, enhanced the resilience of the financial infrastructure, formalized informal financial channels, and disseminated financial education across different sections of society (Kumar, 2013).

Innovations in financial technology, commonly known as FinTech, are among the most important building blocks for increasing opportunities and accelerating the pace of financial inclusion. The reason is simple: they enable financial services to be provided at a lower cost, with respect to speed, cost, and security (Demirgüç-Kunt et al., 2018).

Financial inclusion is a prominent focus for governments and international institutions as a powerful tool for achieving sustainable economic development (Ozili, 2022; Khan et al., 2022). This is accomplished by mobilizing resources to enhance savings and investment levels, providing appropriate financing, and creating new employment opportunities (Winful et al., 2022; Sykes et al., 2016). Given the paramount importance of financial inclusion and its pioneering role in fostering economic growth, the Gulf Cooperation Council (GCC) nations were among the first to adopt and promote its mechanisms (Radha Sharma et al., 2014).

GCC countries have prioritized financial inclusion in their national plans and visions. They have undertaken a series of reforms, programs, and mechanisms to develop the national legislative framework. These efforts have positively impacted the growth and development of their financial sectors, thereby enhancing financial inclusion.

Financial inclusion indicators in the GCC countries show significant progress. Bank account ownership among GCC citizens rose to 74%, compared to the global average of 69%. Borrowing from financial institutions reached 13%, exceeding the global average of 11%. The usage rate of electronic payment instruments among adults was 66%, significantly higher than the global average of 46%. The internet penetration index stood at 161%, substantially surpassing the global average of 83% (Demirgüç-Kunt et al., 2018).

High income levels in the GCC nations were among the key drivers of financial inclusion, as higher incomes led people to open bank accounts and use the services of savings and investment provided by banks. The development of information and communication technology infrastructure also played its part, as innovations in the communications segment made it easier and faster for the public at large to access financial services and data through advanced financial technology. Furthermore, the activities carried out by the GCC nations in human development, as well as the reforms and policies aimed at reducing overall unemployment levels and empowering women, were instrumental and glaring in advancing financial inclusion.

Though GCC nations have made significant strides in financial inclusion, arguably one of the

drivers of economic growth, there remains scope for further progress in this sector. Therefore, the research question centers on the determinants of financial inclusion across the GCC nations.

The relevance of this research lies in addressing a vital theme that has not received proper emphasis in economic research for the GCC nations as a group. The research aims to examine the reality of financial inclusion through descriptive and econometric analyses, identify its determinants, and enable decision-makers to craft appropriate policies. It also makes a valuable contribution to the field of data by forecasting a time series for each country's financial inclusion index, enabling further research.

The primary aim of the study is to estimate and examine the most significant determinants of financial inclusion in the GCC nations, with secondary aims being the estimation of the composite measure of financial inclusion in the GCC, econometric analysis of its determinants, and the identification of challenges and impediments to financial inclusion in member countries to suggest their improvement.

To achieve the study aims, a model will be used to test the following two main econometric hypotheses: that high levels in the Human Development Index (HDI) increase the level of financial inclusion in the GCC area, and that an elevated dependency rate (population under the age of 15 and over the age of 64) reduces the level of financial inclusion.

The research is based on two methodological paradigms: the descriptive one to represent the scope of financial inclusion, and the econometric one to quantify the financial inclusion index and analyze its determinants, employing panel data for GCC member countries over the period (2004-2020).

The sources employed are accurate international and national sources, including the International Financial Statistics (IFS) published by the International Monetary Fund (IMF), World Bank statistics, statistics from GCC central banks, United Nations statistics, and United Nations Conference on Trade and Development (UNCTAD) statistics.

The research is divided into four sections. The first section introduces the research; the second reviews the theoretical framework and previous literature; the third section presents the applied part through methodology and econometric analysis; and finally, the conclusions and recommendations drawn from the analysis are presented in section four.

## **1. Theoretical Framework and Literature Review**

### **1.1 Theoretical framework**

#### **1.1.1 Introduction to Financial Inclusion**

It was in the early 1990s that the concept of financial exclusion – the opposite of financial inclusion – began to attract attention. Researchers Leyshon and Thrift (1993) defined financial exclusion as the process of excluding certain social groups and individuals from the formal financial system (Yadav, 2022). Later, the European Commission defined it as the difficulties individuals face in accessing appropriate financial services that enable them to live normally within their society (Anderloni et al, 2008).

There was an increasing interest in financial exclusion following the study by Kempson and Whyly (1999), which contributed to a more detailed understanding of the unmet needs of excluded groups and how they could be reached.

Consequently, financial inclusion has emerged as a key solution to eradicating financial exclusion and achieving sustainable development, becoming a top priority on the agendas of governments and international organizations. The majority of states took legislative measures to promote it, such as the United States of America: Community Reinvestment Act (1997), which requires banks to lend to all areas; France: Act against exclusion (1998), stating one's right to a bank account; United Kingdom: Creation of a special group for monitoring the development of financial inclusion (Sarma and Pais, 2011).

The term "financial inclusion" was first formally introduced in a 2005 report by the Reserve Bank of India (RBI) (Ghosh and Sahu, 2021). In 2008, the Alliance for Financial Inclusion (AFI, 2017), an international network comprising 84 central banks and financial regulators, was established to promote financial inclusion by connecting policymakers and enabling them to formulate effective policies.

In 2010, the G20 launched the Global Partnership for Financial Inclusion (GPMI) after declaring financial inclusion a key pillar of global development. It was accompanied by international organizations such as the Consultative Group to Assist the Poor (CGAP) and the World Bank (Maity and Majumder, 2025).

### **1.1.2 The Concept of Financial Inclusion**

The concept of financial inclusion evolved from mere access to financial services to a wide-ranging, multidimensional concept. Some important definitions are:

- The World Bank: The degree to which people and businesses have access to valuable and affordable financial services and products (e.g., transactions, savings, credit, and insurance) responsibly and sustainably.
- Global Partnership for Financial Inclusion (CGAP and GPMI, 2011): A state in which all working-age adults have access to basic formal financial services from formal financial institutions.
- G20 and Alliance for Financial Inclusion (AFI, 2017): Promoting the access and use of financial services by all segments of society, both marginalized and wealthier groups, in an equitable, transparent, and affordable manner.
- Organization for Economic Cooperation and Development (OECD, 2005): The process of promoting access to financial services, together with implementing financial awareness and education campaigns to improve individuals' financial well-being.

The preceding definitions highlight several key features of financial inclusion.

- Brings in Everybody: Individuals and enterprises, with particular focus on marginalized groups and small enterprises.
- Through Formal channels: Delivery of services through formal financial institutions.
- Quality and Variety of Products: Provision of a variety of high-quality financial services.
- Sustainability and Equitability: Delivery of services sustainably and equitably to all groups.
- Affordable Cost: Service prices should be low enough for everyone to afford.
- Use, Not Just Access: Emphasize using and benefiting from services enabled by financial education.

### **1.1.3 Objectives of Financial Inclusion**

Financial inclusion aimed to:

- Increasing savings and investment levels.
- Empowerment of women and bridging the gender gap in access to financial services.
- Increasing opportunities for Small and Medium-sized Enterprises (SMEs) to access finance (Blancher et al, 2019).
- Eradicating the informal financial sector (unregulated).
- Reducing poverty.

### **1.1.4 Financial Inclusion Importance**

The importance of financial inclusion lies in the fact that it helps to

- **Poverty Reduction:** The World Bank considers financial inclusion a crucial element in poverty reduction and promoting prosperity.
- **Safeguarding Individuals:** Helps individuals with financial planning, shock management, and the avoidance of costly informal loans.
- **Encouraging Savings:** Promotes the use of safe savings instruments (e.g., bank accounts) over traditional instruments (e.g., gold), thus boosting capital formation in the economy.
- **Women's Empowerment:** Enhances women's ability to manage money, make informed financial decisions, and start businesses, thereby increasing their financial independence and economic contributions. The literature demonstrates a direct correlation between women's financial inclusion and their increased labor market participation, particularly in Gulf countries (Abdel Moneim and Qa'loul, 2021).
- **Empowering SMEs:** They are the primary driver of employment; their credit increase by 1% decreases the rate of unemployment by 0.1% to 0.2% (Abdel Moneim and Qa'loul, 2021).
- **Stimulating Economic Growth:** Through savings mobilization and their direction to productive investment (Josef and Varghese, 2014).

### **1.1.5 Dimensions of Financial Inclusion**

Financial inclusion has three dimensions:

- **Access:** The availability of financial service points (e.g., bank branches and ATMs) and their ease of access, particularly in rural locations (Sarma, 2008).
- **Usage:** The extent and frequency of people's use of financial services over time (e.g., number of electronic transactions or transfers) (World Bank, 2015).
- **Quality of Services:** The extent to which products are aligned with customer needs, transparent, and the extent to which the choices offered are diverse (World Bank, 2015).

### **1.1.6 Determinants of Financial Inclusion**

The determinants of financial inclusion can be divided into two sides: Demand (factors related to individuals) and Supply (factors related to financial institutions).

**First:** Demand-Side Determinants

- **Income Level:** Poor individuals are more likely to be financially excluded, either because they cannot afford the cost or because they do not need advanced financial services. Empirical evidence strongly establishes a relationship between higher income and greater financial inclusion (Allen et al., 2012).
- **Employment:** Unemployed Individuals are more likely to face financial difficulties and social exclusion. Households with at least one working member are less likely to experience financial exclusion (Kempson and Whyley, 1999).
- **Dependency Ratio:** A high dependency ratio reduces the breadwinner's financial savings potential and access to financial services, and is associated with a higher incidence of poverty (Park and Mercado, 2018).
- **Education and Financial Literacy:** Financial literacy is a crucial component for understanding financial products and making informed choices, with the potential to encourage the use of formal services (OECD, 2005).
- **Age:** The age group (25-65 years) is the most financially included. The young and elderly face more obstacles due to inexperience or lack of knowledge about financial services (Zins and Weill, 2016).
- **Gender:** A significant gender gap exists in access to finance and credit, with women having lower access than men, primarily due to socioeconomic disparities (Demirgüç-Kunt et al., 2018).
- **Urbanization:** Rural societies are less financially included due to the low density of bank branches and the prevalence of the informal financial sector (David et al., 2018).
- **Trust in the Financial System:** A lack of trust in financial institutions (especially after the crisis) discourages individuals from using their services (Allen et al., 2012).
- **Social and Religious Considerations:** Religious beliefs (e.g., the ban on usury) exclude some individuals from dealing with traditional financial institutions, necessitating the development of Sharia-compliant financial products (World Bank, 2014).

## **Second: Supply-Side Determinants**

- **Regulations:** Strict documentation (e.g., income or address verification) can exclude many, especially in the informal economy, from opening bank accounts (Demirgüç-Kunt and Klapper, 2012).
- **Cost of Services:** High account and transaction costs make financial services inaccessible to poor segments of society (Simatele and Maciko, 2022).
- **Quality and Suitability of Services:** Financial services must be transparent, easy to use, diversified, and cater to customers' diverse needs, and they must also encompass Islamic products (AFI, 2016).
- **Availability and Proximity:** The lack of bank branches and ATMs in rural regions is a significant geographical barrier to accessing financial services (Allen et al., 2012).
- **Financial Technology (FinTech):** Digital financial instruments (e.g., e-wallets and online banking) offer a tremendous opportunity to expand the scope of financial inclusion, as they reduce costs and improve ease of access and usability, as experienced during the COVID-19 pandemic (World Bank, 2022).

### **1.2 Literature Review**

Previous literature on the determinants of financial inclusion has varied in the types of

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determinants it focused on, allowing for classification into several main themes. These range from studies examining a broad set of socioeconomic determinants to those emphasizing the religious factor and the role of Islamic banking, and finally to studies investigating the impact of the technological revolution through digital finance and Fintech.

### **2.2.1 Studies Addressing Diverse Financial Inclusion Determinants (Social – Economic – Demographic)**

A significant number of studies have examined the impact of individuals' demographic and economic characteristics on their financial inclusion. In a comprehensive study of 37 African countries by Zins and Weill (2016), which used a probit regression methodology, it was found that gender, age, income, and educational level are critical determinants. The results indicated a gender gap favoring males in account ownership and formal savings. Additionally, they confirmed a nonlinear relationship between age and financial inclusion, with a peak in middle age followed by a decline. The study unequivocally highlighted the positive impact of both higher income and education level on increasing the likelihood of financial inclusion.

At the Middle East level, a study by Al-Sharshani et al (2025) analyzed the state of financial inclusion in Qatar and suggested generalizing the results to the Gulf Cooperation Council (GCC) countries due to similar conditions. The study employed descriptive and comparative methodologies and concluded that high per capita income, low unemployment rates, the quality of the banking infrastructure, a supportive legal and regulatory environment, and financial literacy initiatives were crucial factors in Qatar achieving advanced levels of financial inclusion.

Analyzing the African context, a study by Lotto (2018) in Tanzania yielded consistent results, confirming the positive impact of income and education, as well as the negative impact of being female on the likelihood of inclusion. It also added a new dimension: the pivotal role of mobile phone ownership as a key channel for accessing financial services. In South Africa, a study by Mahlangu and Denhere (2020) found that deep demographic factors, including race, marital status, age, income, and education, significantly affect bank account ownership.

At the macroeconomic level, a study by Mose and Thomi (2021), covering East African countries, provided evidence of the positive impact of GDP per capita, while highlighting the negative impact of high female illiteracy rates and the wage gap (measured by the Gini index) on the overall level of financial inclusion. In a similar context, a study by Chithra and Selvam (2013) employed the "Sarma" methodology to construct a composite financial inclusion index in India, finding that GDP, literacy levels, and the quality of infrastructure (such as roads and internet connectivity) were among the key positive determinants.

### **2.2.2 Studies Focusing on the Role of Financial Literacy**

Financial literacy is a cornerstone for enhancing the demand for formal financial services. In this regard, a study by Shalaby (2018) measured financial knowledge in Egypt using the OECD methodology and found a strong positive relationship, with financial knowledge explaining 24.6% of the variance in financial inclusion. It also indicated low levels of financial literacy among women and older people, necessitating policy direction towards these groups.

These results were supported by a study by Antony and Joseph (2019), which affirmed the vital role of financial literacy in enabling individuals to manage their financial affairs, analyze risks, and choose suitable products, particularly amid the growth of complex financial services and the

spread of Fintech. In Albania, a study by Dushku (2022) found a low level of financial literacy compared to the global average, which is linked to the non-ownership and non-use of financial products, particularly among women, the elderly, and the unemployed.

### **2.2.3 Studies Incorporating the Religious Factor and the Role of Islamic Banking**

The religious factor emerges as a unique determinant in Muslim-majority societies. A study by Demirgüç-Kunt et al. (2014) showed that religious reasons are cited as one of the main obstacles to owning bank accounts among Muslims, despite the limited actual use of Islamic financial services. The study also noted that a large portion of the sample preferred Sharia-compliant financial products, even if they were more expensive.

In Egypt, a study by Sayed and Shsha (2019) emphasized the central role of religious beliefs in shaping individuals' behavior regarding the consumption of financial services. Meanwhile, a study by Bekele (2022) comparing Kenya and Ethiopia found no significant effect of religion on financial inclusion, which may reflect differences in context or in the measurement of the variables.

Regarding the role of Islamic banking, a study by Naceur et al. (2017) highlighted that the presence of Islamic banks plays a pivotal role in alleviating voluntary financial exclusion due to religious reasons in OIC countries. Similarly, a study by Akhter et al. (2019) in a sample of low- and middle-income Islamic countries found that Islamic banking has a positive impact on financial inclusion, particularly by increasing the number of borrowers. A study by Abdel Moneim and Zeidi (2020) reinforced this view in the Arab context, indicating that diversifying the banking structure to include Islamic banks in countries such as Bahrain, Saudi Arabia, and Kuwait expanded access to finance.

### **2.2.4 Studies Investigating the Impact of Fintech and Digital Financial Inclusion**

Fintech represents a qualitative shift in the mechanisms for enhancing financial inclusion. A study by Goswami et al. (2022), focusing on rural areas in India, found that ease of use, low cost, and belief in its profitability were key drivers of fintech adoption, despite concerns about risks. A study by Asif et al. (2023) confirmed that social factors and trust shape individuals' behavioral decisions regarding the adoption of digital financial services.

In Ghana, a study by Apiors and Suzuki (2021) demonstrated that mobile money services have a clear positive impact on individuals' payments, transfers, and small investments. However, a study by Wieser et al (2022) cautioned that the mere availability of the service through agents in remote areas of Uganda was not sufficient to achieve effective financial inclusion, pointing to the necessity of complementary interventions such as providing information, incentives, and designing suitable financial products (like agricultural insurance). Finally, a study by Kheira (2021) highlighted the importance of regulatory authorities in the Arab world in keeping pace with fintech development and establishing regulatory frameworks that encourage innovation while managing risks, to ensure that these technologies drive financial inclusion.

### **2.2.5 The Research Gap**

A review of the literature suggests that the determinants of financial inclusion are complex and multifaceted, encompassing factors ranging from individual demographic and economic characteristics to macro-financial and banking factors, as well as cultural, religious, and technical considerations. While many studies have covered different regions of the world, there is a need

for an integrated study specifically focusing on the GCC countries, which are characterized by unique features such as high income, a specific demographic composition, rapid digital transformation, and a dual financial system (conventional and Islamic). This research aims to fill this gap by developing a comprehensive analytical model that draws on the frameworks of these studies and applies them to the GCC context.

## **2. Methodology: Specifications And Estimates**

Indicators are considered one of the most essential tools in the economic field. Their primary role is to gather data and information that represent the general state of the economy or reflect the performance of one of its sectors. These indicators provide an opportunity to objectively assess and analyze economic status, compare different countries or economic units, and enable decision-makers to define economic trends, predict future directions, and implement necessary policies and plans.

Economic indicators are of two major types, depending on their composition: single indicators, which consist of a single variable, and composite indicators, which combine multiple variables. Their adoption depends on the analysis's purpose and the availability of data. Composite indicators are more capable than single indicators because they can measure multidimensional phenomena—particularly complex concepts that a single indicator cannot capture (OECD, 2008).

### **2.1 Financial Inclusion Index for the Gulf Cooperation Council (GCC) Countries**

The World Bank and Gallup therefore designed the Global Findex database, which provides key data on financial inclusion for 140 countries. The database is based on interviews with over 150,000 adults and is updated every three years, beginning in 2011.

Since this data is not available as a continuous time series, many studies use simpler, long-term indicators, such as Bank accounts per 1,000 adults, bank branches per 100,000 adults, and ATMs per 100,000 adults.

However, these single measures don't fully capture financial inclusion. Therefore, various researchers have developed composite indices that combine multiple dimensions for better cross-country comparisons. In this study, the Financial Inclusion Index developed by Sarma (2008) is used; this index is one of the most widely recognized composite measures. Sarma's approach essentially follows the UNDP's approach to constructing indices, such as the Human Development Index. The same methodology will be used to construct our financial inclusion index.

Sarma proposed a multidimensional financial inclusion index (Sarma, 2008, 2012, 2015), which measured three crucial dimensions: access (bank accounts per 1,000 adults), availability (bank branches and ATMs per 100,000 adults), and usage (credit and deposits as a percentage of GDP). This index is distance-based and constructed using a methodological approach.

This index combines all the dimensional information into one number, making cross-country and temporal comparisons easy. It has some key characteristics: it is a unit-free measure, has upper and lower bounds, increases if any dimension improves, and shows zero-degree homogeneity.

This paper follows Sarma's three-dimensional methodology and selects variables based on data availability and prior work (Hathroubi, 2019). The constructed index comprises:

- Access dimension: bank accounts per 1,000 adults
- Availability dimension: bank branches and ATMs per 100,000 adults, plus ATMs per 1,000 km<sup>2</sup>
- Usage dimension: ratio of credit and deposits to GDP

These three dimensions are then combined into one composite index of financial inclusion. Sarma derived an aggregation methodology based on the inverse of the Euclidean distance from the ideal point (1) and the worst point (0), represented by the following formula: Sarma, 2012; Sarma, 2015:

$$= \frac{1}{2} \left\{ \frac{\sqrt{p_k^2 + a_k^2 + u_k^2}}{\sqrt{1.5}} + \left( 1 - \frac{\sqrt{(1-p_k)^2 + (.5-a_k)^2 + (.5-u_k)^2}}{\sqrt{1.5}} \right) \right\} \quad (2)$$

This index takes values between (0,1). In the index, a value of 0 depicts complete financial exclusion, while a value of 1 represents full financial inclusion. Countries can be classified according to their financial inclusion performance as follows: (Sarma,2012):

- $IFI \geq 0.6$ : High financial inclusion countries.
- $0.6 \geq IFI \geq 0.3$ : medium financially inclusive countries.
- $IFI < 0.3$ : Countries with low financial inclusion

## 2.2 Analysis of the Financial Inclusion Index for the Gulf Cooperation Council (GCC) countries

**Table 1 Financial Inclusion Index for GCC Countries (2010-2023)**

Year	UAE	Bahrain	Saudi Arabia	Oman	Qatar	Kuwait
2010	0.288	0.522	0.538	0.297	0.302	0.338
2011	0.336	0.338	0.537	0.286	0.229	0.436
2012	0.418	0.343	0.549	0.182	0.431	0.313
2013	0.489	0.375	0.587	0.354	0.535	0.223
2014	0.504	0.375	0.640	0.312	0.524	0.376
2015	0.568	0.495	0.699	0.466	0.604	0.556
2016	0.659	0.492	0.717	0.526	0.622	0.660
2017	0.677	0.429	0.729	0.489	0.662	0.717
2018	0.681	0.423	0.729	0.544	0.667	0.619
2019	0.689	0.580	0.742	0.673	0.723	0.579
2020	0.751	0.646	0.749	0.724	0.795	0.642
2021	0.637	0.681	0.762	0.860	0.911	0.729
2022	0.651	0.893	0.787	0.907	0.878	0.825
2023	0.860	0.820	0.821	0.853	0.896	0.956

Source: Calculated by the author

From 2010 to 2023, GCC countries experienced significant development in their financial

inclusion indices, with all member states demonstrating steady improvement. This evolution can be viewed in the following way from the table data:

The UAE has demonstrated consistent growth in its Financial Inclusion Index, increasing from 0.288 in 2010 to 0.860 in 2023. This is a strong reflection of the successful efforts to enhance financial inclusion in the country, particularly over the past two years, during which the index increased from 0.651 in 2022 to 0.860 in 2023.

In 2010, the Kingdom of Bahrain's score was relatively high, at 0.522, but noticeable fluctuations occurred within the period. The index decreased to 0.338 in 2011, then rose to 0.893 in 2022 and stabilized at 0.820 in 2023.

The Kingdom of Saudi Arabia's performance was characterized by steady growth, with the index rising from 0.538 in 2010 to 0.821 in 2023. Throughout the study period, the Kingdom experienced almost no significant decline, which can be attributed to the success of the policies implemented to promote financial inclusion.

At the same time, the Sultanate of Oman recorded the highest growth rate among the GCC countries, rising from 0.297 in 2010 to 0.853 in 2023, despite some fluctuations during the period. In fact, Oman showed impressive performance, especially during the second half of the period.

The State of Qatar's performance was robust and stable, as demonstrated by its rising index, which increased from 0.302 in 2010 to 0.896 in 2023. Qatar maintained advanced levels of financial inclusion during the later years of this study period.

In general, these findings suggest that the policy of financial inclusion has been successfully implemented in the GCC countries, as all states have moved from low or medium to high levels of financial inclusion, according to the adopted classification standards. This development reflects the significant efforts of GCC states to promote financial inclusion as a pillar of sustainable economic development.

### 2.3 Analysis of the financial inclusion determinants model

Panel data is a combination of cross-sectional observations and time-series data. While cross-sectional observations reflect the behavior of several units, such as countries, at a single point in time, time-series observations follow a single unit across multiple periods. Thus, panel data captures both individual unit effects and common time trends.

The panel data regression model takes the form of (Greene, 2012):

$$Y_{it} = \beta X_{it} + Z_i \alpha + \mu_{it} \dots (1)$$

Where:

- $Y_{it}$ : Dependent variable for unit  $i$  at time  $t$
- $X_{it}$ : Independent variables
- $\alpha$ : Constant term
- $\beta$ : Regression coefficients
- $\varepsilon_{it}$ : Error term

To achieve the study objectives, the factors potentially influencing financial inclusion levels in GCC countries will be measured through the following general framework:

$$IFI_{ijt} = \alpha + \beta HDI_{ijt} + \beta PD_{ijt} + \beta INTER_{ijt} + \mu_{ijt}$$

Whereas:

- (IFI) is the Financial Inclusion Index in country (i) during period (t), with the calculation method clarified in Chapter Three.
- (HDI) is the Human Development Index in country (i) during period (t).
- (PD) is the Dependency Rate in country (i) during period (t).
- (INTER) is the percentage of Internet users in the population of country (i) during period (t).
- ( $\mu$ ) is the random error term.

### 2.3.1 Model variables

The model considers three significant factors that influence financial inclusion:

- The Human Development Index: Improvements in health, education, and income enhance financial inclusion by increasing awareness and the capability to access financial services.
- The Dependency Ratio: Its impact varies depending on whether the country is rich or poor. In poor countries, it reduces financial inclusion, whereas in rich countries, with social support systems and financial transfers, the impact may be less negative.
- Internet Penetration: It plays a crucial role in enhancing access to financial services, reducing costs, empowering vulnerable groups, and fostering innovation in the financial services sector.

Collectively, these variables provide a comprehensive framework for understanding the dynamics of financial inclusion in society.

### 2.3.2 Descriptive statistics

Table 2 presents the summary statistics of the study variables. The mean for financial inclusion was 0.588, which is moderate and leans towards the positive, with a relatively high standard deviation of 0.189, indicating variation across countries.

The Human Development Index also reached an average of 0.855, indicating that Gulf countries are classified in the high human development category. The similarity was significant, with a standard deviation of only 0.029.

The dependency rate had an average of 29.5 and a standard deviation of 7.5, indicating substantial variability across countries.

The average percentage of internet users was high at approximately 85.86%, while the standard deviation was 16.27, indicating significant differences in the speed of internet diffusion across countries.

**Table 2: Descriptive Statistics**

Variable	Mean	Std.dev	Min	Max
IFI	0.588	0.189	0.183	0.954

PD	29.502	7.507	17.032	43.920
HDI	0.855	0.029	0.801	94
INTER	85.86	16.271	35.800	100

Source: Calculated by the author

### 2.3.3 Measuring Correlation Between Variables

The results in the correlation matrix in Table 3 indicate that all relationships between the financial inclusion model variables are below 0.8, indicating weak to moderate correlations across the variables.

The strongest correlation within the sample is that between the Human Development Index and the percentage of internet users. It corresponds to 0.74. This relation is quite strong, though it does not exceed the critical threshold.

The relationships between financial inclusion and the Human Development Index, as well as between financial inclusion and the percentage of Internet users, were positive, significant, and of moderate strength, with correlation coefficients of 0.58 and 0.63, respectively. This indicates that improvements in these two indicators contribute to the enhancement of financial inclusion in Gulf countries.

The dependency ratio variable has a very weak, insignificant correlation coefficient of 0.03, indicating that it does not cause multicollinearity.

Hence, these results indicate that the possibility of multicollinearity problems among model variables is low, and their inclusion in conventional analysis would not compromise the precision of parameter estimates.

**Table 3 :correlation matrix**

Variable	IFI	PD	HDI	INTER
IFI	1			
PD	0.032 -(0.773)	1		
HDI	0.589	-0.366 (0.000)	1	
INTER	(0.000)	-0.360 (0.000)	0.740 (0.000)	1

Source: Calculated by the author

### 2.3.4 Variance Inflation Factor Test

The Variance Inflation Factor (VIF) test was performed to ensure there was no high multicollinearity among the independent variables describing the model of financial inclusion. Table 4 shows that all values for this factor range from 2.33 to 1.18, with an average of 1.95. All these values are very low compared to the critical threshold of 10, indicating that the respective variables fall within the statistically acceptable range and that the model is free of severe multicollinearity that might affect the regression estimates and their significance.

**Table 4: Variance Inflation Factor Test**

Variable	VIF	1/VIF
HDI	2.34	0.42
INTER	2.33	0.42
PD	1.18	0.84
Mean VIF	1.95	

Source: Calculated by the author

### 2.3.5 Cross-Sectional Dependence Tests (CSD)

Table 5 presents the results of the Cross-Section Dependence Test, which is conducted to determine whether the random errors are correlated across the sample countries. Three statistics are used: Breusch-Pagan LM, Pesaran Scaled LM, and Pesaran CD.

The test results provide probability values for all three statistics, indicating that they are significant at the 5% level. Therefore, the null hypothesis of no cross-sectional dependence among countries is rejected, and the alternative hypothesis, confirming the presence of cross-sectional dependence in the random errors of the sample countries, is accepted.

Due to the economic and financial integration among the GCC countries, this outcome is anticipated.

**Table 5: Variance Inflation Factor Test**

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	75.49	15	0.000
Pesaran scaled LM	11.04		0.000
Pesaran CD	4.206		0.000

Source: Calculated by the author

### 2.3.6 Unit Root Test

As can be seen from the above, the presence of cross-sectional dependence among the sample countries calls for the application of second-generation panel unit root tests. Table (6) reports both the CIPS and CADF tests results according to Sallam (2025), developed by Pesaran (2007).

**Table 6: Result of Unit Root Test**

Test	Variable	Level		First difference	
		constant	constant - trend	constant	constant - trend
CIPS	IFI	constant	constant - trend	constant	constant - trend
	INTER	-2.017	-3.146**	-3.07***	-2.294
	HDI	-4.233***	-4.517***	-3.613***	-3.76***
	PD	-1.501	-2.095	-3.051***	-3.357***
CADF	IFI	-0.691	-2.419	-2.234*	-1.812
	INTER	(-2.616)**	(-2.929)*	(-2.798)***	(-3.797)***
	HDI	(-2.78)***	(-3.178)**	(-2.997)***	(-3.293)**

	PD	-2.104	-1.737	-2.08	(-3.01) **
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Source: Calculated by the author; (\*), (\*\*), (\*\*\*) indicate significance levels of (1%), (5%), and (10%), respectively.

The findings presented in Table 6 indicate that the Financial Inclusion Index series, the Dependency Ratio, and the percentage of Internet users are stationary at their original levels. In contrast, the Human Development variable achieves stationarity only in first differences.

Therefore, all the variables in the model are integrated of order zero I (0) or order one I(1), hence meeting the precondition necessary to carry out cointegration analysis among the study variables.

### 2.3.7 Cointegration Test( Westerlund Test)

The Westerlund (2007) cointegration test is one of the most important cointegration tests that accounts for cross-sectional dependence among the sample countries, making it more suitable for application to sample data.

The test results, shown in Table 7, indicate a long-run relationship among the model's variables, explaining the determinants of financial inclusion in the GCC countries. The Gt statistic is significant at the 5% level, which calls for rejecting the null hypothesis that there is no cointegration among the variables across cross-sectional units.

This means the alternative hypothesis, which asserts the existence of a cointegrated relationship among the cross-sectional units, is accepted. The Pt statistic is also significant at the 10% level, which again calls for rejecting the null hypothesis of no cointegration across the panel and accepting the alternative hypothesis of a cointegrated relationship across the entire panel.

**Table 7: Westerlund cointegration test results**

Statistic	Value	P-value
Gt	-21.411	0.000
Ga	-1.158	0.996
Pt	-5.53	0.039
Pa	-2.111	0.799

Source: Calculated by the author

### 2.3.8 Hausmann test

The ARDL model is considered the optimal model for estimating the sample data. To select the most appropriate estimation method, namely PMG, MG, and DFE, the data are estimated using all three methods. Afterward, the Hausman test is applied to determine the best estimation method.

Table 8 shows the results of the Hausman test. The results show that the P-value of the test is insignificant in both cases: PMG vs. MG and PMG vs. DFE. This calls for accepting the null hypothesis and finally adopting the PMG estimators.

**Table 8: Hausmann test results**

Method	Chi2	P-Value
Mean Group	3.234768	0.356825
Dynamic Fixed Effects	2.629791	0.452291

Source: Calculated by the author

### 2.3.9 Results of estimating the financial inclusion determinants model

The estimation results of the financial inclusion determinants model for GCC countries are presented in Table 9, using the ARDL model with the PMG method.

The long-run relationship estimates suggest that the fraction of internet users and the financial inclusion rate are positively related at a high level of significance. This implies that higher internet penetration in GCC countries is associated with greater financial inclusion, as more digital finance channels become available. However, this effect is somewhat limited, as the variable's coefficient is 0.0044. This might be explained by the fact that internet services in GCC countries have already been adopted early and widely, with most countries in the region already reaching high levels of internet penetration. Thus, this variable has low within-sample variation, which reduces its explanatory power. In other words, the digital transformation process in GCC countries has almost reached saturation, beyond which incremental increases in internet usage do not visibly alter the level of financial inclusion.

For the Human Development Index variable, the findings also show a significant positive relationship with the level of financial inclusion in GCC nations. For every 1% increase in human development levels, the financial inclusion rate rises by 2.9%. Increased access to education and healthcare also raises income levels, enabling better financial literacy and greater use of financial products, a result supported by most of the prevailing literature.

The dependency ratio variable yields results that are contradictory to the conventional literature but expected, given the nature of Gulf economies. Its estimated coefficient value is 0.05, positive, and statistically significant. This can be rationalized by high income levels in the Gulf economies and by supportive policies for dependent sections of the population. High household incomes mitigate the adverse effects of dependency, as wealthy families can support more dependents without adverse consequences for system use. Moreover, breadwinners use formal channels for remitting to dependents, making the effect of dependency on financial inclusion weak or even positive. Secondly, Gulf regimes have extensive social welfare policies, including social security, subsidies, and housing support, which are distributed through banking channels, thereby integrating households with high demographic burdens into the financial system. Regarding the short-term relationship, the error correction coefficient (ECC) is negative and statistically significant, indicating that 32.7% of short-run deviations are corrected in the subsequent year. This implies that it takes approximately 3 years for the GCC economies to return to equilibrium after a shock to financial inclusion or any of its determinants.

**Table 9 Results of estimation using PMG**

Term	Variable	P-Value
Long run	HDI	(2.904) *
	PD	(0.053)*
	INTER	(0.004) **
Short run	COINTTEQ	(-0.32) **

Source: Calculated by the author; (\*), (\*\*), (\*\*\*) indicate significance levels of (1%), (5%), and (10%), respectively.

To confirm the validity of the results obtained from the PMG model, the study model has also been estimated using the FMOLS and DOLS methods. These estimates are presented in

Table 10 and are consistent with the results obtained using the PMG method.

**Table 10 DOLS - FMOLS Estimation Results**

Variable	DOLS	FMOLS
HDI	(2.979) **	(2.976) *
PD	(0.024) **	(0.023) *
INTER	(0.006) **	(0.006) *

Source: Calculated by the author; (\*), (\*\*), (\*\*\*) indicate significance levels of (1%), (5%), and (10%), respectively.

### 3. Conclusions and Recommendations

The present study concludes with a set of conclusions and recommendations following an in-depth analysis of the level of financial inclusion, as measured by the Financial Inclusion Index for GCC countries.

#### 4.1 Conclusions

The study's findings reveal significant improvements in financial inclusion levels for GCC countries between 2010 and 2023. Each of these countries has moved from medium to high levels on the Financial Inclusion Index. This is due to the efficiency of national policies and reforms implemented by the GCC states within the framework of their strategic vision.

The results confirm a positive long-run causal relationship between the Human Development Index and financial inclusion. A 1% increase in the Human Development Index is associated with a 2.9% rise in financial inclusion. This implies that investment in human capital through education, health, and increased income plays a vital role.

The findings also highlight the significant role of digital infrastructure in financial inclusion, with internet penetration a positive, statistically significant determinant. This supports the strategic importance of financial technology and digital financial services in expanding access to financial services and reducing transaction costs.

The most remarkable finding is indeed the positive relationship between the dependency ratio and financial inclusion, a result that stands in contrast to conventional literature. This may, however, be explained by the high income levels and comprehensive social welfare systems in the GCC, where formal channels for supporting dependents help integrate households with a high dependency burden into the financial system.

Finally, the econometric analysis confirms the existence of a stable long-term cointegrating relationship between the series under scrutiny, indicating that the system can correct approximately 32.7% of the short-run deviations annually. This implies a return to equilibrium in approximately three years following any shock.

#### 4.2 Recommendations

This study would, therefore, propose some measures for increasing financial inclusion in the GCC countries:

- Invest more in human development through enhanced education and health policies, integrating financial literacy programs into school curricula, and implementing community awareness programs, especially for disadvantaged sections.

- Accelerate digitization in the financial sector by building digital infrastructure, innovating safe and affordable digital financial products, and creating an enabling regulatory environment that fosters innovation while protecting consumers.
- Design and develop financial products tailored to different segments of the population, utilizing social welfare distribution channels to enhance financial inclusion among beneficiary families.
- Adopt an integrated policy-making approach linking financial inclusion strategies to policies for human development and digital transformation. It also proposes establishing a regional observatory for monitoring financial inclusion data. Enhancing regional cooperation by providing a platform for knowledge and experience sharing among GCC countries in the field of financial inclusion can also help accelerate the pace and ultimately achieve integration in regional efforts.

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