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## Abstract

This paper reveals a positive association between financial inclusion and the quality of the legal system within a sample of 27 industrialized nations spanning the years 2004 to 2020. The research employs the metric of bank branches and ATMs per 100,000 individuals as indicators of financial inclusion, alongside many significant factors pertaining to the quality of the legal system. The results indicate that there is a positive correlation between an increase in one variable and an improvement in the other. There exists a positive correlation between the expansion of bank branches and the facilitation of procedures linked to construction permits and the enforcement of judgments. Conversely, there exists a positive correlation between the proliferation of automated teller machines (ATMs) and the facilitation of credit acquisition, contract enforcement, judgment enforcement, and insolvency resolution. The study asserts that there exists a mutually beneficial relationship between financial inclusion and the quality of the judicial system inside an economy.

**Keywords:** Financial Inclusion, Correlation, Legal System, ATM, Bank Branches

## 1. Introduction

Financial inclusion is the encompassing term used to describe the systematic effort of facilitating affordable access to financial services and products for persons and communities who are currently marginalized and excluded from the conventional financial system. Certain individuals and localities may encounter limited accessibility to conventional banking services, encompassing savings accounts, loans, credit, insurance, and investment prospects. The objective of financial inclusion is to bridge this disparity by facilitating the availability of financial services.

Financial inclusion has emerged as a key focus of development policy in numerous nations worldwide, as evidenced by the works of Chibba (2009), Sarma and Pais (2011), and Ozili (2020). Several studies have shown evidence suggesting a favorable correlation between financial inclusion and various socio-economic outcomes. For instance, Chibba (2009) observed a link between financial inclusion and poverty reduction, while Alleb et al. (2014) noted associations with both development and financial access. Additionally, Chibba (2009) also found indications of a relationship between financial inclusion and income equality.

The establishment of a well delineated legal framework is imperative in fostering economic expansion and advancement. Legal systems serve as a structural framework comprising a set of rules and regulations that dictate and regulate the conduct of individuals, commercial entities, and governmental bodies. This framework facilitates the advancement of justice, accountability, and openness.

A proficient legal system has the capacity to afford individuals with safeguards against exploitation and mistreatment perpetrated by individuals in positions of authority and influence, such as government officials and huge corporations. The soundness of the legal system serves as a safeguard for those of lower socioeconomic status, shielding them from unjust transactions and exploitation perpetrated by powerful individuals and corporations (Pearson, 1970; Jiong, 2017; Boone, 2019). The safeguarding of vulnerable populations, such as impoverished and marginalized communities, is of utmost significance as it mitigates the potential for unjust treatment.

Furthermore, the establishment of a clearly delineated legal framework serves the purpose of imposing responsibility upon public officials for their conduct, so fostering an environment where they are compelled to behave in the utmost interest of the constituents they represent. The implementation of this measure has the potential to mitigate corruption and foster effective governance, both of which are crucial for fostering economic progress and advancement. A well-established legal system is of utmost importance in facilitating economic growth and development, safeguarding individuals against exploitation and mistreatment, and fostering equity, responsibility, and openness in the marketplace.

The level of effectiveness and efficiency of a nation's legal system significantly influences the advancement of financial inclusion. An effective legal system creates a conducive atmosphere for financial institutions to function. Additionally, it has the potential to offer legal safeguards to both financial service providers and their clientele. Financial inclusion has the potential to exert a beneficial influence on the efficacy and integrity of a nation's legal framework through many mechanisms. Furthermore, the provision of financial inclusion can afford increased avenues for small enterprises and individuals with entrepreneurial aspirations to obtain loans and various financial amenities. This, in turn, has the potential to foster entrepreneurship and stimulate economic expansion. This phenomenon has the potential to generate increased demand for legal services and foster the growth of legal organizations capable of facilitating business transactions and ensuring contract enforcement.

Ultimately, the achievement of financial inclusion has the potential to foster enhanced financial literacy and education, so facilitating heightened cognizance of legal entitlements and obligations, bolstering comprehension of the legal framework, and promoting increased involvement with legal establishments. In general, the incorporation of financial inclusion has the potential to foster a legal system that is more inclusive and equitable, hence facilitating economic growth and development.

The establishment of a robust legal framework has the potential to foster an environment conducive to financial inclusion through the mitigation of transaction costs, safeguarding of property rights, enforcement of contracts, and provision of legal safeguards for lenders and borrowers. Conversely, an ineffective legal framework can impede financial inclusion by presenting obstacles for financial service providers in conducting their operations and providing their services. This, in turn, restricts individuals' capacity to avail and utilize financial services, while also diminishing overall trust in the financial system.

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This phenomenon has the potential to engender a self-perpetuating loop characterized by limited financial inclusivity, diminished economic expansion, and compromised quality of the judicial system.

The significance of financial inclusion and the quality of the legal system cannot be overstated in relation to the economic advancement of a nation. The examination of the relationship between these two variables can be approached through multiple methodologies, contingent upon the particular inquiries of the study and the accessibility of relevant data. One potential methodology is investigating the correlation between financial inclusion and the quality of the legal system on a national scale, utilizing data from multiple reputable sources such as the World Bank, International Monetary Fund, and World Economic Forum. The measurement of financial inclusion can be conducted by the examination of several variables, including but not limited to the proportion of people possessing a bank account, the accessibility of credit facilities, and the utilization of digital financial services. The assessment of the quality of a legal system can be conducted through the examination of various indicators, including but not limited to the rule of law, property rights, and contract enforcement. An alternative methodology involves the implementation of case studies focusing on individual nations, examining the extent to which enhancements in financial inclusion and the quality of legal systems have contributed to their respective economic advancements. This methodology may encompass conducting interviews with policymakers, business executives, and other pertinent stakeholders, alongside the examination of pertinent documents and data.

The concept of financial inclusion encompasses a variety of favorable effects on both the economy and society. These effects include the mitigation of poverty, the enhancement of financial stability, the expansion of credit and other financial services accessibility, as well as the advancement of gender equality (Li, 2018; Sarma and Pais, 2011; Shah & Ali, 2022; Geng and He, 2021; Manji, 2010; Ghosh and Vinod, 2017; Hanning & Jansen, 2010). Research has indicated that enhanced financial inclusion has the potential to result in heightened financial development and accessibility, hence playing a role in diminishing poverty levels and fostering economic advancement. Individuals and enterprises that possess the means to avail themselves of financial services, such as savings accounts, credit facilities, and insurance, are more adept at mitigating financial risks and capitalizing on economic prospects. Consequently, this enhances their overall well-being and fosters a surge in economic activity. Furthermore, the promotion of financial inclusion has the potential to advance gender equality through enhanced accessibility to financial services for women. This increased access can serve as a catalyst for empowering women and fostering their active engagement in economic activities. In numerous nations, governments place significant emphasis on the promotion of financial inclusion, particularly in developing economies where individuals may face restricted access to financial services.

The economic growth and development of a nation are significantly influenced by the caliber of its legal and judicial institutions. According to Khanam (2021), the task of reducing poverty becomes challenging in situations where the rule of law is absent. In their recent study, Tebaldi and Mohan (2021) expounded upon the favorable correlation that exists between the rule of law and reduced levels of poverty. According to Anderson (2003), the legal system offers individuals protection from influential entities and ensures accountability of public officials. These institutions are of paramount importance in establishing a favorable investment climate, fostering economic vitality, and safeguarding the rights of both persons and enterprises. In their study, Demircuc-Kunt et al. (2013) conducted an analysis on the correlation between financial inclusion and legal discrimination against women in developing nations. The findings revealed that in countries where women encounter legal barriers in terms of employment opportunities, household leadership, residential choices, and inheritance rights, they exhibit lower probabilities of possessing a bank account, engaging in savings, or accessing loans in comparison to their male counterparts. This case serves as a compelling illustration of the adverse consequences that can arise from legal discrimination, specifically in relation to financial inclusion, with a particular focus on women residing in developing nations.

Effective legal and judicial institutions play a crucial role in upholding the enforcement of contracts, safeguarding property rights, and facilitating the equitable and unbiased resolution of disputes. The promotion of trust and confidence in the market is crucial for fostering economic growth and development. In addition, the presence of the rule of law and the quality of the legal system are significant determinants in the alleviation of poverty. Individuals experiencing poverty frequently have heightened susceptibility to exploitation and mistreatment, hence encountering challenges in their efforts to alleviate their impoverished circumstances in the absence of sufficient legal safeguards. Robust legal and judicial institutions possess the capacity to safeguard individuals of lower socioeconomic status against unjust treatment, facilitate their attainment of justice, and contribute to the mitigation of social inequality.

The correlation between financial inclusion and the quality of the legal system is intricate and multifaceted. One perspective suggests that an effective legal system can create a consistent and foreseeable framework for the functioning of financial institutions. This, in turn, can foster enhanced financial inclusion by expanding credit accessibility, diminishing transaction expenses, and bolstering investor trust. A robust legal framework can additionally offer enhanced safeguards for consumers and investors, thereby fostering more confidence in the financial system and promoting heightened engagement. Conversely, the phenomenon of financial inclusion can engender enhancements within the legal system through generating a need for legal services among historically marginalized people. Countries that place a high emphasis on both financial inclusion and legal system reform are expected to observe enhanced prospects for long-term economic growth and development.

In this study, many proxies were utilized to investigate the relationship between financial inclusion and the quality of the judicial system, as substantiated by the work of Ozili (2021). This study employs financial access indicators as proxies for financial inclusion, specifically the number of ATMs per 100,000 adults and the number of bank branches per 100,000 adults. Additionally, the rule of law index is utilized as a proxy for the quality of the legal system. Other indicators of legal system quality, such as the Strength of Insolvency Framework Index (ranging from 0 to 16) for resolving insolvency, the time taken to resolve insolvency (in years), the Strength of Legal Rights Index (ranging from 0 to 10) for obtaining credit (according to the DB05-14 methodology), the number of procedures involved in dealing with construction permits, the enforcement of judgment (in days) for enforcing contracts, and the time taken to enforce contracts (in days), are also considered. Data for all the variables is obtained from the World Bank's Doing Business Indicator and Global Financial Development Indicators for a selected group of 27 developed nations, based on data availability.

The study suggests several policy implications, one of which is the need of prioritizing initiatives aimed at enhancing the quality of the legal system. Specifically, policymakers should focus on minimizing discriminatory practices and fostering greater equality for historically underrepresented groups, including women and marginalized communities. This may encompass endeavors to enact legal and regulatory reforms that could potentially remove barriers hindering the access of certain groups to financial services and resources. Furthermore, endeavors aimed at fostering enhanced financial inclusion, such as the expansion of financial service accessibility and the enhancement of financial literacy, can likewise contribute to the advancement of economic growth and development. These policies have the potential to enhance resource allocation for individuals and enterprises, bolster productivity levels, and foster increased societal equality.

## 2. Literature Review

La Porta et al. (1997) shown that in nations whose legal systems effectively uphold private property rights, endorse private contractual agreements, and safeguard the legal entitlements of investors, individuals who save money exhibit a greater inclination to provide financial backing to enterprises, so fostering the growth and prosperity of financial markets. In their study, Bottazzi et al (2009) conducted an analysis which revealed that investors demonstrate a willingness to provide support for the expansion of enterprises, but only in the presence of robust legal safeguards for investor protection.

The study conducted by Lu and Yao (2009) examined the influence of legal advancements on the composition of China's banking industry. The researchers discovered that the implementation of an improved legal framework in China resulted in a notable rise in the proportion of bank credit allocated to private entities, suggesting an increased likelihood for private enterprises to obtain bank financing. Moreover, it was seen that the presence of legislative advancements resulted in heightened bank rivalry, as it facilitated the establishment of additional private banks and the growth of pre-existing private banks. This study emphasizes the significance of the quality of the legal system in facilitating financial inclusion and enhancing access to credit for private enterprises, hence fostering economic development.

According to Claessens and Laeven (2003), the presence of a more robust legal system can result in improved resource allocation by enterprises, thereby fostering accelerated economic growth. The authors of the study place particular emphasis on the examination of property rights protection and its impact. Their findings indicate that enterprises operating in nations with stronger property rights provisions exhibit higher rates of growth and enhanced productivity. The rationale behind the legal safeguarding of property rights is in its ability to mitigate the likelihood of expropriation and incentivize firms to allocate their investments towards assets that yield greater financial gains. The authors also observe that the establishment of secure property rights is linked to decreased levels of corruption, hence fostering economic growth through the reduction of transaction costs and the enhancement of investor trust.

According to the findings of Chinn and Ito (2006), it is substantiated that the process of financial liberalization has the potential to foster the growth and advancement of stock markets. However, this positive outcome is contingent upon the existence of a specific threshold of legal development. The researchers specifically observe a positive correlation between financial liberalization and equity market capitalization, but only in countries that possess a well-established legal system. This implies that legal institutions play a crucial role in facilitating financial development. According to Posner (1998), the economic progress and prosperity of a nation are significantly influenced by the robustness of its legal framework, with a special emphasis on safeguarding property and contract rights. According to the author's perspective, an effectively operating legal system plays a crucial role in guaranteeing that both individuals and businesses can participate in economic endeavors with a sense of assurance, devoid of concerns regarding confiscation of assets or violation of contractual agreements. Consequently, this phenomenon gives rise to heightened levels of investment, innovation, and expansion, finally culminating in the advancement of economic development.

According to Davis and Trebilcock (2008), the presence of legal systems is crucial in fostering both economic and social growth within developing cultures. The argument put forth is that a well-functioning legal system is crucial in order to guarantee that economic activity is carried out in accordance with legal regulations, and to establish a structure for resolving any conflicts that may develop as a result of these activities. Moreover, proponents contend that the utilization of legislation can exert a significant influence in advancing social justice and mitigating inequality, notably within domains including property law, employment law, and consumer protection law. In general, their research highlights the significance of legal reform in facilitating development and emphasizes the necessity for policymakers to give precedence to legal changes within comprehensive development programs. According to the findings of Ardic et al (2011), there exists a substantial positive correlation between the level of financial inclusion and the extent of accessibility to bank accounts and bank branches per adult. This underscores the significance of enhancing the accessibility of banking services and extending their reach to marginalized areas in order to attain enhanced financial inclusivity.

According to the research conducted by Raza et al (2019), it was shown that the expansion of bank branches can potentially contribute to favorable outcomes in terms of economic development. However, the proliferation of automated teller machines (ATMs) may have adverse effects on the same. This phenomenon may be attributed to the potential consequence of an augmented ATM count, wherein a heightened focus on cash-based transactions may impede the acceptance and utilization of increasingly sophisticated financial technology and services. According to Ozili (2018), there is evidence to suggest that the promotion of digital financial inclusion in developing countries can have positive effects on household welfare. This is achieved through a range of mechanisms, including the reduction of transaction costs, enhanced access to credit, and the enhancement of financial literacy. According to Gabor and Brooks (2017), the promotion of digital financial inclusion has the potential to enhance financial stability and expand the availability of financial services to marginalized people.

According to the study conducted by Li (2018), it was determined that the inclusion of financial services has the potential to alleviate poverty by facilitating greater availability of credit, insurance, and savings options. In their study, Sarma and Pais (2011) shown that the participation of individuals and businesses in the financial system can have positive effects on financial development and stability. This is achieved through the enhancement of financial intermediation efficiency and the mitigation of systemic risks. In a recent study conducted by Geng and He (2021), it was determined that the integration of financial services,

also referred to as financial inclusion, has the potential to bolster economic growth while concurrently mitigating income disparity. According to Hannig and Jansen (2010), the enhancement of financial inclusion has the potential to enhance financial stability through the mitigation of the financial system's susceptibility to external shocks.

The aforementioned research indicate that the quality of the legal system is a significant factor in facilitating financial development and fostering economic progress. The authors underline the significance of legal safeguards pertaining to property rights, contractual agreements, and the rights of investors, as these factors contribute to a heightened propensity among savers to provide financial resources to enterprises, hence fostering the expansion of financial markets. Additionally, it is suggested that the implementation of improved legal systems could potentially result in more efficient resource allocation and expedited firm growth. The results of these research provide evidence in favor of the notion that there exists a symbiotic relationship between financial inclusion and the quality of the legal system. Consequently, endeavors aimed at fostering financial inclusion should be supported with initiatives to enhance the legal system. Notwithstanding the data put out in these research, the scholarly literature has yet to explore the correlation between financial inclusion and the quality of the legal system. This work addresses a significant research void.

### 3. Data and Methodology

#### 3.1. Data and Variables

In the context of examining the correlation between financial inclusion and the quality of the legal system, it is deemed suitable to employ the Doing Business Indicators and Global Financial Development Indicators. The chosen time frame of 2004 to 2020 is deemed appropriate for the examination of trends pertaining to financial inclusion and the quality of the legal system. The study utilizes two primary financial inclusion variables, which are recognized as indicators of financial access. These variables include the number of ATMs per 100,000 individuals and the number of bank branches per 100,000 adults. The utilization of these two variables has been extensively employed as indicators of financial access and financial inclusion in several scholarly works, including Neaime and Gaysset (2018), Emara and El Said (2021), Ozili (2021), and Shah and Ali (2023). The indicators used to assess the quality of the legal system include the following: the Strength of Insolvency Framework Index (ranging from 0 to 16) and Time taken to resolve insolvency cases; the Strength of Legal Rights Index (ranging from 0 to 10) based on the DB05-14 methodology, which measures the ease of obtaining credit; the number of procedures involved in dealing with construction permits; the enforcement of judgments in terms of the number of days it takes; and the time required to enforce contracts.

#### 3.2. Methodology

The Pearson correlation test is utilized to assess the relationship between financial inclusion and the quality of the legal system. Notable studies that have utilized the Pearson correlation test statistic in this context include King and Levine (1993), Benesty et al. (2009), Gujarati et al. (2012), Wang et al. (2018), Paraschiv (2017), and Xu et al. (2020).

### 4. Statistical Analysis

#### 4.1. Mean Values Description

The mean values of the entire sample are discussed in table 1. in which the Rule of law shows the lowest mean value, while the ect variable demonstrates the highest mean value.

**Table 1: Mean Values Description**

	Mean	Standard Error	95% Confidence. Interval
ngc	6.111111	.2545021	5.603648 6.618574
ncm	11.95833	.4644808	11.03219 12.88448
natm	207.7917	14.26359	179.3509 236.2325
nbb	221.8056	14.21664	193.4584 250.1527
ect	601.9028	31.75269	538.5897 665.2158
ej	126.4861	8.011826	110.511 142.4612
ris	11.96528	.1629054	11.64045 12.2901
ri	1.681944	.1059521	1.470682 1.893207
legal	1.379358	.652924	1.249169 1.509548

#### 4.2. Correlation Analysis

The comprehensive sample survey is provided in detail in Table 2. Which reveals a positive correlation between the variable "nbb" and the variables "ect" and "ej". Furthermore, both "ect" and "ej" exhibit statistical significance, indicating that countries with more favorable conditions for dealing with construction permits and enforcing judgments tend to have a higher number of bank branches. The measure nbb has a negative correlation with ncm, ngc, ris, ri, and legal variables. Among these variables, ngc is the only statistically significant variable, indicating that an increase in the number of bank branches is connected with a decrease in credit opportunities. Conversely, there exists a positive correlation between the natm variable and the ngc, ect, ej, and ri variables, all of which demonstrate statistical significance. The variable "natm" exhibits a negative correlation with the variables "ncm," "ris," and "legal," all of which demonstrate statistical significance. The statement suggests a correlation between the availability of automated teller machines (ATMs) and the ease of dealing with construction permits, effectiveness in resolving insolvency, and adherence to the rule of law in a given country.

### 5. Conclusion

This study utilizes the Pearson Correlation test to investigate the relationship between financial inclusion and the quality of the judicial system within a sample of 27 developed industrialized countries. The data utilized for this analysis has been sourced

from the World Bank Databases, encompassing the time span from 2004 to 2020, with data points recorded on an annual basis. This methodology enables a more detailed examination of the connection between financial inclusion and the quality of the legal system, facilitating the identification of any particular elements that may be influencing the observed link.

According to the findings of the comprehensive survey, it has been observed that the variable "nbb" exhibits a positive correlation with the variables "ect" and "ej". Furthermore, statistical analysis has confirmed the significance of these correlations, indicating that countries with a higher ease of dealing with construction permits and stronger enforcement of judgment tend to have a greater number of bank branches. In contrast, there exists a positive correlation between the natm variable and the ngc, ect, ej, and ri variables. Furthermore, it is worth noting that all of these variables exhibit statistical significance.

The significant relationship identified between financial inclusion and the quality of the judicial system holds significant implications for policymakers and practitioners. The proposition posits that the pursuit of enhanced financial inclusion and improved quality of the legal system should be undertaken in a mutually reinforcing manner to attain optimal development results. It is imperative for policy makers to acknowledge the significance of legal safeguards for individuals utilizing formal financial services. Consequently, they should strive to enhance the efficacy of current legal institutions, thereby guaranteeing sufficient safety for customers. This measure can aid in mitigating the potential for exploitation by formal financial service providers and guaranteeing that individuals using these services can avail themselves of the advantages of formal finance without apprehension of mistreatment.

It is imperative for financial authorities to guarantee the accessibility of formal financial services to individuals across all income brackets and geographical areas. Efforts should be made to eliminate obstacles to entry and establish a conducive atmosphere for the delivery of financial services. This may encompass several strategies, such as the facilitation of digital financial services, the augmentation of bank branch and ATM infrastructure, and the provision of financial literacy programs aimed at empowering individuals to make well-informed financial choices.

**Table 2: Pearson Correlation Analysis**

	nbb	natm	Ncm	ngc	ect	ej	ris	ri	legal
nbb	1.0000								
natm	0.1437	1.0000							
	0.0039								
ncm	-0.0001	-0.1637	1.0000						
	0.9982	0.0020							
ngc	-0.1338	0.1238	0.2970	1.0000					
	0.0320	0.0483	0.0000						
ect	0.3163	0.2739	-0.4376	-0.3372	1.0000				
	0.0000	0.0000	0.0000	0.0000					
ej	0.1994	0.3300	-0.5798	-0.2345	0.7615	1.0000			
	0.0053	0.0000	0.0000	0.0443	0.0000				
ris	-0.0149	-0.2131	-0.0087	0.2685	0.0063	0.1127	1.0000		
	0.7610	0.0000	0.8635	0.0000	0.8953	0.0881			
ri	-0.0042	0.1588	-0.4784	-0.0587	0.2795	0.3962	-0.0726	1.0000	
	0.9329	0.0015	0.0000	0.3467	0.0000	0.0000	0.1289		
legal	-0.0300	-0.1909	0.5823	0.4272	-0.5289	-0.6648	0.1773	-0.5638	1.0000
	0.5389	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	

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