The Role of Financial Inclusion to Enhance Social Progress in Developed and Developing Countries

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ARTICLE INFO	ABSTRACT
	This study examines the role of financial inclusion in enhancing the social progress of developed and developing economies. Social progress is a key indicator of a country's development. It captures a range of factors that shape the well-being of the economy. Therefore, financial inclusion promotes social progress through financial resources. This study uses a sample of 32 developed and 18 developing countries from 2000 to 2023. The econometric approach Panel Quantile Autoregressive Distributed Lag (PQARDL) model is used to investigate the short and long-term impact among the variables. The results of the study show that financial inclusion and strong institutions positively impact Social Progress (SP) in developed countries while industrialization, population growth and transportation has negative impact on it. On the contrary, in developing countries, financial inclusion, institutions, population growth, and industrialization have a positive impact on SP while transportation harms it. The study suggests that developing countries need to promote financial literacy, strengthen governance, support green industrialization, improve sustainable transport, and control high population growth. While, developed economies should focus on financial product diversification, policy reform in healthcare and education, promote sustainable practices, and managing demographic changes.

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1. Introduction

Social progress is a multidimensional phenomenon which consists of quality of life, equal access to resources, and entire human well-being. It has become an important goal for economies facing challenges such as income inequality, poverty, and sustainable development. These issues have flashed growing interest in sympathetic to the significant factors that initiate social progress (Kar, 2023). Societal well-being is crucial for a nation's political, social, and economic development. However, inadequate societal well-being remains a serious issue in both developed and developing countries. Specifically, the Social Progress Index (SPI) has three major dimensions: opportunities, which include the most innovative facets of social progress; basic human needs, which show important basic components but are not sufficient to get a good level of development; and foundation of well-being, which measure most complex elements of environment and progress (Annoni & Bolsi, 2020). Usually, economic growth has been measured through GDP. However, GDP is insufficient to apprehend the broader dimensions of an economy such as social and environmental prospects. SP offers a complete approach which integrates the non-economic dimensions that significantly impact people's lives and contribute to the overall development of society (Annoni & Bolsi, 2020; Peiró-Palomino, Picazo-Tadeo, & Rios, 2023). Financial Inclusion (FI) is a cornerstone for achieving social progress. It refers to the availability and accessibility of affordable financial services such as credit, savings, banking, and insurance. It plays an energetic role in the development of economic growth and improves living standards (Mahmood et al., 2022; Sarma & Pais, 2011). The financial services support individuals to invest

in small businesses, health, and education which not only improve the living standards but also increase the mobility and welfare of the economy. FI can help mitigate poverty, reduce economic shocks and improve income stability to make the economy socially progress (Huang et al., 2023). Despite this in recent years, nearly 1/3rd of all adults are still unregistered for a bank account. It shows a persistent gap in access to financial services, even in the past ten decades over 60 economies have executed FI policies.

Institutions also promote social progress by increasing the availability of resources and keeping information on the non-economic needs of society (Porter, Stern, & Green, 2014; Sen, 1999). Acemoglu and Robinson (2012) pointed out that institutions directly impact social progress by connecting the economic opportunities and challenges of individuals that influence the development of society. However, it enhances economic activity and strengthens the institutions to improve an economy's well-being. SP has become a risk due to environmental degradation, rising noise and air pollution which are getting worse over time. Urban traffic is responsible for 70% of pollutants from road traffic, which affects the environment. An unbalanced transportation growth directly impacts economic well-being, and incorrect incentives lead towards welfare losses (Maibach et al., 2008). In developing economies, investment and industrialization have improved labour productivity (Shakoor & Ahmed, 2023). Hysa and Mansi (2020) showed that a 7.5% increase in labour productivity is recorded in underdeveloped countries. The pathway to wealth, power, and a higher standard of living has proven to be industrialization. The industrial sector brings about both opportunities and challenges. Economic growth has been considered obstructed by the nation's low level of industrialization. However, several studies are available in literature which have analyzed have shown that in developing countries industrialization has not gained much attention as compared to developed economies. (see for example; (Irwin, 2021; Lewis, 2022).

This study makes a valuable contribution to achieving Sustainable Development Goals (SDGs) such as Good Health and Well-being (SDG 3) explicitly focusing on improving human well-being. This focus determines economic growth and raises societal progress (Kovalevsky et al., 2020). In this context, plays a significant role in achieving SDGs for reducing poverty (SDG 1), and lessening inequality (SDG 10) (Ahmad, Lensink, & Mueller, 2023). FI, institutions, transportation, population growth, and industrialization show that the combined effect of these factors on social progress has yet to be explored. The first objective of this study is to explore these factors impact on growth and sustainability by addressing their combined effect on the multidimensional nature of the social progress of an economy. It was partially neglected in the past. The second objective of this study is related to identifying the comparative analysis between developing and developed countries, as it often neglects the role of non-economic and socioeconomic structure. This study fills these gaps and offers a comparative viewpoint to form policies for sustainable development. The second section of this study highlights literature of similar studies, section three is the theoretical framework and research technique, and the research report and findings are presented in sections fourth and fifth illustrate the conclusion and policy implications drawn through this analysis.

2.   Literature Review

The main objective of the literature review is to identify a suitable review of many aspects of the current hypotheses. SP presents the whole picture of national welfare and it has three dimensions: basic needs, the foundation of well-being, and opportunities (Imperative, 2015). Therefore, FI has positively affected economic growth and resolved issues in rural areas (Eshun & Kočenda, 2025; Hasan, Abu Sayem, & Hossain, 2024). Kuznet measured economic growth as a success of a nation. But it cannot equate with national welfare, particularly used for economic performance as well as not for the overall performance of a country. "The welfare of a nation can, therefore, scarcely be inferred from the measurement of national income as defined above" (Kuznets, 1934)". *Rahman, Chowdhury and Sristi (2024)* pointed out that energy poverty is influenced by the FI which impacts the growth of an economy. Therefore, Fonseca and Matray (2024) investigated the expansion of banking as being associated with inequality problems in Brazil. Siddiki and Bala-Keffi (2024) also showed that promotion and modified FI policies have an insightful impact on the stages of development and reduce poverty. Fehder, Porter and Stern (2019) have found a positive association between institutions and SP particularly in some areas (Health and education). SP is raised across economies by the improvement in institution quality. A comprehensive approach is needed to address the current situations and challenges for

improving the well-being of society. However, institutions play a vital role in welfare policies and corporations (Fleurbaey et al., 2018).

Kadarisman, Gunawan and Ismiyati (2015) identified that transport played an essential role in accessibility and increasing economic growth but also presented a trade-off between them. Mačiulis, Vasiliauskas and Jakubauskas (2009) explored that transportation enhances growth and cohesion in society, yet it also includes environmental degradation and inequality in benefits distribution. Sustainable development is hindered by resource consumption, air pollution, and traffic crowding (Gudmundsson et al., 2016). In Jakarta, transportation policies improved social welfare for citizens but also raised traffic jams, pollution, and economic costs, which, in the end, decreased the economy's welfare (Kadarisman, Gunawan, & Ismiyati, 2015). On the other hand, various studies have shown that improvement in the infrastructure of transportation significantly increases the economic growth of an economy (Achour & Belloumi, 2016; Hong, Chu, & Wang, 2011; Ighodaro, 2010; Jiwattanakulpaisarn, Noland, & Graham, 2012; Pradhan & Bagchi, 2013). The expansion of transport infrastructure, such as streets, railways, roads, airports, and flights, led to rapid economic growth. However, some studies have identified advancements in transport infrastructure that harm economic well-being due to environmental deterioration (Yu et al., 2012).

Industrialization is described as the transformation of society, both socially and economically, from agricultural base to industrial base (O'sullivan & Sheffrin, 2007). Both developed and developing countries have explored that there is a positive impact of industrialization on economic well-being (Haraguchi, Cheng, & Smeets, 2017; Ndiaya & Lv, 2018; Szirmai & Verspagen, 2015). According to Mahmood, Alkhateeb and Furqan (2020), "rapid increases in industries raise the industrial sector's share and create employment opportunities". However, the population growth has both negative and positive effects. It is accountable for the reduction in sustainable development, which is verified by studies such as (Ghanem, 2018; Iqbal, Hassan, & Arshed, 2023; Kalim et al., 2024; Li, Yang, & Zeng, 2024; Mondal, 2019; Rehman et al., 2022; Xing et al., 2023). The Population density has a negative impact on resource depletion and an increase in social expenditures. The literature found a collective effect of financial inclusion, institutions, transportation, population growth, and industrialization on social progress. Furthermore, some studies have analyzed a comparative analysis of improvement in social progress between developing and developed countries and guide policy formulation to enhance economic well-being.

3.   Theoretical Framework

The relationship between SP and FI is based on the inclusive growth theory. When FI rises in an economy, it reduces the cost of intermediaries and the ability to advance loans to stimulate investment opportunities and create new jobs. Furthermore, FI provides better access to financial services, increases entrepreneurship and expands economic growth. These ways support inclusive growth by improving education, health care, income management, and eradicating poverty and it helps to achieve the goals of welfare and prosperity. The institutional theory supports the relationship between institution and SP. According to this theory, political framework, system, and social norms affect an economy's outcomes. Institutions regulate the social structure and shape policies and governance, determining the SP through improvement and availability in education, healthcare, justice, and economic welfare. Strong institutions promote social mobility, equality, and well-being in both developed and developing countries. For example, protecting rights and an effective legal system provide stable economic activity and social relationships (Ostrom, 2009). Several countries of the world have achieved social progress and have enhanced the development of society through improvement in the quality of institutions (Rodrik, Subramanian, & Trebbi, 2004).

4.   Research Methodology
4.1.   Data and Model Specification

This study uses the data of 18 developing and 32 developed countries for the period 2000-2023. The data has been collected from the World Development Indicators (WDI) and PCI (Productive Capacities Index) databases. The details of the data are presented in Table 1. This study constructs the SP index based on thirteen variables of three dimensions using Principal Component Analysis (PCA). The detail is provided in the Appendix. Another index is constructed by PCA called FI (For detail see Appendix 1).

Table 1: **Study Variables, Description, and Their Measurement**

Variables	Measurements	Sources
SPI	Index (0-1)	WDI, Our World Bank, IEA
FI	Index (0-10)	WDI
TR(log form)	Index (0-100)	PCI
POP	Annual %	WDI
INDS(log form)	Industry, value added (% of GDP)	WDI
INS (log form)	Index (0-100)	PCI

4.2. Model Specification

This study examines the impact of FI on SP in developing and developed countries. Explanatory variables consist of human capital, transport infrastructure, population density, and industrialization, which play vital roles in enhancing the social progress of a nation. The econometric model of the study is as under:

$$SPI_{it} = \alpha_0 + \beta_1 FI_{it} + \gamma_2 INS_{it} + \delta_3 TR_{it} + \vartheta_4 POP_{it} + \varphi INDS_{it} + \varepsilon_{it} \tag{1}$$

Where;
SPI = Social Progress Index
FI = Financial Inclusion
INS = Institutions
TR = Transportation
POP = Population growth
INDS = Industrialization

i & t = i= 1, 2, 3, …..N (Developing counries i=18, Developed countries i=32), t refers time period (t= 2000-2023).

4.3. Estimation Techniques

For analysis purpose, the following econometric techniques have been used for cross-sectional dependency, unit root test and long-run association among the variables through Panel Quantile ARDL for both developed and developing economies.

4.4. Panel Co-integration Test
4.4.1. Panel Quantile ARDL

This study uses Panel Quantile ARDL (PQARDL) developed by Cho et al., (2015) to investigate the relationship between variables. The PQARDL is the modified variant of the ARDL model with quantile regression (Koenker & Bassett Jr, 1978). The PQARDL has many benefits, such as it gives long-run and short-run effects of explanatory variables. It can also be used with small sample sizes. It is used when variables are in a mixed order of integration. Figures 1 and 2 show the correlation between the independent variables and dependent variable in developed and developing countries. The figures bring up the distribution of variables changes across different quantiles with dependent. Following Cho, Kim and Shin (2015) this study quantified the PQARDL (p,q) model.

$$Q_{SPI_{it}} = \beta(\tau) + \sum_{i=1}^{p} \alpha_i(\tau)SPI_{2t-i} + \sum_{i=0}^{q1} \gamma_i(\tau)FI_{t-i} + \sum_{i=0}^{q2} \delta_i(\tau)INDS_{t-i} + \sum_{i=0}^{q3} \vartheta_i(\tau)INS_{t-i}$$
$$+ \sum_{i=0}^{q4} \mu_i(\tau)TR_{t-i} + \sum_{i=0}^{q5} \rho_i(\tau)POP_{t-i} + \epsilon_t(\tau)$$

The short-run dynamics can be expressed as:

$$Q_{SPI_t} = \beta(\tau) + \sum_{i=1}^{q1-1} \partial_{SPI_i}(\tau)\Delta SPI_{t-1} + \sigma_{SPI}(\tau)SPI_t + \sum_{i=0}^{q2-1} \partial_{FI_i}(\tau)\Delta FI_{t-1} + \sigma_{FI}(\tau)FI_t$$
$$+ \sum_{i=0}^{q3-1} \partial_{INDS_i}(\tau)\Delta INDS_{t-1} + \sigma_{INDS}(\tau)INDS_t + \sum_{i=0}^{q4-1} \partial_{INS_i}(\tau)\Delta INS_{t-1} + \sigma_{INS}(\tau)INS_t$$
$$+ \sum_{i=0}^{q5-1} \partial_{TR_i}(\tau)\Delta TR_{t-1} + \sigma_{TR}(\tau)TR_t + \sum_{i=0}^{q6-1} \partial_{POP_i}(\tau)\Delta POP_{t-1} + \sigma_{POP}(\tau)POP_t + \epsilon_t(\tau)$$

## 5.   Results and Discussion

Table 2: Descriptive statistics

Developing Countries						
Statistic	**SPI$_{it}$**	**FI$_{it}$**	**INDS$_{it}$**	**INS$_{it}$**	**TR$_{it}$**	**POP$_{it}$**
Mean	0.5319	-0.4594	3.1707	3.628	3.0773	2.2690
Median (p50)	0.518	-0.6161	3.2027	3.6163	3.1955	2.4436
Standard Dev.	0.0961	0.5241	0.2800	0.2308	0.5406	0.6726
Skewness	0.2864	2.1088	-0.8030	-0.1218	-3.3184	-0.6868
Kurtosis	2.5588	9.1560	4.0958	2.7105	17.2876	2.6313
Observations	432	432	432	432	432	432
Developed Countries						
Mean	0.7849	0.6227	3.3605	4.0883	3.7048	1.084
Median (p50)	0.793	0.5674	3.282	4.1462	3.7475	0.8727
SD	0.0793	1.1034	0.4	0.234	0.3965	2.1627
Skewness	-0.4069	1.1613	0.2649	-0.4074	-1.4877	3.9629
Kurtosis	2.9633	6.3035	3.0167	2.3642	6.3971	28.8678
Observations	768	768	768	768	768	767

Table 2 shows the results of the descriptive statistics of both developed and developing countries. The above part of the table describes the outcomes of the developing countries. The highest means value was held by INS$_{it}$ (3.62) while the lowest was held by FI$_{it}$ (-0.45). Therefore, the standard deviation of the entire variables is less than 1 which shows that variability is low. In other words, entire countries hold almost the same characteristics. Besides, in developed countries mean values are higher than in developing countries as well as the standard deviation values are also higher than developing countries. The values of skewness and kurtosis show that the data deviate from normality. The value of skewness and kurtosis is symmetrically distributed with few outliers observed in developed countries as compared to developing countries.

Figure 1: Correlation Plot of Developed Countries
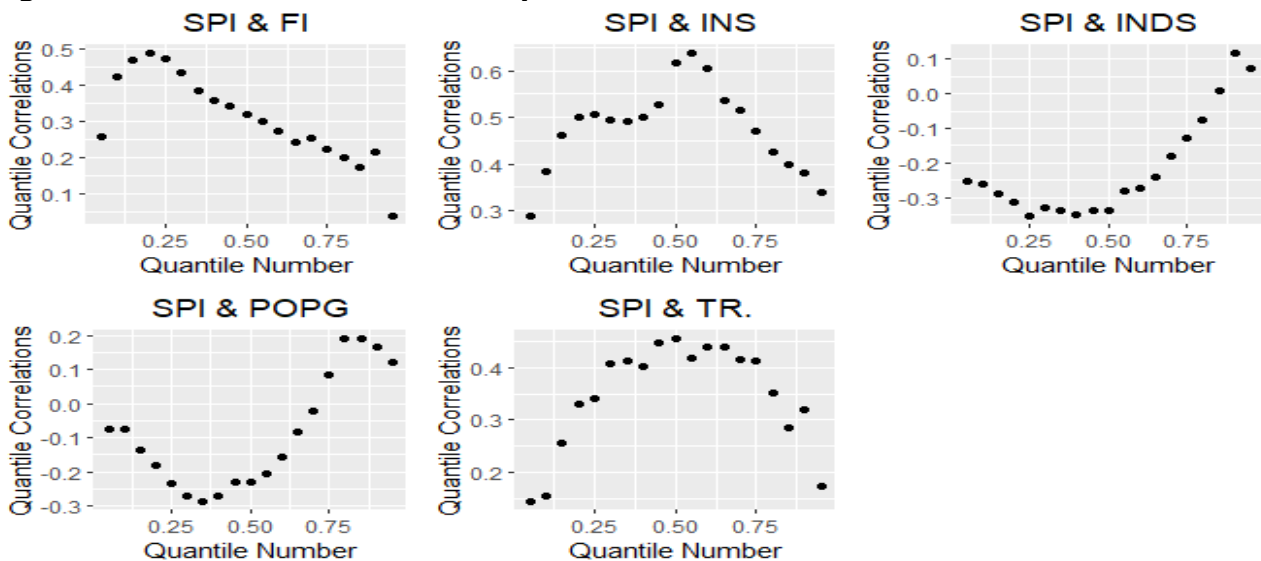
Figure 2: Correlation Plot of Developing Countries
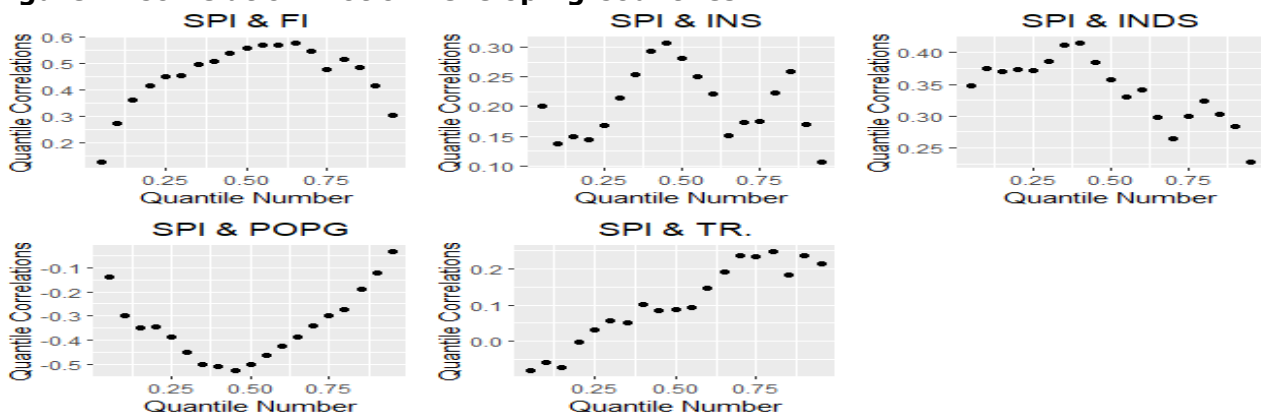
Table 3: Cross-Sectional Dependency (CSD) Test

Variables	Developing countries		Developed countries	
	CD-test	P-value	CD-test	P-value
SPI$_{it}$	57.55***	0.000	103.8***	0.000
FI$_{it}$	45.39***	0.000	47.27***	0.000
INDS$_{it}$	2.85***	0.004	43.44***	0.000
INS$_{it}$	1.44	0.150	12.56***	0.000
TR$_{it}$	23.34***	0.000	52.33***	0.000
POP$_{it}$	5.07***	0.000	19.33***	0.000

*,**,*** indicate significance level 1%, 10% and 5% respectively

The CSD test results are shown in Table 3. The results showed that dependency exists among the variables. The results indicate the significance of variables at a 5% level except for INS$_{it}$ in developing countries. Therefore, the presence of cross-dependency guides to apply 2nd generation panel unit root test for robustness.

Table 4: Cross-Sectional Augmented Im-Pesaran-Shin (CIPS)Unit Root Test

VARIABLES	Developing Countries		Developed countries	
	CIPS test statistics			
	Level	1st difference	Level	1st difference
SPI$_{it}$		-3.336***		-3.755***
FI$_{it}$		-3.824***		-2.752***
INDS$_{it}$		-4.048***		-3.235***
TR$_{it}$		-4.081***		-4.038***
INS$_{it}$	-2.454***		-2.340***	
POP$_{it}$		-3.143***	-2.455***	

*** indicates a 1% significance level. Source author's calculation

Table 4 indicates the results of the 2nd generation unit root test. It shows that all the variables are integrated in a mixed order for both developing and developed countries.

Table 5: Westerlund co-integration test

Statistic	Developing countries			Developed countries		
	Value	Z-value	P-value	Value	Z-value	P-value
Gt	-3.051***	-3.671	0.000	-2.749***	-2.768	0.003
Ga	-34.412***	-14.36	0.000	-40.39***	-24.23	0.000
Pt	-8.89	0.086	0.042	-9.136	3.279	1.000
Pa	-34.035***	-17.815	0.000	-34.953***	-24.622	0.000

*,**,*** indicate significance level 1%, 10% and 5% respectively

Table 5 shows the outcomes of the Westerlund co-integration test. The p-value of the tests confirmed that there is a long-run relationship among variables in both countries.

Table 6: Long Run Results of Panel Quantile ARDL

Developing countries
Quantile levels

variables	SPI (25 quantile)		SPI(50 quantile)		SPI(75 quantile)	
	Coefficient	Std. err	Coefficient	Std. err	Coefficient	Std. err
FI$_{it}$	0.0447***	0.0023	0.0543***	0.0029	0.0588***	0.0051
INDS$_{it}$	0.1034***	0.0043	0.0662***	0.0082	0.0317***	0.0032
INS$_{it}$	0.14713***	0.0149	0.1406***	0.0100	0.1348***	0.0054
TR$_{it}$	-0.0286***	0.0016	-0.0229***	0.0015	-0.0334***	0.0031
POP$_{it}$	0.0108***	0.0041	-0.0059	0.0050	-0.0175***	0.0024

Developed Countries

	SPI (25 quantile)		SPI(50 quantile)		SPI(75 quantile)	
	Coefficient	Std. err	Coefficient	Std. err	Coefficient	Std. err
FI$_{it}$	0.0285***	0.0022	0.0144***	0.0015	0.0152***	0.0006
INDS$_{it}$	-0.0303***	0.0080	-0.0897***	0.0076	-0.0883***	0.0086
INS$_{it}$	0.1487***	0.0100	0.1611***	0.0055	0.1298***	0.0060
TR$_{it}$	-0.0180***	0.0023	-0.0189***	0.0015	-0.0110***	0.0017
POP$_{it}$	-0.0026***	0.0004	-0.0013***	0.0001	-0.0025***	0.0004

*,**,*** indicate significance level 1%, 10% and 5% respectively

Table 6, describes the long-run results of the PQARDL. In developing countries, FI_{it} has a positive and significant relationship with SPI_{it} across all quantiles (25, 50, 75) with the increase in coefficient as a move towards higher quantiles. It shows that FI promotes economic growth and increases the well-being of an economy. The parallel studies have found the same results in developing countries such as Basnayake et al. (2024); Hasan, Abu Sayem and Hossain (2024). Industrialization also has a positive effect on SPI_{it} at all quantiles. Besides, $INDS_{it}$ has an indirect impact on the SPI_{it} in developing countries. Although industrialization has promoted social advancement in particular countries as well as its impact is less in nations that have already attained greater degrees of social progress (Haraguchi, Cheng, & Smeets, 2017). Institutions also have a strong positive and significant impact on SPI_{it} across all quantiles. In developing countries, robust institutions increase social progress. These results are similar to the Fehder, Porter and Stern (2019). Transportation infrastructure has a negative and significant impact across all quantiles. The effect of the 75th quantitles is more pronounced. Similarly, results were found by Pradhan and Bagchi (2013). They found that the development in transportation is directly association with environmental trade-offs. The population growth in developing countries is one of the significant issues and it has negative and insignificant associated with SPI_{it} in all quantiles. In developed economies, FI_{it} and INS_{it} have a positive and significant impact on SPI_{it} in all quantiles. However, industrialization, population growth and transportation have negative and significant impacts on social progress due to their long-term social and environmental cost. While $INDS_{it}$ in the initial stage increases economic growth and it leads towards environmental degradation and resource depletion, the parallel outcomes were found by Ali (2015). In developed economies, $INDS_{it}$ has a positive impact on prosperity and economic growth in the short run but it has adverse effects in the long run (Franck & Galor, 2017). Similarly, population growth stressed public services and transportation contribute to air pollution.

Table 7 Short run PQARDL Results

Developing countries
Quantile levels

variables	SPI (25 quantile)		SPI(50 quantile)		SPI(75 quantile)	
	Coefficient	Std. err	Coefficient	Std. err	Coefficient	Std. err
ΔFI_{it}	0.0004	0.0032	-0.0040	0.0032	0.0040	0.0039
$\Delta INDS_{it}$	-0.0047	0.0037	0.0084	0.0061	0.0198	0.0074
ΔINS_{it}	0.0108	0.0071	0.0024	0.0014	0.0009***	0.0017
ΔTR_{it}	0.0028	0.0016	0.0037**	0.0020	0.0057	0.0025
ΔPOP_{it}	0.0025	0.0024	-0.0040**	0.0032	0.0040**	0.0039
ECT_{t-1}	-0.0045	0.0052	-0.0121***	0.0044	-0.0222***	0.0054
Developed Countries						
ΔFI_{it}	0.0014***	0.0018	0.0029***	0.0013	0.0021	0.0017
$\Delta INDS_{it}$	0.0020	0.0033	0.0031	0.0024	0.0048	0.0032
ΔINS_{it}	0.0104	0.0087	0.0059	0.0062	0.0128	0.0083
ΔTR_{it}	0.0118***	0.0021	0.0014	0.0015	0.0016	0.0020
ΔPOP_{it}	0.0051***	0.00232	0.0030**	0.0016	0.0077	0.0221
ECT_{t-1}	-0.0128***	0.0038	-0.0149***	0.0027	-0.0167***	0.0036
*,**,*** indicate significance level 1%, 10% and 5% respectively						

Table 7 presents the short-run results of PQARDL. It can be observed that there is dynamic adjustment of different factors associated with SPI_{it} across various quantiles for both developed and developing economies. The ECT_{t-1} shows that the movement from short run towards the long-run equilibrium in developing countries. The coefficients of the 50th and 75th quantiles are negative and significant coefficients which describe a more considerable short-term adjustment of higher SPI_{it}. However, at the 25th quantile, the coefficient value ECT_{t-1} is insignificant (means short-run adjustment at the lower SPI_{it} level). FI_{it} has a minimum effect on SPI_{it} in all quantiles in the short term. All coefficients have small values which are not statistically significant. $INDS_{it}$ has also a positive impact at the higher quantile 75th and a negative effect at the lower 25th and 50th. The coefficients show that industrial development leads to decline in SPI_{it}. Besides, it has a positive impact at a higher level. Similar results were found by (Kyule & Wang, 2024), Haraguchi, Cheng and Smeets (2017); Ndiaya and Lv (2018) for the same period in developing and developed countries. INS_{it} has a positive and significant effect at the 75th quantile. It shows that improvement in institution services increases the level of SPI_{it}. The TR_{it} shows a positive and statistically significant coefficient at the 50th quantile, which shows improvement is effective at mid-level SPI values. POP_{it} (population growth) has a positive and significant impact at the higher level. It shows that population growth contributes to SPI_{it}. In developed countries, the value of ECT_{t-1} is negative and significant at all quantiles which indicates that short-term adjustment

towards long-run equilibrium is more potent in developed countries than in developing ones. A positive and significant association also exists between SPI_{it} and FI_{it} at the 50th quantile, which is significant at the 1% level.

6. Conclusion and Policy Recommendations

The present study investigated the relationship between SP and other factors such as FI, institutions, transportation, population growth, and industrialization. These variables have long-term and short-term effects on SP in developing and developed countries. The results show that FI and institutions significantly promote social progress in both developed and developing economies. Industrialization exhibits a dual effect: while it positively influences SP at higher quantiles in developing countries, it negatively affects SP in developed economies across all quantiles. Population growth harms SP, particularly in developed countries, where the strain on resources is more evident. Despite its role in fostering economic development, transportation infrastructure presents mixed results, with adverse effects in higher quantities due to environmental and social costs. The short-term analysis shows that financial inclusion's impact on SP is limited in developed and developing countries. However, institutional quality and industrialization exhibit more potent effects in higher quantities, indicating their potential role in driving social progress. The adjustment to long-term equilibrium is faster in developed countries than in developing ones. The results bring up the need for policymakers to adopt a multi-dimensional approach, integrating strategies for financial inclusion, institutional reform, sustainable industrialization, transportation regulation, and population management. In developing economies, targeted efforts should include promoting financial literacy, strengthening governance, supporting green industrialization, improving sustainable transport, and addressing population growth. Developed economies should focus on financial product diversification, policy reform in healthcare and education, incentivizing sustainable practices, and managing demographic changes. By addressing these interconnected factors, policymakers can drive social progress, reduce inequality, and promote sustainable development in alignment with Sustainable Development Goals (SDGs) across developed and developing nations.

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Appendix
Table 1: list of variables

Dimensions of SPI Basic Human Need List of variables	Foundation of Wellbeing	Opportunity
Prevalence of undernourishment (% of population) Access to electricity (% of population) Deaths that are from all causes attributed to unsafe water sources per 100,000 people, in both sexes aged age-standardized Access to clean fuels and technologies for cooking (% of population) Deaths from infectious diseases Maternal mortality ratio (modeled estimate, per 100,000 live births) child mortality rate 1 to 4	Mobile cellular subscriptions (per 100 people) Annual greenhouse gas emissions in CO2 equivalents Number of Internet users	Vulnerable employment, total (% of total employment) School enrollment, primary (% gross) GDP per capita, PPP (constant 2017 international $)
Variables used for FI index. Dimension of FI Accessibility List of variables	**Availability**	**Usage**
Automated teller machines (ATMs) (per 100,000 adults) Commercial bank branches (per 100,000 adults)	Domestic credit to the private sector (% of GDP	Borrowers from commercial banks (per 1,000 adults) Depositors with commercial banks (per 1,000 adults)