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RESEARCH PAPER

Government Effectiveness and Socio-Economic Equity: An Empirical Analysis of Sustainable Social Protection Systems in Developing Countries Using Two-Step System GMM Econometric Approach

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ABSTRACT

This paper aims to study the nexus between government effectiveness and socioeconomic equity, which leads to a sustainable social protection system. We have empirically investigated the nexus through a panel data set of 46 developing countries for a period of 20 years. Developing countries face socio-economic inequity due to ineffective government policies leads to the collapse of the social protection system. We have developed an index of sustainable protection systems using the Keyser Meyer Olkin Methodology used as a sampling adequacy. We found a positive association between government effectiveness and social protection systems in developing countries. However, a weak mechanism may cause the poor implementation of sustainable social protection needs utmost policy maneuvers in those countries. There is a need for capacity building of government institutions to improve their effectiveness. Action should be taken that promotes transparency, accountability, and good governance practices.

Introduction

Government effectiveness is a tool to achieve social equity, growth, and a social protection system(Androniceanu & Georgescu, 2023; Duho et al., 2020). The developing world faces a number of challenges where government effectiveness helps to deal with all these kinds. It is a long-term growth phenomenon. By following the growth model capital, labor, and productivity can be enhanced through government effectiveness(Barra et al., 2023).

Institutions and governments are human-made limitations that influence how people interact with one another and the incentives of economic actors (Muzaffar, et, al. 2023; Androniceanu et al., 2022). Higher economic growth is a result of good governance, which encourages more effective labor divisions, more profitable investments, and quicker social and economic policy execution. According to, the economic environment in which people acquire skills, businesses amass money, and production is produced is determined by institutions and governmental policies. While bad governments can cause public diversion in an economy through expropriation, confiscatory taxes, and poor rules and laws, good governments can promote economic growth by effectively providing social infrastructure that guards against diversion((Muzaffar, et, al. 2024; Garcia-Sanchez et al., 2013; Nzama et al., 2023).

Table 1
AN overview of Pakistan Social Protection

Category	Details
Population in Poverty	One-third of Pakistan's population (approximately 50 million individuals).
Most Vulnerable Groups	Women, children (out-of-school/working), disabled, and potentially the elderly.
Characteristics of the Poor	Mainly live in rural areas, are unskilled, work in the informal sector, lack basic human, physical, and productive assets, limited or no access to essential social services.
Employment and Earnings	Scarce employment opportunities, and decline in real earnings over the last decade.
Vulnerability of Households	56% of households classified as vulnerable.
Major Shocks Experienced	Nearly two-thirds of respondents experienced major shocks in three years before survey (2007).
Types of Shocks	60% individual-specific (health, sickness, disability); remaining covariate (droughts, economic shocks).
Impact of Shocks	Huge costs on the ultra-poor (54% of annual consumption) compared to non-poor (18%).
Coping Strategies	Poor: reducing consumption, increasing labor supply. Non-poor: asset-based strategies (sale of assets, dissaving).
Natural Disasters Impact	Poor households are particularly vulnerable to natural disasters such as earthquakes and droughts.
Social Protection System	Traditional programs include Bait-ul Maal and Zakat with limited coverage. Pension programs for civil servants and private sector workers.
Challenges in Social Protection Programs	Fragmentation and duplication, limited coverage (2-3% of the population), poor targeting (significant resources accrue to non-poor households), low implementation and M&E capacity, inadequate institutional arrangements for multi-sectoral coordination, and insufficient rapid assistance capacity for natural disasters.
Government Initiatives	Adoption of a national targeting formula, identifying and strengthening its implementation.
National Social Protection Strategy (2007)	Developed to modernize social protection, aligned with the Poverty Reduction Strategy and Pakistan Vision 2030. (Ahmad et al., 2022)
Priority Areas for Policy Action	Increasing access to economic opportunities for the poor, preventing income shocks from pushing individuals into poverty, and providing for the chronically poor and those unable to work.
Benazir Income Support Program (BISP)	Introduced in 2009 as a key element of the National Social Protection Strategy, aims to provide significant basic income support and opportunities to the poorest population to graduate from poverty.

Literature Review

Social protection is an important component of the welfare state designed to reduce the risks of the city. The effective system is influenced by several factors like human capital physical capital socioeconomic equity and trade. The literature review section synergy the finding of how various determinants of social protection affect social protection drawn through the empirical research and theoretical perspective. One major factor that plays a role in social protection is government effectiveness tends to have a more robust and well-managed societal program. Effective government systems allocate resources efficiently and reduce the leakage due to corruption (Muzaffar, & Choudhary2017; Agbozo & Asamoah, 2019; Magalhães, 2014).

Human capital is measured through education and skills are those factors that contribute toward social protection. The investment in human capital not only increases individual productivity but also promotes greater social welfare. A high level of education

enhances the capacity to design and implement social programs effectively. moreover, the education population can provide sustained comprehensive social protection(Braunerhjelm & Lappi, 2023; Islam & Amin, 2022). Research indicates that societies with higher levels of equity tend to have stronger and more inclusive social protection programs. For instance, digital payment systems for social benefits and data-driven targeting mechanisms have been shown to reduce costs and improve the reach and accuracy of social protection initiatives.

The relation between trade, economic performance, and social protection is dynamic and well-documented leading to the greater fiscal capacity to fund social protection and thus generate high revenue from trade(Desai & Rudra, 2019; Gao & Gao, 2023). Moreover, the trade can provide financial resources for a comprehensive social protection system(Ahmad et al., 2024). Taking into account the continuity and sustainability of the social protection system has a lasting impact on its effectiveness. It creates institutional inertia and makes political and economic fluctuation. They provide long-term security and support to the population.

Material and Methods

The methodology of the paper is based on an endogenous growth model that exhibits the characteristics of basic determinants of growth. Meanwhile, the social protection system comprises of number of factors like economic performance, nutrition and dietary requirements, income of the population, and climate factors all can be controlled through government effectiveness. The study is empirically validated through the Two Step System GMM econometric approach. We have analyzed a dynamic panel dataset for 46 countries for the past 20 years. Data have been collected from the World Bank and OECD statistics. The benefit of Two Step System GMM (Ahmad et al., 2023) is that it helps to deal with the problem of endogeneity when explanatory variables are correlated with error terms.
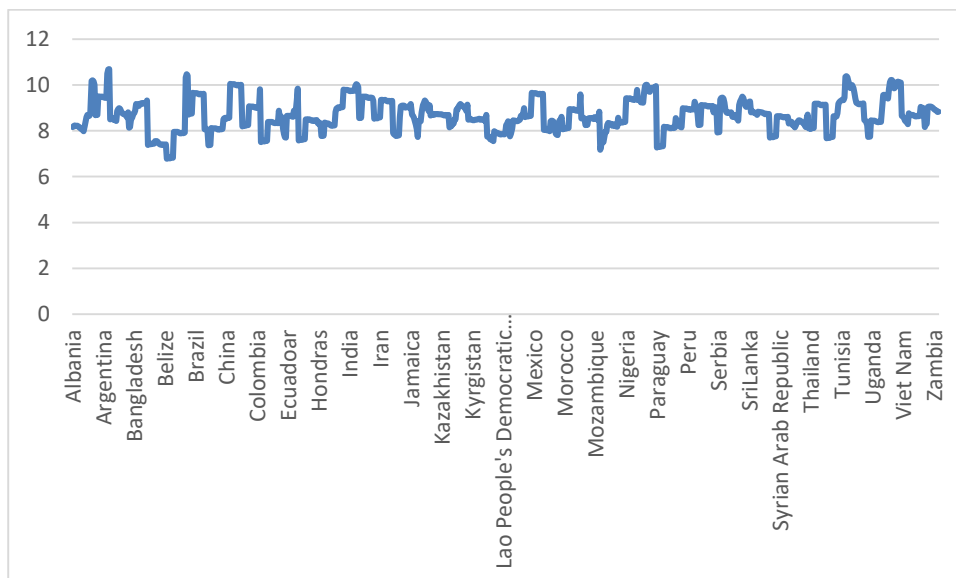
Panel (a): social protection system across countries
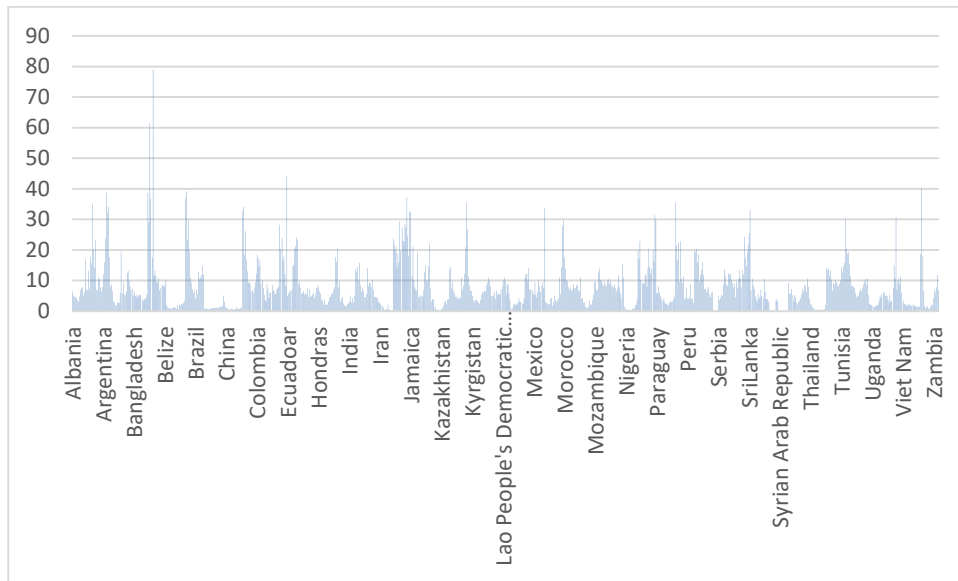
Panel (b): government effectiveness across countries
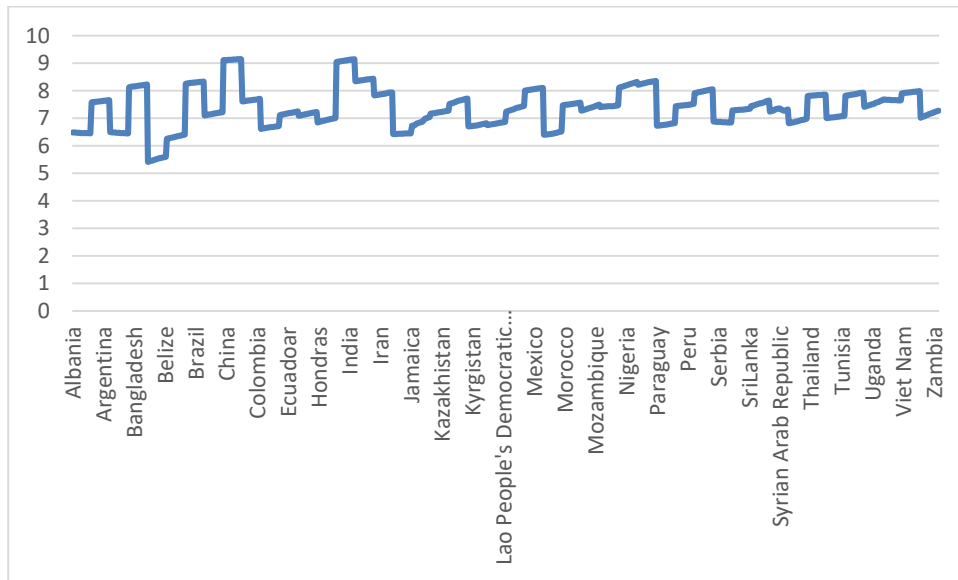
Panel (c): trade across countries

Figure 1: Status of social protection, government effectiveness, and trade respectively

Table 2
Correlation matrix

Matrix	Social Protection	Government Effectiveness	Human Capital	Physical Capital	Innovation	Socio-Economic Equity	Trade
			Full sample				
Social Protection	1						
Government Effectiveness	0.2684***	1					
Human Capital	0.52851 ***	0.2783**	1				
Physical Capital	0.4986***	0.3879***	0.9145**	1			
Innovation	0.2784 ***	0.23871 **	0.2817 ***	0.7383**	1		
Socio-Economic Equity	0.5296**	0.2891 ***	0.6945**	0.5829 **	0.8392**	1	
Trade	0.5728 **	0.8409	0.3792	0.1281**	0.2848 **	0.3729	1

Results and Discussion

The correlation matrix reveals the relation of variables. Social protection is positively and significantly associated with other variables. With human capital, the association degree is 52%. For physical capital its 49% and for economic performance it is 52%. It means social protection is important and without the inclusion of these variables, social protection does not work properly. On the other hand, government effectiveness is also positively associated with trade, and physical capital which is significant. Governance that is more effective leads to a higher level of trade and investment in physical infrastructure. Thus, government effectiveness is crucial which leads to enhanced economic activity. Without government intervention, the economy cannot be strong enough to play for social protection.

On the other hand, human capital is one of the other determinants of social protection it is associated with physical capital at 91% and economic performance at 69%. It shows that human capital and physical capital are indispensable for each other without their presence economic activity(Nosheen et al., 2021a) becomes sluggish and social protection achievement becomes slower. They are likely through education and training, to drive higher investments in physical capital and subsequently boost economic performance(Nosheen et al., 2021b). Technological innovation is a player of social protection and plays a main role in economic uplift. With economic performance, its associated is 83%, and with physical stock of capital like infrastructure and assets of the economy is 73%. It suggests that innovative activities are crucial for economic success and are supported by strong physical infrastructure. Trade is also correlated with government effectiveness. The more vigilant government policies will be the more international collaboration increases leading to increased trade and well-being of the economy. With government effectiveness, the association degree is 84%. In short, it can be stated the interdependencies among variables like social protection with other explanatory variables are critical drivers of economic performance. They facilitate trade and foster a conducive environment for investment and growth(Anser et al., 2020). This complex relation multifaceted nature of economic development and improvement of support and enhanced outcomes.

Table 3
Two-Step System GMM (Full sample), Dependent variable, Social Protection System

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Government Effectiveness	0.6297	0.4289	0.4419	0.2528	0.3884	0.4417
	0.2998**	0.1383**	0.1767*	0.0871**	0.1942*	0.1051***
Human Capital	0.2167	0.2332	0.2218	0.3267	0.3554	0.3951
	0.1031**	0.0752**	0.0887*	0.1126**	0.1777*	0.094***
Physical Capital	0.1053	0.1193	0.1178	0.1592	0.1695**	0.4186
	0.0501**	0.0384***	0.0471*	0.0548*	0.0847	0.0996***
Innovation	0.0321	0.0482	0.05998	0.03471	0.0731	0.0572
	0.0152*	0.0155**	0.0239**	0.0119*	0.0365**	0.0136**
Socio-Economic Equity	0.4272	0.6712	0.6839	0.7276	0.7189	0.8142
	0.2034**	0.2165*	0.2735**	0.2508**	0.3594*	0.1938**
Trade	0.2372	0.2472	0.2396	0.2185	0.2222	0.2341
	0.1129**	0.0797**	0.0958*	0.0753*	0.1111**	0.0557**
Social Protection System (-1)	1.4572	1.5492	1.62809	1.6792	1.973	1.739
	0.693*	0.4997*	0.6512**	0.579**	0.9865*	0.414*
Constant	2.529	2.8192	2.9937	2.5872	2.6762	2.4815

	1.2042***	0.909***	1.1974*	0.8921***	1.3381	0.5908***
Observations	920	920	920	920	920	920
Number of Groups	46	46	46	46	46	46
F /Wald test	21.94	37.22	20.95	17.19	23.99	6.15

The table represents the dynamic panel regression using Two Step System GMM(Alhendi et al., 2021; Yespergenova et al., 2023) from Model 1 to Model 6. It examines the effects of various factors on social protection where socioeconomic equity and government effectiveness are the key explanatory variables. Each row represents the different independent variable with values of coefficient and standard error of the respective variable. The results reveal that the coefficient of government effectiveness ranges between 25% to 62% as if the government works efficiently then social protection can be enhanced to this range(Barra et al., 2023; Mendiratta et al., 2023). These values are significant at 10%, 5%, and 1% with *,**, and ***. It shows that government effectiveness is key to social protection and consistent with policies that enhance that social protection. While human capital is also the main determinant of social protection where the effect of the variable ranges between 21% to 39%. Human capital is crucial as it enhances productivity and brings innovative ideas(Liu et al., 2022; Wirajing et al., 2023). Human capital empowers social protection through teamwork, contributing toward economic performance by bringing ideas that are climate resilient and working on research and development to meet nutrition and dietary deficiencies. The positive and significant relation shows the positive outcomes of human capital on social protection. The coefficient of physical capital is between 10% to 41%. It shows that a 100% increase in physical capital enhances social protection within the above-given range. Physical capital is the investment in physical assets of the economy, which enhances the circular flow of economic activity thus generating more jobs and alleviating poverty. The stronger physical capital is the more chances of social protection are(Cheng et al., 2021; Sun et al., 2023).

Taking into account the effect of innovation on social protection reveals that it has a smaller effect on social protection(Olivier, 2017; Wang et al., 2023). Despite the small coefficient, the impact of innovation is positive and significant. Thus, it can be concluded that innovation has a more efficient and effective social protection mechanism thus new technologies and innovative policies play a role in social protection with enhanced mechanisms. The coefficient of socio-economic equity ranges between 42% to 81% showing a positive and significant role for social protection. Higher socioeconomic equity is likely to distribute resources equally among society thus large proportion of society can benefit from this(Keesstra et al., 2018; Meričková & Halásková, 2014). This coefficient is the largest among other explanatory variables. Trade also positively and significantly affects social protection, which leads to economic growth and higher fiscal capacity. The high effect of trade for social protection enhances the government to allocate more resources to societal well-being(Pereznieto & Taylor, 2014; Renzaho, 2020; Vinichenko et al., 2019). The F/Wald test value is between 6.15 to 37.22 showing the overall significance of the model. This suggests that a stronger model confirms the robust analysis of the regression results.

Conclusion

The paper concludes that social protection is indispensable for the long-term well-being of the economy and society as well. However, a strong mechanism of other variables is necessary to facilitate social protection. Government effectiveness facilitates the better implementation of management of protection programs. Similarly, without the inclusion of human capital social protection is merely a story, not a reality. The theory advocates that robust social protection can be enhanced through administrative capacity. Physical capital improves the delivery and reach of social services thus improving the physical

infrastructure of the economy and providing a resilient mechanism to work for the economy. Innovation is also a part of social protection it being new insights to find ways for societal benefits. It enhances the effectiveness and efficiency of the social protection system. Socio-economic equity and trade distribute resources equitably to support strong social protection. It enhances the quality of education and good health as suggested by the Sustainable Development Goals. Enhancing fiscal space and increasing the inflow of foreign remittances in the country can be possible through the trade and persistent structure of international collaboration. Thus, it can be concluded that social protection has multiple dimensions influenced by governance and economic factors, innovation, and equity. These relationships underscore the multifaceted nature of social protection, influenced by governance, economic factors, innovation, and equity.

Recommendations

The paper suggests some policy perspective that enhances social protection. The government needs to invest in the public sector to improve efficiency, transparency, and accountability. The training of public officials, adopting e-governance, and implementing anti-corruption measures all ensure social protection with managed resources. There is a need to increase investment in education and vocational programs to improve the skill level of the workforce. Higher education and skills empower the individual to contribute and benefit from social protection. The policies should be designed to develop an infrastructure such as health care facilities, schools, and social services, particularly for the underserved areas of society. This improves the accessibility and delivery of social protection ensuring broader coverage and effective support. Meanwhile, the encouragement of innovation for the social protection program develops political projects and uses new technologies that are more efficient and respond to the needs of the population. Fostering socio-economic equity aimed at reducing income inequality and progression taxation with minimum wage laws and social safety nets. It ensures the social protection benefits to create a more inclusive society. Trade and economic growth provide a conducive environment for trade agreement infrastructure to support trade logistics and facilitate business operations. Finally to establish a robust mechanism for monitoring and evaluating the impact on social protection programs to ensure achieving outcomes to make data-driven adjustments. It needs to promote coordination among different government sections like health, education labor, and fiancé to create a holistic approach to social protection.

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