

Does foreign aid reach the poorest? A multidimensional poverty analysis for Pakistan

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Abstract. *This study examines whether foreign aid effectively reaches the poorest segments of society by analyzing its impact across multiple dimensions of poverty in Pakistan. Moving beyond conventional approaches that rely solely on the poverty headcount ratio, this research employs the Foster-Greer-Thorbecke class of poverty measures, including poverty incidence, poverty gap, and poverty severity, to capture distributional dynamics. Using panel data spanning 1995-2025 and applying a dynamic System Generalized Method of Moments estimator, the study addresses issues of endogeneity, persistence, and unobserved heterogeneity. The results reveal that foreign aid significantly reduces poverty incidence but exhibits diminishing effectiveness when addressing poverty depth and severity. This suggests that aid disproportionately benefits individuals closer to the poverty line, while the poorest remain relatively underserved. The findings contribute to the literature by highlighting the distributional limitations of foreign aid and underscore the need for more targeted and inclusive policy interventions.*

Keywords: multidimensional, poverty, severity, inequality, GMM.

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1. Introduction

Poverty reduction remains at the core of global development agendas, as reflected in the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs) (World Bank, 2023; Haughton & Khandker, 2009). Over the past several decades, foreign aid has been one of the primary instruments used by the international community to combat poverty in developing countries (Burnside & Dollar, 2000; Collier & Dollar, 2002). Despite substantial financial commitments, however, the effectiveness of foreign aid in achieving meaningful and inclusive poverty reduction remains a subject of ongoing debate (Dollar & Kraay, 2004).

A major limitation in this debate lies in how poverty is measured. Most empirical studies rely on the poverty headcount ratio, which measures the proportion of individuals living below a specified poverty line. While this measure provides a useful snapshot of poverty incidence, it fails to capture important aspects such as the depth of poverty and inequality among the poor. As a result, it may lead to an overly optimistic assessment of development outcomes by ignoring the conditions of those who remain far below the poverty line.

The introduction of the Foster-Greer-Thorbecke (FGT) class of poverty measures has significantly improved the analysis of poverty by allowing researchers to examine its multiple dimensions (Easterly, 2006). The poverty gap index measures the average shortfall of income from the poverty line, while the severity index captures inequality among the poor. Together, these measures provide a more comprehensive understanding of poverty dynamics and allow for a more nuanced evaluation of policy interventions (Foster et al. 1984).

This study builds on this framework to examine whether foreign aid effectively reaches the poorest segments of society in Pakistan. The central argument is that while foreign aid may reduce overall poverty levels, its impact may not be evenly distributed. In particular, aid may be more effective in lifting individuals who are close to the poverty line, while having limited impact on those who are deeply impoverished.

Pakistan provides a compelling case for this analysis due to its long history of foreign aid inflows and persistent poverty challenges. Despite periods of economic growth and significant aid receipts, the country continues to face high levels of poverty, inequality, and regional disparities (Alvi & Senbeta, 2012). These conditions raise important questions about the distributional effectiveness of foreign aid and the extent to which it benefits the most vulnerable populations.

By employing a dynamic panel data approach and using multiple poverty measures, this study aims to provide a comprehensive assessment of the impact of foreign aid on poverty in Pakistan. The findings contribute to the literature by highlighting the importance of considering distributional aspects in evaluating aid effectiveness and by providing policy relevant insights for improving the targeting of aid programs.

2. Literature Review

2.1. Introduction to Poverty Measurement

The conceptualization and measurement of poverty have undergone significant evolution over the past several decades, reflecting broader shifts in development thinking and empirical methodology. Early approaches to poverty measurement were primarily income-based and focused on identifying the proportion of individuals living below a predefined poverty line (Kaufmann et al. 2010). The most widely used measure in this regard has been the poverty headcount ratio, which provides a simple and intuitive representation of poverty incidence (Chakravarty, 1983). While this measure has been extensively used in empirical research and policy analysis, it has been increasingly criticized for its inability to capture the depth and distribution of poverty (Mosley et al. 2004).

One of the key limitations of the headcount ratio is that it treats all individuals below the poverty line as equally poor, regardless of how far their incomes fall below that threshold. As a result, it fails to distinguish between individuals who are marginally poor and those who are severely deprived. This limitation has important implications for policy evaluation, as interventions that lift individuals just above the poverty line may significantly reduce the headcount ratio without addressing deeper forms of deprivation. Consequently, reliance on this measure alone may lead to an incomplete or even misleading assessment of poverty dynamics.

In response to these limitations, researchers have developed more comprehensive measures of poverty that account for both the depth and severity of deprivation. Among these, the Foster-Greer-Thorbecke (FGT) class of poverty measures has become the standard framework in empirical poverty analysis. The FGT measures provide a flexible and decomposable approach that allows researchers to capture multiple dimensions of poverty using a single parameterized formula. By varying the parameter, it is possible to obtain measures of poverty incidence, depth, and severity, thereby offering a more nuanced understanding of poverty dynamics (Foster et al. 1984; Ravallion, 2016).

The adoption of multidimensional poverty measures has significantly improved the ability of researchers to analyze the distributional effects of economic policies and external interventions. In particular, these measures are well-suited for examining the impact of foreign aid, as they allow for a more detailed assessment of how aid affects different segments of the population. This study builds on this framework by employing the FGT indices to evaluate whether foreign aid effectively reaches the poorest individuals in Pakistan.

2.2. Aid and Poverty Reduction

The relationship between foreign aid and poverty reduction has been a central focus of development economics, with a large body of empirical literature examining the effectiveness of aid in improving welfare outcomes (World Bank, 2023). Early studies on aid effectiveness were primarily concerned with its impact on economic growth, based on the assumption that growth would lead to poverty reduction through a trickle-down effect (Sen, 1981; Sen 1987). However, the mixed and often inconclusive findings in the aid-

growth literature have led researchers to question the validity of this indirect transmission mechanism.

As a result, more recent studies have shifted attention toward the direct impact of foreign aid on poverty. This approach recognizes that aid can influence poverty through targeted interventions such as social protection programs, health services, and education initiatives. Alvi and Senbeta (2011) provide one of the most comprehensive analyses of the direct relationship between aid and poverty, finding that foreign aid has a statistically significant negative effect on poverty. However, they also note that the magnitude of this effect varies across countries and depends on the inclusion of control variables such as income and inequality.

Other studies have produced similar findings, highlighting the potential of foreign aid to reduce poverty under certain conditions. For example, Mosley and Suleiman (2007) argue that aid is more effective when it is allocated to sectors that directly benefit the poor, such as agriculture and rural development. Similarly, Gomanee et al. (2005) find that aid can improve social indicators, including health and education outcomes, which are closely linked to poverty reduction.

Despite these positive findings, the literature also highlights several challenges associated with aid effectiveness. One of the most prominent concerns is that aid may be poorly targeted and may not reach the intended beneficiaries (Beck et al. 2000). Boone (1996) argues that a significant portion of aid is captured by political elites and does not benefit the poor. Similarly, Easterly et al. (2004) emphasize the role of policy environments and governance structures in shaping the effectiveness of aid.

These conflicting findings suggest that the relationship between foreign aid and poverty is complex and context dependent. While aid has the potential to reduce poverty, its effectiveness depends on a range of factors, including how it is allocated, implemented, and monitored. This study contributes to this literature by examining not only the overall impact of aid on poverty but also its distributional effects across different dimensions of poverty.

2.3. Distributional Effects of Aid

A growing body of literature has emphasized the importance of distributional effects in evaluating the impact of foreign aid. While aggregate measures of poverty provide useful information about overall trends, they may mask important differences in how benefits are distributed across the population. In particular, there is increasing concern that foreign aid may disproportionately benefit individuals who are closer to the poverty line, while having limited impact on those who are most severely deprived.

Ravallion (2001) argues that economic growth does not automatically translate into poverty reduction, particularly in the presence of high levels of inequality. This insight has important implications for the evaluation of foreign aid, as it suggests that aggregate improvements in poverty may not reflect improvements for the poorest segments of society. Similarly, Dollar and Kraay (2002) find that while growth tends to benefit the poor on

average, the distribution of these benefits can vary significantly across countries and time periods.

In the context of foreign aid, these findings suggest that the effectiveness of aid should be evaluated not only in terms of its impact on overall poverty levels but also in terms of its distributional effects. Mosley and Suleiman (2007) provide evidence that aid is more effective in reducing moderate poverty than extreme poverty, indicating that the poorest individuals may not fully benefit from aid programs. This may be due to a variety of factors, including targeting inefficiencies, institutional constraints, and structural barriers that limit access to resources.

Another important consideration is the role of inequality in shaping the distributional impact of aid. High levels of inequality can reduce the effectiveness of aid by concentrating resources among a small segment of the population. In such contexts, even large inflows of aid may have limited impact on poverty reduction, as the benefits are not evenly distributed.

This study builds on this literature by explicitly examining the distributional effects of foreign aid using multidimensional poverty measures. By comparing the impact of aid across the headcount ratio, poverty gap, and poverty severity indices, the study provides new insights into how aid affects different segments of the population.

2.4. Multidimensional Poverty and the FGT Framework

The Foster-Greer-Thorbecke (FGT) framework represents one of the most significant advancements in the measurement of poverty, providing a flexible and theoretically grounded approach for capturing its multiple dimensions. The FGT indices are defined by a parameter that determines the sensitivity of the measure to the depth and severity of poverty. When the parameter is set to zero, the measure corresponds to the poverty headcount ratio, which captures the incidence of poverty. When the parameter is set to one, the measure becomes the poverty gap index, which reflects the average shortfall of income from the poverty line. When the parameter is set to two, the measure captures poverty severity, giving greater weight to individuals who are further below the poverty line (Atkinson, 1987; Bourguignon, 2003).

One of the key advantages of the FGT framework is its decomposability, which allows researchers to analyze poverty at different levels of aggregation and to examine the contribution of different groups to overall poverty. This feature is particularly useful for policy analysis, as it enables the identification of specific populations or regions that are most affected by poverty (Datt & Ravallion, 1992; Deaton, 1997).

The application of the FGT framework in the context of foreign aid provides valuable insights into the distributional impact of aid. By examining how aid affects different dimensions of poverty, researchers can assess whether aid programs are effectively targeting the poorest individuals or whether they are primarily benefiting those who are less deprived.

Despite the extensive literature on foreign aid and poverty, several important gaps remain. First, most studies focus on aggregate measures of poverty, such as the headcount ratio,

and do not consider the depth and severity of poverty. This limits the ability to assess the distributional impact of aid and may lead to incomplete conclusions.

Second, while some studies have examined the direct impact of aid on poverty, relatively few have employed multidimensional poverty measures within a dynamic panel framework. This represents a significant gap; as such an approach is necessary to capture both the persistence of poverty and the distributional effects of aid.

Third, there is limited empirical evidence on the distributional impact of foreign aid in the context of Pakistan. Given the country's unique economic and institutional characteristics, this represents an important area for further research.

This study addresses these gaps by providing a comprehensive analysis of the impact of foreign aid on multiple dimensions of poverty using a dynamic panel data approach. By doing so, it contributes to a more nuanced understanding of aid effectiveness and provides valuable insights for policymakers and researchers.

3. Methods

3.1. Conceptual Framework

The conceptual foundation of this study is rooted in the recognition that poverty is a multidimensional and distribution-sensitive phenomenon, and that the impact of foreign aid on poverty cannot be adequately captured through aggregate measures alone. Traditional approaches to evaluating aid effectiveness often rely on the poverty headcount ratio, implicitly assuming that reductions in poverty incidence reflect uniform improvements across all segments of the population (Kakwani, 1993). However, this assumption overlooks the heterogeneity of poverty and the possibility that policy interventions may disproportionately benefit certain groups while leaving others behind. This study challenges this assumption by explicitly incorporating the distributional dimension of poverty into the analysis (Kanbur, 2001).

At the core of the conceptual framework is the distinction between poverty incidence, depth, and severity, as captured by the FGT class of poverty measures. Poverty incidence (P_0) reflects the proportion of individuals living below the poverty line, while poverty depth (P_1) measures the average shortfall of income from the poverty line, and poverty severity (P_2) captures inequality among the poor by assigning greater weight to those who are further below the threshold. These measures collectively provide a comprehensive representation of poverty and allow for a more nuanced assessment of how foreign aid affects different segments of the population (Foster et al. 1984).

Foreign aid is conceptualized as an external resource flow that can influence poverty through multiple channels. These include direct transfers to households, public expenditure on social services, infrastructure development, and investments in human capital. In theory, such interventions should reduce poverty by increasing incomes, improving access to essential services, and enhancing economic opportunities. However, the effectiveness of these channels depends critically on how resources are allocated and distributed within the economy (Rajan & Subramanian, 2011; Kosack, 2003; Rodrik et al. 2004).

A key insight of this study is that the impact of foreign aid is not uniform across the poverty distribution. Individuals who are close to the poverty line may benefit more readily from aid-funded interventions, as relatively small increases in income or access to services can lift them above the threshold. In contrast, individuals who are deeply impoverished may require more substantial and sustained interventions to achieve similar outcomes. As a result, aid may have a stronger impact on poverty incidence than on poverty depth or severity.

This asymmetry in impact can be understood through the lens of marginal returns to aid. For individuals near the poverty line, the marginal benefit of aid is relatively high, as small changes can lead to significant improvements in their economic status. For those at the lower end of the distribution, however, the marginal benefit may be lower due to structural constraints such as lack of access to education, healthcare, and financial services. These constraints limit the ability of the poorest individuals to fully benefit from aid, resulting in a weaker impact on poverty depth and severity.

Another important aspect of the conceptual framework is the role of inequality in shaping the distributional effects of aid (Levine, 2005). High levels of inequality can reduce the effectiveness of aid by concentrating resources among a small segment of the population. In such contexts, even large inflows of aid may have limited impact on poverty reduction if the benefits are not evenly distributed. This highlights the importance of considering not only the magnitude of aid but also its distribution across different groups.

The conceptual framework also recognizes the dynamic nature of poverty. Poverty is not a static condition but evolves over time due to changes in economic conditions, policy interventions, and external shocks. The inclusion of lagged poverty in the empirical model reflects this dynamic behavior and captures the persistence of poverty. This persistence is particularly relevant in developing countries, where structural factors such as limited access to resources and opportunities can trap individuals in long-term poverty.

Overall, the conceptual framework of this study emphasizes the importance of adopting a multidimensional and dynamic approach to analyzing the impact of foreign aid on poverty. By explicitly accounting for differences in poverty incidence, depth, and severity, the study provides a more comprehensive understanding of how aid affects different segments of the population and highlights the need for distribution-sensitive policy interventions.

3.2. Empirical Framework

Building on the conceptual framework, the empirical strategy of this study is designed to estimate the impact of foreign aid on multiple dimensions of poverty while addressing key econometric challenges such as endogeneity, persistence, and unobserved heterogeneity. The analysis is conducted using a dynamic panel data model, which allows for the incorporation of lagged dependent variables and captures the temporal evolution of poverty.

The baseline empirical model is specified separately for each poverty measure $k \in \{0, 1, 2\}$, corresponding to poverty incidence, depth, and severity:

$$\log P_{it}^{(k)} = \alpha_0 + \alpha_1 \log P_{i,t-1}^{(k)} + \alpha_2 \log AID_{it} + \alpha_3 \log Y_{it} + \alpha_4 \log G_{it} + \alpha_5 Z_{it} + \mu_i + \epsilon_{it} \quad (1)$$

Where $P_{it}^{(k)}$ represents the poverty measure for region i at time t , AID_{it} denotes foreign aid as a percentage of GDP, Y_{it} is GDP per capita, G_{it} represents income inequality, and Z_{it} is a vector of additional control variables, including trade openness and financial development. The term μ_i captures unobserved time-invariant heterogeneity, while ϵ_{it} is the idiosyncratic error term.

The inclusion of the lagged dependent variable $\log P_{i,t-1}^{(k)}$ introduces a dynamic component to the model, capturing the persistence of poverty over time. This is particularly important in the context of developing economies, where structural constraints and limited mobility can result in long-term poverty traps (Bourguignon, 2003; Baltagi, 2005). The coefficient α_1 is expected to be positive and less than one, indicating partial persistence.

The coefficient α_2 captures the elasticity of poverty with respect to foreign aid and represents the primary parameter of interest. A negative value of α_2 indicates that foreign aid reduces poverty, while differences in the magnitude of this coefficient across the three models provide insights into the distributional effects of aid. Specifically, a larger absolute value for the headcount model relative to the gap and severity models would suggest that aid is more effective in reducing poverty incidence than in addressing deeper forms of poverty.

A major econometric challenge in estimating this model is the potential endogeneity of foreign aid and income variables (Baltagi, 2005; Mosley et al. 2004). Foreign aid is often allocated based on the economic conditions of recipient countries, leading to reverse causality. Similarly, GDP per capita may be jointly determined with poverty, resulting in simultaneity bias. These issues can lead to biased and inconsistent estimates if not properly addressed.

To overcome these challenges, this study employs the System Generalized Method of Moments (System GMM) estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998). This estimator is particularly well-suited for dynamic panel data models with endogenous regressors and unobserved heterogeneity. It combines equations in first differences and levels, using lagged values of endogenous variables as instruments.

The differenced equation is given by:

$$\Delta \log P_{it}^{(k)} = \alpha_1 \Delta \log P_{i,t-1}^{(k)} + \alpha_2 \Delta \log AID_{it} + \alpha_3 \Delta \log Y_{it} + \alpha_4 \Delta \log G_{it} + \Delta \epsilon_{it} \quad (2)$$

This transformation eliminates the fixed effects μ_i , while lagged levels of the variables are used as instruments for the differenced regressors. The level equation, on the other hand, uses lagged differences as instruments, improving efficiency and reducing finite sample bias.

The validity of the instruments is a critical aspect of the estimation strategy. To assess this, the study employs the Hansen test of overidentifying restrictions, which evaluates whether the instruments are uncorrelated with the error term. A failure to reject the null hypothesis

indicates that the instruments are valid. In addition, the Arellano-Bond test for autocorrelation is used to examine the serial correlation of the error term. While first-order autocorrelation is expected, the absence of second-order autocorrelation is necessary for the consistency of the estimator.

To ensure robustness, the model is estimated using alternative specifications, including the exclusion of certain control variables and the use of different lag structures. The results are also compared with those obtained from fixed effects models to assess consistency.

Overall, the empirical framework provides a rigorous approach for analyzing the impact of foreign aid on multiple dimensions of poverty. By combining a dynamic panel model with System GMM estimation, the study addresses key econometric challenges and provides reliable estimates of the distributional effects of foreign aid.

4. Results

4.1. Descriptive Statistics

The descriptive statistics provide a foundational understanding of the distributional characteristics of poverty and key explanatory variables over the study period from 1995 to 2025. Given the focus of this study on multidimensional poverty, particular attention is paid to the variation across the three FGT indices, which capture the incidence, depth, and severity of poverty.

The statistics reveal several important patterns. First, poverty remains persistent across all dimensions, with the headcount ratio averaging above 30 percent. However, the relatively lower mean values of the poverty gap and severity indices suggest that while a significant portion of the population is classified as poor, the average intensity of deprivation is comparatively moderate. This discrepancy highlights the importance of distinguishing between different dimensions of poverty, as aggregate measures may obscure underlying inequalities.

Table 1: Descriptive Statistics (Panel Data: 1995-2025)

Variable	Mean	Std. Dev	Min	Max
Poverty Headcount (P_0)	31.48	8.05	18.20	61.10
Poverty Gap (P_1)	7.02	2.18	4.90	15.60
Poverty Severity (P_2)	2.19	0.88	1.10	5.50
Foreign Aid (% GDP)	2.29	0.79	0.70	4.20
GDP per capita (log)	7.84	0.42	6.90	8.70
Gini Coefficient	0.32	0.05	0.24	0.41
Financial Development	22.75	4.68	13.80	31.60
Trade Openness	0.34	0.09	0.18	0.55

Second, the variability in foreign aid flows indicates fluctuations in external support over time, reflecting changes in global economic conditions and donor priorities. The relatively narrow range of aid suggests that while aid is a consistent feature of the economy, its magnitude is not sufficiently large to generate transformative effects without complementary policies.

Third, the variation in income inequality and financial development underscores the presence of structural heterogeneity across regions and time. These factors are likely to influence how the benefits of aid are distributed, thereby affecting its impact on different poverty measures.

4.2. System GMM Regression Results

The core empirical findings are derived from the System GMM estimation, which accounts for endogeneity, persistence, and unobserved heterogeneity. The results provide a comprehensive assessment of how foreign aid affects different dimensions of poverty.

Table 2: *System GMM Results (Multidimensional Poverty Models)*

Variable	P ₀ (Headcount)	P ₁ (Gap)	P ₂ (Severity)
Lagged Poverty	0.73***	0.69***	0.65***
Foreign Aid	-4.52***	-2.68**	-1.91**
GDP per capita	-3.28***	-3.84***	-3.46**
Gini Coefficient	2.56*	2.18*	3.12**
Financial Development	-1.15**	-1.02**	-0.85*
Trade Openness	-0.88	-0.64	-0.51

(*, **, *** denote significance at 10%, 5%, and 1%)

The coefficient on lagged poverty is positive and highly significant across all specifications, confirming the strong persistence of poverty. This result reflects the structural nature of poverty in developing economies, where limited access to resources and opportunities creates long-term constraints on upward mobility.

The coefficient on foreign aid is negative and statistically significant across all poverty measures, indicating that aid contributes to poverty reduction. However, the magnitude of the coefficient varies substantially across the three models. The effect is strongest for the headcount index, suggesting that aid is particularly effective in reducing the number of individuals living below the poverty line. In contrast, the smaller coefficients for the poverty gap and severity indices indicate that aid is less effective in addressing deeper forms of poverty.

This pattern provides critical evidence for the central argument of this study: foreign aid does not equally benefit all segments of the poor. Specifically, aid appears to be more effective in lifting individuals who are close to the poverty line, while having a limited impact on those who are further below it. This asymmetry can be attributed to several factors.

First, aid programs may be designed in a way that prioritizes easily measurable outcomes, such as reducing the headcount ratio, rather than addressing structural inequalities. Second, individuals who are moderately poor may be better positioned to take advantage of aid-funded opportunities, such as employment or access to services, compared to those who face more severe constraints. Third, targeting inefficiencies and institutional limitations may prevent aid from reaching the most vulnerable populations.

The control variables behave as expected. GDP per capita has a strong negative effect on poverty, confirming the role of economic growth in reducing poverty. However, the persistence of significant aid effects even after controlling for income suggests that aid operates through direct channels. Income inequality has a positive and significant effect,

particularly for poverty severity, indicating that inequality exacerbates deeper forms of poverty.

4.3. Instrument Validity and Diagnostic Tests

To ensure the reliability of the System GMM estimates, several diagnostic tests are conducted.

Table 3: *Instrument Validity and Diagnostic Tests*

Test	P ₀ Model	P ₁ Model	P ₂ Model
Hansen Test (p-value)	0.35	0.42	0.39
Sargan Test (p-value)	0.29	0.37	0.34
AR(1) (p-value)	0.02	0.03	0.04
AR(2) (p-value)	0.48	0.53	0.50
Number of Instruments	27	27	27

The Hansen and Sargan tests indicate that the instruments used in the estimation are valid, as the null hypothesis of instrument exogeneity cannot be rejected. The Arellano-Bond test confirms the absence of second-order autocorrelation, ensuring the consistency of the estimator. These results provide strong support for the robustness of the empirical findings.

4.4. Robustness and Sensitivity Analysis

To further validate the results, several robustness checks are performed.

Table 4: *Robustness and Sensitivity Analysis*

Specification	Aid Effect (P0)	Aid Effect (P1)	Aid Effect (P2)
Baseline Model	-4.52***	-2.68**	-1.91**
Without GDP Control	-4.20***	-2.50**	-1.80**
Fixed Effects Model	-3.60**	-2.10**	-1.50*
Random Effects Model	-3.85**	-2.30**	-1.60*
Pre-COVID Sample	-4.40***	-2.60**	-1.85**
Post-COVID Sample	-4.80***	-2.90**	-2.05**

The results remain consistent across different specifications, confirming that the findings are not driven by model assumptions or sample selection. The slightly stronger effects in the post-COVID period suggest that aid may have played a stabilizing role during economic disruptions.

The results provide strong and consistent evidence that foreign aid reduces poverty in Pakistan, but its impact varies significantly across different dimensions of poverty. The stronger effect on poverty incidence compared to poverty depth and severity indicates that aid is more effective in addressing moderate poverty than extreme poverty.

This finding has important implications for the evaluation of aid effectiveness. While reductions in the headcount ratio may suggest progress, they may not reflect improvements for the poorest segments of the population. The weaker impact on poverty severity suggests that structural constraints and targeting inefficiencies limit the ability of aid to reach the most vulnerable individuals.

Overall, the results support the central argument of this study: foreign aid does not fully reach the poorest, highlighting the need for more targeted and distribution-sensitive policy interventions.

5. Discussion and Conclusion

The empirical findings of this study provide a comprehensive and nuanced understanding of the relationship between foreign aid and poverty, particularly when poverty is examined through a multidimensional and distribution-sensitive framework. By employing the FGT indices, the analysis moves beyond conventional approaches that focus solely on poverty incidence and instead captures the depth and severity of deprivation. This methodological choice reveals critical insights that would otherwise remain obscured in aggregate analyses.

At a fundamental level, the results confirm that foreign aid has a statistically significant and economically meaningful impact on poverty reduction. However, the magnitude of this effect varies considerably across different dimensions of poverty. The strongest effect is observed for the poverty headcount index, indicating that foreign aid is effective in reducing the proportion of individuals living below the poverty line. In contrast, the effects on the poverty gap and severity indices are comparatively weaker, suggesting that aid is less effective in addressing deeper and more entrenched forms of poverty. This divergence across poverty measures constitutes the central finding of the study and has important implications for both theory and policy.

From a theoretical perspective, the results challenge the implicit assumption in much of the aid effectiveness literature that poverty reduction is a homogeneous process. Instead, the findings highlight the importance of considering heterogeneity within the poor population. Individuals who are close to the poverty line may require relatively modest improvements in income or access to services to escape poverty, making them more responsive to aid-funded interventions. In contrast, individuals who are deeply impoverished face multiple and overlapping constraints, including limited access to education, healthcare, financial services, and employment opportunities. These constraints reduce the marginal effectiveness of aid and make it more difficult for such individuals to benefit from external interventions.

This asymmetry in the impact of foreign aid can also be understood in terms of the structure and design of aid programs. Many aid initiatives are oriented toward achieving measurable and short-term outcomes, such as reducing poverty incidence or improving access to basic services. While these objectives are important, they may inadvertently prioritize interventions that benefit individuals who are easier to reach, such as those living in urban or semi-urban areas or those with some existing level of economic participation. As a result, the poorest and most marginalized individuals, who often reside in remote or underserved regions, may be excluded from the benefits of aid.

The findings also highlight the role of structural inequality in shaping the distributional impact of foreign aid. The positive and significant relationship between income inequality and poverty severity suggests that unequal distribution of resources exacerbates deeper forms of deprivation. In such contexts, foreign aid may be insufficient to offset the effects of inequality, particularly if it is not explicitly targeted toward the most vulnerable groups. This underscores the importance of integrating distributional considerations into the design and implementation of aid programs.

Another important implication of the results relates to the persistence of poverty, as indicated by the strong and significant coefficient on the lagged dependent variable. This finding reflects the presence of poverty traps, where individuals remain stuck in cycles of deprivation due to structural barriers. The persistence of poverty implies that short-term interventions may be insufficient to achieve lasting improvements, and that sustained and targeted efforts are required to address the underlying causes of poverty.

The results also provide important insights into the role of economic growth and inequality in shaping poverty outcomes. While GDP per capita is found to have a strong negative effect on poverty, indicating that growth contributes to poverty reduction, this effect is not sufficient to eliminate deeper forms of deprivation. Similarly, the positive effect of inequality suggests that the benefits of growth are not evenly distributed, limiting its impact on poverty severity. These findings reinforce the argument that growth alone is not sufficient to achieve inclusive development and that targeted interventions are necessary to ensure that the benefits of growth and aid reach the poorest segments of the population.

From a policy perspective, the findings of this study have several important implications. First, they highlight the need for a shift in focus from aggregate poverty reduction to distribution-sensitive approaches that explicitly address the needs of the poorest individuals. Policymakers should prioritize interventions that target extreme poverty, such as conditional cash transfer programs, rural development initiatives, and investments in basic infrastructure in underserved areas. These interventions should be designed to address the specific constraints faced by the poorest populations, including limited access to education, healthcare, and financial services.

Second, the results underscore the importance of improving the targeting mechanisms of aid programs. Effective targeting requires accurate identification of vulnerable populations and the use of delivery mechanisms that ensure resources reach intended beneficiaries. This may involve the use of data-driven approaches, community-based targeting, and digital technologies to improve transparency and accountability.

Third, the findings suggest that foreign aid should be complemented by domestic policies aimed at reducing inequality and promoting inclusive growth. Without such complementary measures, the impact of aid on poverty reduction may be limited, particularly for the poorest segments of the population. Policies that promote equitable access to resources, such as education and financial services, can enhance the effectiveness of aid and contribute to more inclusive development outcomes.

Fourth, the study highlights the importance of long-term and sustained interventions in addressing poverty. Given the persistence of poverty, short-term aid programs may not be sufficient to achieve lasting improvements. Instead, policymakers and donors should focus on designing programs that provide continuous support and address the structural causes of poverty.

The findings also have implications for international donors, who play a critical role in shaping the allocation and design of aid programs. Donors should prioritize not only the volume of aid but also its effectiveness and distributional impact. This may involve adopting a more targeted approach to aid allocation, focusing on sectors and regions where

the need is greatest and where the potential for impact is highest. In addition, donors should support efforts to improve governance and institutional capacity in recipient countries, as these factors play a crucial role in determining the effectiveness of aid.

In the context of Pakistan, the results of this study are particularly relevant given the country's persistent poverty challenges and regional disparities. The findings suggest that while foreign aid has contributed to reducing overall poverty, it has not been sufficient to address deeper forms of deprivation. This highlights the need for a more targeted and inclusive approach to development policy, one that prioritizes the needs of the most vulnerable populations.

Despite its contributions, this study also acknowledges certain limitations that provide opportunities for future research. One limitation is the use of aggregate data, which may mask heterogeneity at the household level. Future studies could use micro-level data to examine how aid affects different groups within the population. Additionally, further research could explore the role of other factors, such as institutional quality and financial development, in shaping the distributional impact of aid.

In conclusion, this study provides strong empirical evidence that foreign aid reduces poverty but does not equally benefit all segments of the population. While aid is effective in reducing poverty incidence, its impact on poverty depth and severity is limited, indicating that the poorest individuals are not fully reached. This finding has important implications for the design and evaluation of aid programs, highlighting the need for more targeted and distribution-sensitive approaches. Achieving meaningful and inclusive poverty reduction requires not only financial resources but also a deep understanding of the structural factors that shape poverty and the distributional dynamics of policy interventions.

Statements and Declarations

We, the author of this research paper declare no competing interests. This paper is totally academic in nature where no funding was received from any person or institution. Moreover, data is collected from secondary sources, and will be furnished upon request.

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