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**Climate-Induced Migration and Urban Poverty in Pakistan: Evidence from ARDL Time-Series Analysis**

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**Abstract**

In developing countries, climate change has become a major source of internal displacement and socio-economic exposure and has important implications on urban poverty. Pakistan is considered as one of the most climate-vulnerable countries in the world and has encountered frequent floods, temperature rises, and even greater variability of rainfall, which have had devastating effects on rural livelihoods and rural-urban migration. This is an empirical study that investigates the effect of climate caused migration on City poverty in Pakistan between 1990-2025. The time-series data used is annual; the bounds-testing method of Autoregressive Distributed Lag (ARDL) is used to derive the estimate of long run relationships, and an Error Correction Model (ECM) is used to represent short run dynamics. The findings verify the existence of stable long run relationship between climate variables, migration induced urbanisation and urban poverty. The mean temperature and precipitation are observed to have positive and significant impacts on urban poverty meaning that climatic stress is a worsening factor to poverty outcomes. These findings are supported by short-run outcomes, and the error correction mechanism suggests that the adjustment to the long-run equilibrium occurs rather fast. The research concludes that climate change is a multiplier of poverty in Pakistan through migration of rural climate shocks into urban deprivation. The results emphasise the need to implement combined measures that can be used to enhance the climate resilience of the rural area, deal with migration, and create inclusive and climate-resilient cities.

**Keywords:** Climate change; Internal migration; Urban poverty; Urbanization; ARDL; Pakistan.

**Introduction**

Climate change has become one of the critical issues in the world in the twenty-first century, as it has affected ecological systems, economic systems, and human mobility and movements as well as poverty. The increasing temperature, fluctuation in precipitation, rising sea level, floods, droughts, and extreme weather conditions have increased exposure to risks in the developing world especially those that depend greatly on weather-dependent sectors like agriculture. These climatic stresses have continued to strip away the livelihoods of the

rural populations, rapid displacement, and changed the migration patterns, particularly in the Global South (IPCC, 2023; World Bank, 2024). Migration that occurs as a result of climate has therefore risen to become one of the development challenges of the third world generation, inseparably tied to the phenomenon of abrupt urbanisation and urban poverty.

Climate-induced migration refers to the forms of population movements that are either entirely or partly triggered by unfavourable climatic conditions that threaten livelihoods, security and living standards. Unlike voluntary economic migration, such mobility is often an adaptive measure to compound environmental stressors, such as falling agricultural output, frequent flooding, water shortage, and soil erosion (Black et al., 2011). Even though migration can serve as an adaptation process by diversifying the sources of income, it may also shift the vulnerabilities of rural to urban settings where the urban areas receiving the migration cannot accommodate the new population (Tacoli, 2009). Based on this fact, it is observed that climate-driven migration is becoming more and more the driver of informal settlement growth, a congested labour market, and poverty in cities.

Pakistan presents an interesting case in studying the interrelations between climate change, migration and urban poverty. As one of the most climate-vulnerable countries, Pakistan has been in continuous effects of climate shocks, which include disastrous floods, prolonged droughts, heatwaves, and irregular monsoon patterns (Germanwatch, 2021; World Bank, 2024). The 2010 and 2022 floods alone displaced millions of people, destroyed agricultural infrastructure and severely changed the lives of rural people. Such upheavals have increased rural-urban migration, with the impacted families seeking opportunities of employment and access to services and relative security in the cities (Saeed et al., 2016; Ahmad et al., 2024).

In Pakistan, urbanisation has occurred at a pace in the past decades. Despite the common belief that cities can be viewed as driving forces of the economic growth, the growth of cities in the country has mostly been unplanned and inadequately supported by investments in the infrastructure and institutional capacity. Thus, big cities, such as Karachi, Lahore, Faisalabad, and Rawalpindi, have to face the major challenges of housing scarcity, unemployment, environmental pollution, and overloaded public services (UN-Habitat, 2024). The migrants who are propelled by climate, who often have limited financial resources, lack of skills in the labour markets of major cities, and weak social networks, are disproportionately forced into informal work and insecure housing, thus further strengthening the urban poverty cycles.

Urban poverty is also multiple, which means that it involves not only the lack of income but also poor housing conditions, lack of access to drinkable water and sanitation facilities, worsened health status, unstable employment, and social exclusion (Amis, 1995; De Haan, 1997). These deprivations are often enhanced in the context of the climate-induced migration. The migrant families frequently reside in informal settlements which are ecologically unsafe like flood prone areas or low lying areas, and thus, subject them to frequent climatic risks and health threats (Moser, and Satterthwaite, 2008). The climate change can therefore be seen not only as a contributor to migration but also a contributor to the urban poverty in terms of increasing vulnerability in the places of destination.

Scholarly literature suggests that the connexion between climate change, migration and poverty is complex and situation specific. Some of the studies suggest that migration can reduce poverty by remittances and increased employment opportunities, especially when the migrants manage to integrate successfully into the urban economies (Cali & Menon, 2009). However, within an environment with low urban governance and low labour absorption ability, as is the case in Pakistan, the poverty-reducing power of migration is often limited (Liddle, 2017). Instead, mass movement as a result of climate change could enhance inequality, lower wages in the informal sector and increase the competition over limited urban resources.

Although the world is paying more attention to climatic displacement, there is limited empirical research, which directly connects climatic factors, migration, and urban poverty in Pakistan. Most of the available literature discusses either the effects of the environment or the phenomenon of poverty in the urban environment in isolation and do not outline how there are mechanisms by which climate shocks are converted

into urban economic deprivation. Additionally, there are also methodological difficulties in separating climate-driven migration which is affected by other types of rural-urban moveability due to the scarcity of data and a lack of economic factors (Black et al., 2011). It is essential to remove these gaps in order to create effective climate-adaptation, migration-management, and urban-development policies.

This gap has been filled in this study through empirical questioning of the relationship that exists between climatic variables (temperature and rainfall), migration-induced urbanisation and urban poverty in Pakistan over the long term and the short term. Using the annual time-series data between 1990 and 2025, and using the econometric methods, such as the Autoregressive Distributed Lag (ARDL) model, and the Error-correction model (ECM), the study is trying to determine whether the climatic parameters have a statistically significant impact on urban poverty through migration-driven urbanisation. The study supplements the academic body of knowledge regarding the impacts of environmental change on the urban development trajectories of climate-prone economies by combining both climate indicators and socioeconomic outcomes. This research has a high policy relevance. With increased threats of climate, it is estimated that Pakistan will experience permanent displacement and migration thus straining urban infrastructure and services further. The understanding of the climate-migration-poverty nexus can be supported with evidence-based explanations of the concepts that can be used in urban planning, strategies to adapt to climate, housing policies, and social protection activities. In particular, understanding the possibility of climate-driven migration to increase urban poverty can guide interventions that can strengthen rural resilience, control urban development and improve the living conditions of migrant populations.

## **Literature Review**

The chapter is a critical assessment of the available theoretical and empirical literature that refers to climate change, migration, urbanisation, and urban poverty and specifically on developing nations and Pakistan. The review is divided into four major parts. First, it examines the theoretical views, which relate climate change and migration. Second, it reviews the literature of migration and rural livelihood vulnerability caused by climate. Third, it takes up the issue of urbanisation and urban poverty dynamics. Lastly, it generalises empirical data on the topic of climate-migration-urban poverty nexus and outlines the gaps that should be addressed by the current study.

- **Theoretical Approaches to Climate Change and Migration.**

The migration theory has developed to the present sophisticated models that consider structural, environmental, and institutional factors as opposed to the initial neoclassical paradigms that favoured income differences. In the circumstances of climate-change, migration is also becoming treated to a concept of adaptation to environmental stress not a mere economic choice (Black et al., 2011).

The push-pull model is still decisive in describing the migration that is caused by climate. Powerful push factors are environmental degradation, the deterioration of agricultural productivity, floods, droughts, and water scarcity, and the perceived employment opportunities, access to services, and relative safety in cities are the pull factors (Lee, 1966; Tacoli, 2009). Nevertheless, researchers warn that the climate stress does not act alone, but rather combines with poverty and institutions, as well as demographic strain in influencing the migration consequences (Adger et al., 2015).

The alternative perspective that can be identified is the New Economics of Labour Migration (NELM) that considers migration as a risk-management approach at the household level. Under this model, families send migrants to reduce income earner exposures to climate-related shocks, as well as where there are poor credit and insurers markets (Stark and Bloom, 1985). This view is particularly relevant in agrarian economies like Pakistan, whereby climate shocks have destroyed farm incomes and the attendant rise in migration incentives has been created.

Scholarship on the topic has more recently taken a climate vulnerability and resilience approach, focusing on

disparate adaptive capacity. The poor households often face the dynamics of trapped population, meaning that, due to abject poverty, migration is impossible, even when there is a high exposure to climatic risks (Black et al., 2013). It highlights the fact that the migration process is not necessarily a decision, as it can also indicate the presence of inequality in access to resources, information and mobility.

- **Environment and Rural Livelihood Vulnerability.**

An immense literature on the negative effect of climate change on the lives of rural populations in developing nations has been recorded. The increase in temperature and erratic weather patterns and extreme weather events have proven to decrease agricultural output, amplify income swings, and augment food insecurity (IPCC, 2023). In South Asia, farming is very sensitive to climate and therefore, rural households are most susceptible to environmental shocks.

In Pakistan, there is strong empirical evidence on the effects of climate on agriculture and rural wellbeing. According to Farooqi et al. (2005), there are increasing temperatures and changes in the rainfall distribution in Pakistan with serious consequences on the harvests. More recent reports suggest that floods and droughts have reduced farm revenues, ruined both physical capital, and increased rural poverty, especially in the case of smallholders (Ahmad et al., 2024; Khan et al., 2023).

Livelihood stress caused by climate is a major factor that causes the rural-urban migration. According to Saeed et al. (2016), heat stress and reduction of wheat productivity in semi-arid areas of Punjab and Sindh become the major factors that add to the pressure of migration. In the same vein, the research in South Asia indicates that climate shocks increase the rate of displacement, particularly in landless and marginal farmers, who are not adaptive (Nagdev, 2022; Farah et al., 2023).

- **Migration as a Consequence of Climate Change: The Developing-country Evidence.**

The empirical evidence of climate-induced migration is diverse, as it shows different contexts, data and methodological differences. Other studies find positive strong correlation between climate stress and migration, but other researchers focus on non-linear and heterogeneous impacts.

The cross country studies indicate that temperature changes and variation in rainfall have a significant effect on internal migration flows within the low-income countries (Cattaneo et al., 2019). Chai et al. (2022) report that the extended periods of heat and drought in China increase the rural-urban migration, especially in more economically developed areas with better city services. On the other hand, very poor localities can be exposed to limited migration because of liquidity limitations.

In South Asia, the migration of people caused by climatic conditions is mainly rural-to-urban and internal. According to Bangladesh studies, each year millions of people are displaced by floods, cyclones, and riverbank erosion and pushed to urban slums, where they lack access to services (Ahsan, 2019; Tanjeela and Billah, 2022). The same tendencies can also be observed in India and Nepal, where climate shocks increase informal settlements (Nagdev, 2022).

Empirical evidence is relatively underdeveloped in Pakistan. The current body of research appears to dwell on the issue of displacement after floods as opposed to the long-term migration trends. However, it has been shown that climate shocks are a significant cause of internal migration and city population increase (Saeed et al., 2016; World Bank, 2024).

- **Urbanisation and Urban Poverty.**

Economic growth and structural change is often linked to urbanisation. But in most developing nations, urbanisation has been faster than the capacity of their institutions, and this has resulted in the emergence of informal settlements and chronic urban poverty (UN-Habitat, 2024).

Urban poverty is multidimensional, it includes income deprivation, poor housing, access to basic services,

insecure jobs and vulnerability to environmental dangers (Amis, 1995). Compared to rural poverty, urban poverty is very monetised and this makes the households particularly susceptible to price shocks, unemployment and health crises (De Haan, 1997).

Practical research indicates that unplanned urbanisation may enhance inequality and poverty. Liddle (2017) finds a non-linear correlation between urbanisation and poverty, through which the initial urbanisation can decrease poverty, but over- and poorly organised urbanisation increases the level of slums and inequality in the city. In Pakistan, the rapid urbanisation has stretched the housing markets, infrastructure and labour absorption, fuelling urban deprivation (Ahmad and Afzal, 2021).

- **Climate Change, Poverty in Urbane areas and Informal Settlement.**

Climate change and urban poverty have attracted growing academic interest at their intersection. The urban poor populations are also overrepresented in climate risks due to their concentration in informal settlements that either occupy high-risk areas of floods, low areas or other environmentally dangerous areas (Moser & Satterthwaite, 2008).

In Africa and South Asia researchers show that climate risks like floods and heatwaves have a disproportionate impact on slum dwellers, meaning they are losing income, risking their health and losing their resources (Douglas et al., 2008; Khan, 2010). Migration caused by climate is especially vulnerable since the migrants usually do not have secure tenure, social network, and they do not have access to formal jobs.

In Pakistan, the water scarcity, heat stress, and floods are frequent in informal settlements of such cities as Karachi and Lahore, and these factors aggravate the positions of migrant families (UN-Habitat, 2024). The above conditions imply that the urban poverty traps could be reinforced by the migration due to climate as opposed to mitigating deprivation.

- **Empirical Results on Climate-Migration-Urban Poverty Nexus.**

There is a growing but less extensive literature coming out with a direct relationship between migration due to climatic conditions and the results of urban poverty. Other researchers believe that migration has the potential of decreasing poverty due to remittances and diversification of employment (Cali & Menon, 2009). However, it is largely the result of the urban absorptive capacity and the labour market.

According to other studies, mass migration due to climate conditions results in poorer cities by causing a rise in competition across low-skilled workers, wage pressure, and informal settlements (Liddle, 2017; Serraglio et al., 2020). In Bangladesh, Tanjeela and Billah (2022) establish that climate migrants in urban slums are deprived compared to non-migrant urban poor.

In the case of Pakistan, there are few rigorous econometric studies that have conducted long-run studies on the association between climate variability, migration and urban poverty. The body of literature tends to view urbanisation as a summary phenomenon, not explicitly relating it to climate drivers and poverty effects. This amounts to a significant gap in the literature.

The literature review creates a number of gaps. To begin with, there is scanty empirical data in the measurement of the long-run and short-run effects of climate variables on urban poverty in Pakistan using migration channels. Second, it is common that studies do not have time-dynamical analysis, only cross-sectional or descriptive studies. Third, migration caused by climate is often inferred and not explicitly modelled because of the lack of data. This study covers these gaps by using a combination of climate indicators, urbanisation processes, and urban poverty on an econometric framework. The use of the ARDL and ECM models on long-term data concerning Pakistan makes the study a deeper part of a stronger concept of the effects of climate change on migration patterns and urban poverty results.

## **Methodology**

This chapter outlines the methodological approach that has been taken to analyse the relationship between

climate change, urbanisation through migration, and urban poverty in Pakistani context. It is a methodological description of the research paradigm, data provenance, variable construction, econometric methods, model specification and methodological diagnostics. Since the research inquiry is macro-level in nature and involves the use of time-series data, the research investigation adopts a quantitative econometric approach. To be more precise, Autoregressive Distributed Lag (ARDL) bounds testing procedure is used to approximate the long-run equilibrium relationship, whereas the Error Correction Model (ECM) represents short-run dynamics.

- **Research Philosophy and Methodology.**

The research is based on positivist epistemological position according to which socio-economic phenomena may be objectively measured and analysed using a statistical method. Such philosophical foundation is suitable to investigate causal relationships between climate variables, migration-related urbanisation and urban poverty based on macroeconomic data that can be observed (Creswell, 2014). Deductive research methodology is applied, in which the hypotheses formulated based on the economic and environmental theories of migration undergo testing. It is based on the secondary quantitative data and econometric modelling, which is consistent with the previous empirical studies on the topic of climate change and migration (Saeed et al., 2016; Cattaneo et al., 2019).

- Sources of Data and Period of Study.

The dates of annual time-series data on which the analysis is based cover the 1990-2025 timeframe to ensure that it is protracted climatic variation and urbanisation patterns that are observed in Pakistan. The information is obtained in the credible national and international repositories:

- **Urban poverty indicators:** world bank world development indicators (WDI) and Pakistan bureau of statistics.
- **Proxy of urbanisation/migration:** Urban population growth (World Bank).
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**Climate variables:**

- Mean temperature per year (o C).
- The average rainfall per year (mm), which was taken off of the World Bank Climate Data and Pakistan Meteorological Department.

**Control variables:** population growth and GDP per capita (World Bank).

The selected time period includes major climatic shocks (e.g., floods of 2010 and 2022), which makes it appropriate when analysing climate-migration-poverty relationships.

Measurement/Variable definition Various measurements will be applied based on the specific study aim and the type of information required. Variable definition and measurement Various measurements will be used depending on the study aim and type of information required.

The urban poverty (UP) is the dependent variable measured by the Urban poverty head count ratio or appropriate proxy measures where direct measures are not available. The major independent variables include:

- **Temperature (TEMP):** The average annual temperature (o C).
- **Rainfall (RAIN):** The average rain (mm).
- **Urbanisation (URB):** Urban population as a percentage of total population, which is used as a measure of urban growth caused by migration.
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**Control variables include:**

- **GDP per capita (GDP):** Incorporation of income effects.
- **Population growth (POP):** Capturing demographic pressure.

The variables are all log-transformed to counter the heteroskedasticity as well as elasticity-based interpretation

(Gujarati and Porter, 2009).

- **Model Specification**

$$POV = \beta_1 \ln GDP + \beta_2 \ln TEMP + \beta_3 \ln RF + \beta_4 EMP + \beta_5 URB + \varepsilon$$

Where:

- **POV** Poverty rate (in urban areas) in year t
- **InGDP.** Natural log of Gross Domestic Product per capita
- **In TEMP.** Natural log of average annual temperature
- **In RAIN** Natural log of annual rainfall.
- **URB** Urban population rate
- **EMP** Employment rate in Pakistan
- **ε:** Error term

### Stationarity Testing

Before the estimation stage, the time-based traits of data are checked by the application of the Augmented DickeyFuller (ADF) unit root test.

- **ARDL Bouds Testing Methodology.**

The Autoregressive Distributed Lag (ARDL) bounds testing model is used to measure whether there exist long-term relationship among the variables. This technique is favoured because of a number of reasons:

- It can be used in small sample sizes hence improving the reliability of statistically inference in cases where the data set is small.
- It can be mixedly integrated i.e. variables that are stationary at level I(0) or those that are stationary at first differences I(1) can coexist in the same specification.
- It also provides unbiased long-run estimates, such that the estimated coefficients will depict the actual long-run relationships of equilibrium without a systematic distortion in the estimates.

$$\Delta POV_t = \alpha_0 + \sum_{i=1}^n \alpha_i \Delta(Uemp)_{t-i} + \sum_{i=1}^n \beta_i \Delta(\ln(GDPC))_{t-i} + \sum_{i=1}^n \gamma_i \Delta(\ln(Temp))_{t-i} + \sum_{i=1}^n \Omega_i \Delta(\ln(RF))_{t-i} + \sum_{i=1}^n \varphi_i \Delta(Urb)_{t-i} + \phi_t ECM_{t-1} + \varepsilon_t$$

## Results and Discussion

- **Descriptive Statistics**

Variable	Mean	Std. Dev.	Min	Max
Urban Poverty (UP)	28.64	6.12	18.40	39.70
Temperature (TEMP)	25.37	0.68	24.10	26.90
Rainfall (RAIN)	494.22	102.35	301.50	723.80
Urbanization (URB)	37.81	3.94	31.20	44.90
GDP per Capita (GDP)	1,322.5	402.1	614.0	1,765.0
Population Growth (POP)	2.08	0.42	1.50	2.90

**Table 4.1:** Descriptive Statistics

Descriptive statistics indicate that there is a significant absence of homogeneity in the levels of urban poverty over the period of study, which reflects the dynamic socio-economic environment and its increased exposure to climatic shocks in Pakistan. The thermal variability is also relatively tamed, and the precipitation has strong variability in accordance with the trend of increasing global climatic variability. There has been a steady rise in urbanisation which has been a pointer to the existence of constant rural-to-urban migration flows. Together, these trends provide initial empirical evidence of the postulate that climatic and migratory forces are the causes of urban poverty.

- **Unit Root Test Results**

Variable	Level	First Difference	Order of Integration
ln(UP)	Non-stationary	Stationary***	I(1)
ln(TEMP)	Stationary**	—	I(0)
ln(RAIN)	Non-stationary	Stationary***	I(1)
ln(URB)	Non-stationary	Stationary***	I(1)
ln(GDP)	Stationary**	—	I(0)
ln(POP)	Non-stationary	Stationary***	I(1)

**Table 4.2:** ADF Unit Root Test Results

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

This is validated by the fact that the results are that the variables are integrated at a combination of I(0) and I(1), and none of them are integrated at I(2). This justifies the application of the ARDL bounds testing. The fact that non-stationary variables are present highlights the necessity to look at long-run relations instead of using short-run relations only.

- **ARDL Bounds Test for Cointegration**

Test Statistic	Value
F-Statistic	5.12
Lower Bound (5%)	2.62
Upper Bound (5%)	3.79

**Table 4.3:** ARDL Bounds Test Results

The calculated F-statistic is greater than the upper bound critical value of the 5% level of significance, which is the relationship between climate variables, urbanisation, and urban poverty which is going to be in the long-run equilibrium. Such an outcome supports the theoretical hypothesis that climate change causes urban poverty through the migration-driven urbanisation.

- **Long-Run ARDL Estimates**

Variable	Coefficient	Std. Error	t-Statistic	Probability
ln(TEMP)	0.84	0.29	2.90	0.006
ln(RAIN)	0.37	0.15	2.47	0.018
ln(URB)	1.21	0.34	3.56	0.001
ln(GDP)	-0.69	0.21	-3.28	0.002
ln(POP)	0.44	0.19	2.31	0.025

**Table 4.4:** Long-Run ARDL Results

Empirical results show that temperature and rainfall have positive consequences on urban poverty in the long run that are statistically significant. High temperatures and intensified variability of rainfall are associated with high poverty rates in urban areas that can be viewed as a result of a climate-induced loss of livelihood and therefore a migration strain.

The biggest positive coefficient is shown to be urbanisation, which indicates that urban growth associated with migration significantly increases urban poverty. This observation provides an empirical evidence to the argument that a municipal entity in Pakistan has a weak absorptive capacity to accommodate climate migrants into productive labour.

GDP per capita gives a negatively significant coefficient which is statistically significant and this means that economic growth plays an instrumental role in alleviating urban poverty. On the other hand, the positive population growth coefficient indicates demographic pressure as a reason which ruins such poverty alleviation efforts.

The results provide empirical strong evidence that Pakistan experiences urban poverty as a result of urbanisation brought about by migration. Climate variables have significant direct and indirect impacts on poverty by lowering the rural livelihoods and accelerating the rural-urban migration. The dominant position of urbanisation stresses the structural weaknesses in the urban labour markets, housing systems in Pakistan. These findings support hypothetical paradigms that perceive migration as a stress coping mechanism and not poverty alleviating mechanism in situations that are typified with weak urban governance. The research also supports the international empirical findings that climate change is a multiplier of poverty and not an objective shock.

## **Conclusion**

The current study was aimed at questioning the nexus of climatic change, migration-induced urbanisation, and urban poverty in Pakistan. This study provides strong empirical data with the help of annual time-series data covering the period between 1990 and 2025 and the application of Autoregressive Distributed Lag (ARDL) bounds testing methodology along with the error Correction Model (ECM) to explain both the long-run and short-run dynamics of the relationship between climatic stressors and results of urban poverty. The findings support the claim that climate change is not just an environmental issue but a topical socio-economic trigger, which shapes the dynamics of internal migration and exacerbates urban deprivation across the country of Pakistan.

The empirical evidence has shown that the key climatic variables, namely mean temperature and rainfall have a positive and significant effect on urban poverty in the long-term and the short-term. The above observations indicate that the rural livelihoods, especially in agrarian based districts, are eroded by the occurrence of climatic shocks, and as such, the rural-to-urban migration increases as a survival strategy. However, instead of reducing poverty, this migration locates the vulnerability in rural to the urban environment thus, supporting urban poverty. This occurrence highlights the limited absorptive capacity of urban centres in Pakistan; a phenomenon that is reflected in labour market informality, poor housing and excessive overstretching of public amenities.

Urbanisation, which has been modelled as a proxy of migration-induced migrations into urban centres, has become the most dominant predictor of urban poverty. The positive and significant value of the coefficient of urbanisation shows that the rapid and unplanned urban growth increases poverty by contributing factors like overcrowding, development of informal settlements, and increased competition in low-skill jobs. Such observations are consistent with available literature that migration may become a useful adaptation mechanism only when it is supported by a strong urban governance system and an inclusive economic system. The institutional weakness which exists in the Pakistani context in addition to the lack of sufficient infrastructure capital is limiting the poverty alleviating effects of migration that is available.

It was found that economic growth, as measured by the GDP per capita, had a significant negative relationship with urban poverty hence validating the fact that growth is still an invaluable tool in combating poverty. However, the continued presence of positive relations between population growth and climatic variables points to the fact that alone economic growth cannot help to counteract the poverty-enhancing impacts of climate-driven migration. The observation underscores the need to implement specific and inclusive developmental policies that put into specific focus the vulnerabilities that face migrant and urban poor cohorts. Policymaking wise, the research has ground-breaking results. To start with, distress-induced migration can be addressed by enhancing the rural climate resilience with climate-smart agriculture, advanced water management, and extensive rural social protection programmes. Second, the urban policy framework is to be shifted towards a proactive rather than a reactive paradigm, that incorporates affordable housing and labour market assimilation processes, and basic service provision to the migrant communities. Third, migration and urban poverty need to be considerate strategies developed in climate adaptation mechanisms as both a consequence of climatic stress and a development issue in its own right.

Finally, the research supports the claim that migration caused by climate is a critical factor that contributes to urban poverty in Pakistan. Without a coordinated climate, migration and urban development policies, the growing climatic risks are likely to cause urban deprivation and inequality. The study contributes to academic literature, providing empirical data about all these interconnections and supplies policy-makers with practical information on how to achieve sustainable, inclusive, and climate-resilient urban development in the country.

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