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Remittances and Multidimensional Poverty in Mexico: A Comparative Analysis of Income Sources

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Abstract

This study aims to analyze the effect of remittances on multidimensional poverty in Mexico by comparing them with other sources of household income, such as labor income and social spending from transfers, subsidies, and allocations. Furthermore, economic growth dynamism is incorporated as a control variable. A micro-panel with cross-sectional and temporal fixed effects covering the 32 federative entities from 2010 to 2024 is used for this purpose. The results reveal that, although remittances have a moderate alleviating effect on poverty, it is greater than the impact of social spending by state governments. In contrast, labor income is identified as the main factor in reducing multidimensional poverty. These findings underscore the importance of promoting the utilization of remittance flows through financial inclusion strategies to strengthen their contribution to sustained household well-being and consolidate them as a structural instrument against the persistent challenges of multidimensional poverty in Mexico.

Keywords: multidimensional poverty; remittances; wage income; social spending

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1. Introduction

Poverty is a multidimensional phenomenon comprising aspects that violate human dignity, restrict rights, narrow fundamental freedoms, impede satisfaction of basic needs, and preclude full social integration (CONEVAL, 2014). In Mexico, there are at least two distinct approaches to measuring poverty: economic well-being and social rights. The first approach, adopted by international organizations such as the World Bank, conceptualizes poverty through the application of monetary income thresholds. This framework is particularly effective for facilitating cross-national comparisons via the purchasing power parity metric and for tracking progress toward global development objectives, notably Goal 1 of the Sustainable Development Goals, which focuses on the eradication of poverty. The latter approach encompasses indicators such as access to food, health care, education, social security, and dignified housing. Other multidimensional poverty methodologies exist globally. For example, the Oxford Poverty and Human Development Initiative (OPHI) at the University of Oxford has measured the interrelated deprivations in health, education, and standard of living that affect an individual's well-being through the Global Multidimensional Poverty Index (MPI) since 2010 (OPHI & UNDP, 2024).

Recent data on poverty, particularly from the World Bank's (2024) Poverty, Prosperity, and Planet report, indicates that one in ten people globally experiences multidimensional poverty. This highlights that, beyond monetary deprivation, structural factors such as limited access to education, healthcare, and basic infrastructure significantly contribute to

poverty and deepen existing inequalities. Moreover, when analyzing the socioeconomic conditions of a population, it is essential to adopt comprehensive income measurement frameworks that encompass not only income levels (covering both labor and non-labor income sources) but also dimensions related to the realization of rights and the degree of social deprivations. Such an integrated approach yields a more accurate and multidimensional depiction of economic welfare. There are other channels that impact individuals' economic capacity, such as government subsidies, monetary transfers, and remittances. These channels could represent complementary mechanisms to increase well-being. Including these sources in measurement models is crucial for a comprehensive assessment of poverty.

Based on this argument, it has been found that public expenditures, including allocations and subsidies, can reduce poverty (Guerrero & Castañeda, 2022). This is a decisive factor in creating social programs that mitigate multidimensional poverty. According to the World Bank (2022), this can be achieved through redistributive fiscal policies, such as transfers and subsidies. The efficient and targeted distribution of these policies is emphasized as a means of reducing social deprivations.

The International Monetary Fund (2022) shows evidence that social programs mitigate the negative impacts of economic crises, as exemplified by health contingencies such as the one caused by the SARS-CoV-2 virus. However, social programs gain greater momentum when they are Conditional Cash Transfer (CCT) programs because they can specifically alleviate certain social deprivations. Current findings by authors such as Kaydor (2021) refer to CCTs as a tool that reduces social deprivation, mainly due to the absence of intermediaries. Moreover, conditional transfers are more effective in economic crisis scenarios (Nazareno & de Castro Galvao, 2023).

Despite positive findings regarding public expenditures allocated to social programs and their close link to fighting poverty, some studies, such as that by Iniguez-Montiel and Kurosaki (2018), have found that these programs have not significantly reduced poverty levels, particularly in Mexico. This can be explained by two factors: market instability and insufficient economic growth. However, it is acknowledged that this argument requires a contextual analysis that considers both political and social factors. To determine whether public expenditure associated with social programs truly mitigates social deprivations, it is necessary to evaluate the programs' long-term implementation.

Beyond social spending and public assistance programs, remittances have been widely recognized in the economic literature as a crucial and sustained source of income for populations living in poverty. Remittances are income originating from external sources and sent by family members involved in migration processes, whether internal or international. If these transfers can be shown to strengthen and promote capabilities, they could benefit thousands of individuals currently living below the well-being threshold (Ciupureanu & Roman, 2016; Ojeyinka & Ibukun, 2024). Based on data from the American Community Survey, in 2010, the number of U.S. residents born in Mexico exceeded 11.7 million. Of this total, approximately 6.5 million were estimated to be undocumented Mexican immigrants. Since then, both documented and undocumented Mexican immigrant populations have gradually declined, reaching an estimated 10.7 million in 2022, with a slight rebound to approximately 10.9 million in 2023. The resident population of Mexican origin (comprising first, second, and third generations) in the United States is estimated at approximately 39.9 million individuals.

According to the Bank of Mexico (2024), income from family remittances has shown mixed trends in recent years. There was a considerable increase during years of economic crisis, followed by a pronounced reduction in post-pandemic periods. In 2010, remittances to Mexico totaled approximately USD 21.3 billion, reflecting a modest recovery from the global financial crisis. During the COVID-19 pandemic, remittances surged dramatically,

reaching USD 40.6 billion in 2020, driven by increased transfers from Mexican migrants in the United States despite economic uncertainty. However, recent data from 2024 indicates a slowdown, with remittances declining by 5.5% compared to the previous year.

Official data from the National Survey of Household Income and Expenditure (ENIGH-INEGI) shows that the percentage of the population living in multidimensional poverty has decreased. Nevertheless, at least 36 out of every 100 people in Mexico experience social deprivation and have an insufficient monthly income to cover a basic food basket and other essential goods and services. These deprivations are reflected in educational lag, limited access to health services and social security, poor housing quality and space, and limited access to basic housing services and food.

Thus, this document aims to analyze how external income from remittances, social expenditures from transfers, subsidies, and allocations, as well as wage income, affect the multidimensional poverty of the Mexican population from 2010 to 2022. The guiding research question is: to what extent do remittances contribute to the reduction in multidimensional poverty in Mexico, compared to labor income and state-level social spending, during the period 2010–2024? The hypothesis to be tested posits that remittances have a greater short-term impact on reducing multidimensional poverty in Mexico than state-level social spending, but they do not offer a sustainable or structural solution. In contrast, labor income constitutes a more stable and autonomous source of household resources, with a stronger and more enduring effect on overcoming multidimensional poverty over the medium and long term.

The document is organized as follows: Section 2 reviews the context of multidimensional poverty and remittances in Mexico. Section 3 reviews the theoretical literature and empirical analyses addressing the relationship between poverty and remittances. Section 4 describes the data and methodology, and Section 5 analyzes the results of the study. The final section presents the study's conclusion.

2. The Context of Multidimensional Poverty and Remittances in Mexico

The General Law on Social Development (LGDS) establishes that poverty in Mexico must be analyzed through a multidimensional framework encompassing six dimensions of social deprivation, as defined by the National Council for the Evaluation of Social Development Policy (CONEVAL). An individual is considered socially deprived if they lack access to at least one of the following: education, health services, social security, nutritious food, basic housing services, adequate housing quality, or sufficient space.

The conceptualization of poverty in Mexico has evolved over time from a unidimensional approach based exclusively on income to a multidimensional perspective that was formally implemented in 2008. This paradigm shift allows poverty to be assessed through available income, unsatisfied basic needs, and the effective exercise of social rights. This provides a more comprehensive understanding of well-being and social inequality (Villalobos-López, 2023).

Table 1 is a schematic representation that classifies and interrelates the vertical and horizontal axes. It delineates the population space in terms of multidimensional poverty. This framework provides insight into the structural and trend behavior of poverty in Mexico and is organized into specific categories. Multidimensional poverty encompasses individuals whose income falls below the poverty line (the minimum monetary value necessary to purchase basic food and non-food items) and who experience at least one social deprivation. Extreme poverty refers to individuals whose income falls below the minimum welfare line (the minimum monetary value required to purchase a basic food basket) and who experience at least three out of six social deprivations.

Table 1. Identification of Poverty. Source: CONEVAL (2024).

Poverty line	Vulnerable due to social deprivation.		A population without deprivations and with an adequate level of economic well-being.
Minimum poverty line	Multidimensional poverty		Vulnerable due to income.
	Extreme poverty (3 to 6 deprivations)	Moderate (1 to 2 deficiencies)	

Vulnerability due to social deprivation encompasses individuals with one or more deprivations whose income is above the poverty line. Conversely, vulnerability due to income includes individuals without social deprivations whose income is equal to or below the poverty line. The non-poor and non-vulnerable population refers to individuals with an income above the poverty line and without any social deprivation.

According to Table 1 and the 2022 data reported by the National Council for the Evaluation of Social Development Policy (CONEVAL, 2022) indicates that approximately 46.8 million people were living in poverty, representing 36.3% of Mexico's total population that year. This reflects a reduction of 8.9 million individuals compared to 2020. Of those individuals, 37.7 million were living in moderate poverty (29.2%), and 9.1 million were living in extreme poverty (7.1%). Additionally, 56.1 million individuals (43.2%) were considered income-poor.

The states with the highest levels of multidimensional poverty were Chiapas (67.4%), Guerrero (60.4%), Oaxaca (58.4%), Puebla (54%), Veracruz (51.7%), and Mexico State (42.9%). Together, these states accounted for 24 million people (55.6% of the total impoverished population) and 6.1 million people living in extreme poverty (67.5% of the national total). Mexico ranked 70th out of 111 countries in the Multidimensional Poverty Index. However, the data reveal that 84.7 million people experienced at least one social deprivation and 32.1 million experienced three or more.

Data from the 2024 National Household Income and Expenditure Survey (ENIGH) show a notable reduction in economic and social deprivation indicators nationwide. Specifically, between 2022 and 2024, the incidence of multidimensional poverty decreased by 6.7 percentage points, from 36.3% to 29.6% of the total population (equivalent to 8.3 million people moving out of poverty). Similarly, extreme poverty fell from 7.1% to 5.3%. These improvements appear to be associated with the sustained increase in households' real per capita income and progress in social rights coverage, particularly regarding access to social security.

However, the official 2024 poverty statistics also reveal pronounced regional inequality. Chiapas, Guerrero, and Oaxaca remain the most vulnerable states, with poverty rates exceeding 70% in Chiapas and over 60% in Guerrero and Oaxaca. The persistence of social deprivation in these regions is primarily due to insufficient coverage of basic services and limited financial inclusion. In contrast, Nuevo León, Mexico City, and Baja California Sur have the most favorable indicators, with poverty rates below 20%. This disparity reflects the superior socioeconomic infrastructure, broader access to essential services, and greater economic dynamism in the northern and central regions of the country. These contrasts highlight the structural challenges that public policy and market dynamics face in promoting territorial convergence and equitable development.

Table 2 classifies the population experiencing social deprivation across five time periods. The data show that the two most prevalent deprivations are a lack of access to health services and social security. For example, beginning in 2022, the population without

access to health services increased by 11%. Additionally, over 64 million people lack access to social security. These two indicators remain critical at the national level, revealing persistent structural inequalities and disparities in social protection.

Table 2. Indicators of social deprivation. Source: own elaboration with data from CONEVAL (2024) and INEGI (2024).

Social Deprivation	2016	2018	2020	2022	2024
Educational gap	22.3 (18.5%)	23.5 (19%)	24.4 (19%)	25.1 (19.4%)	23.3 (18%)
Access to health services	18.8 (15.6%)	20.1 (16.2%)	35.7 (28.2%)	50.4 (39.1%)	51.8 (40%)
Access to social security	65.4 (54.1%)	66.2 (53.5%)	66 (52%)	64.7 (50.2%)	62.5 (48.3%)
Quality and living spaces	14.5 (12%)	13.6 (11%)	11.8 (9.3%)	11.7 (9.1%)	10.3 (8%)
Access to basic services in the home	23.1 (19.2%)	24.3 (19.6%)	22.7 (17.9%)	22.9 (17.8%)	22.5 (17.4%)
Access to nutritious, high-quality food	26.5 (21.9%)	27.5 (22.2%)	28.6 (22.5%)	23.4 (18.2%)	23.9 (18.5%)

Understanding social deprivations is essential to grasping the reality of multidimensional poverty in Mexico. According to official data, 2.7 million more people are in poverty if they do not receive social transfer programs. This evidence suggests that monetary transfers are a key factor in determining individuals' income levels. However, it is important to examine how this income interacts with other sources, such as remittances, as these may influence household welfare and poverty outcomes differently.

Evolution of Remittances in Mexico

Since 2020, the states with the highest growth rates in remittance income have been Chiapas (175.91%), Baja California Sur (91.81%), Hidalgo (63.58%), and Yucatán (60.98%). This pattern is noteworthy because state-level dynamics differed in previous periods. For example, Baja California led remittance growth from 2010 to 2012, Nuevo León from 2012 to 2014, Querétaro from 2014 to 2016, Yucatán from 2016 to 2018, and Mexico City from 2018 to 2020. Chiapas reached the highest growth from 2020 to 2022 (Appendix A, Table A1).

Remittance growth during the 2022–2024 period has generally decelerated compared to the post-pandemic economic recovery period (2020–2022), which experienced exceptionally high expansion. The average annual growth rates of the states in the most recent period mostly ranged between 2% and 5%. States that experienced the largest increases from 2020 to 2022, such as Chiapas, Quintana Roo, and Baja California Sur, normalized to single-digit growth rates. Meanwhile, Aguascalientes and Yucatán stood out as states with some of the highest remittance growth rates in the current period (Appendix A, Table A1).

This information reveals a changing dynamic in remittance inflows that may reflect shifts in migration patterns toward other regions. Furthermore, these figures highlight persistent disparities in the economic performance of Mexican states. Although some states, such as Baja California, Nuevo León, and Mexico City, have more competitive and productive economies, they still face challenges related to creating decent jobs and providing wages that can cover the high cost of living in urban areas (Pardo Montaño & Dávila Cervantes, 2021).

In contrast, the data in Table 3 indicates significant changes in multidimensional poverty and remittance flows across the country's five major regions. A joint analysis of the two sets of data reveals consistent patterns of regional inequality and economic dependence, as well as a clear decoupling between remittance growth and poverty reduction.

Between 2010 and 2022, territorial gaps in multidimensional poverty remained deep and persistent. The Southwest (Chiapas, Oaxaca and Guerrero) remains the poorest region, with rates consistently above 60% in several years. The Southeast displays intermediate to high levels, ranging between 41% and 52%. The Central and North-Central regions remained at or slightly above the national average. By contrast, the North consistently exhibits the lowest poverty levels, reaching just 18.1% in 2022.

Table 3. Multidimensional Poverty and Remittances by Region[1]. Source: own elaboration with data from CONEVAL (2024) and INEGI (2024).

Multidimensional Poverty (%)							
	2010	2012	2014	2016	2018	2020	2022
North region	31.8	30.6	30.2	25.9	25.0	27.2	18.1
North-Central	45.2	45.0	42.1	38.5	36.4	35.1	30.3
Central	47.6	47.0	48.6	45.0	43.4	47.4	38.8
Southwest	71.0	68.8	69.4	70.9	70.1	67.9	62.1
Southeast	49.6	46.9	46.6	47.4	48.0	52.1	41.8
National total	46.1	45.5	46.2	43.6	41.9	43.9	36.3
Remittance income flows [1]							
	2010	2012	2014	2016	2018	2020	2022
North region	4867.0	5885.8	8302.0	8800.9	11,823.5	14,693.4	19,112.6
North-Central	12,853.6	13,817.7	14,413.8	17,897.1	22,815.4	27,351.3	36,361.5
Central	16,832.3	17,175.7	17,695.2	19,224.0	22,689.8	27,206.3	40,263.3
Southwest	17,517.4	18,073.2	16,650.2	19,196.4	23,818.1	28,405.8	51,379.7
Southeast	5484.7	5320.8	5023.5	5527.4	6989.4	8525.0	12,696.2
National total	364,385.86	383,789.55	404,467.87	461,698.49	576,022.03	694,508.41	1,000,768.18

[1] Note: Remittance flows are presented in millions of Mexican pesos.

Regarding remittance flows, they doubled or even tripled during the analyzed period in all regions, with the most pronounced increases occurring in high poverty regions such as the Southwest and the Central. At the national level, total remittances nearly tripled, 272 rising from 364 billion pesos to over one trillion pesos in 2022 (approximately 19,869.52 million USD in 2010 to 54,567.51 million USD in 2022).

The growth of remittances in Mexico primarily responds to migratory dynamics and economic shocks, such as the pandemic and recent inflationary pressures, rather than internal structural improvements. While remittances may serve as a compensatory mechanism in vulnerable contexts, evidence regarding their ability to transform structural conditions within poor households is limited. The Southwest region, for example, shows strong dependence on these inflows, suggesting a local economy with low capacity to generate internal income that is highly reliant on external resources. The data show that regions with the greatest structural lag are also the main recipients of remittances. This reinforces the idea that these resources function more as short-term household support than as drivers of productive transformation. Thus, while remittances help address immediate needs, they do not alter the conditions that perpetuate regional poverty in Mexico.

To identify whether remittances are concentrated in the poorest states and if they have increased over time, Table 4 shows information about the Mexican states with the highest levels of multidimensional poverty. The states of Chiapas, Guerrero, Oaxaca, Puebla, and Tlaxcala consistently exceed the national average, meaning that at least half of their populations live in multidimensional poverty. The data show that, between 2010 and 2022, these states received substantial increases in remittances, with amounts that, in some cases, tripled or quadrupled. However, this growth has not led to sustained reductions in poverty. In several cases, rates remain persistently high or fluctuate without showing any structural improvement. Chiapas and Guerrero particularly illustrate this disconnect; despite receiving some of the largest increases in remittances, these states continue to rank among the poorest in the country. This dynamic reinforces the idea that remittances primarily operate as a compensatory mechanism for households, alleviating immediate shortages without modifying the market, institutional, and territorial factors that perpetuate poverty in Mexico's most disadvantaged states.

Table 4. Remittance Flows to the Poorest States During the Period 2010–2022. Source: own elaboration with data from CONEVAL (2024) and INEGI (2024) [1].

	Chiapas		Guerrero		Oaxaca		Puebla		Tlaxcala	
Year	Poverty %	Remittances	Poverty %	Remittances	Poverty %	Remittances	Poverty %	Remittances	Poverty %	Remittances
2010	78.5	9825.60	67.6	20,550.38	67.0	22,176.26	61.5	23,453.66	60.3	4421.78
2012	74.7	9796.17	69.7	21,055.44	61.9	23,368.11	64.5	24,001.39	57.9	4331.41
2014	76.2	8588.04	65.2	20,584.60	66.8	20,778.08	64.5	22,896.53	58.9	3743.39
2016	30.7	9862.19	56.9	23,435.65	58.1	24,291.31	29.7	24,963.68	60.5	3988.21
2018	78.0	14,034.70	67.9	27,712.21	64.3	29,707.32	58.0	29,171.46	51.0	4374.90
2020	75.5	19,547.09	66.4	33,214.04	61.7	32,456.34	62.4	32,033.95	59.3	4176.65
2022	67.4	53,932.98	60.4	50,545.15	58.4	49,661.08	54.0	46,975.66	52.5	6555.78

[1] Note: the multidimensional poverty column refers to the % of people per year; and the remittances column show the annual flow of remittances in millions of Mexican pesos.

3. The New Economics of Labor Migration: Interactions with Multidimensional Poverty and Remittance Flows

Both the academic and policy spheres broadly agree that reducing poverty requires economic strategies that increase household income and strengthen individual capabilities. Achieving this goal requires an understanding of the micro- and macroeconomic factors that influence household welfare. In this context, analyzing the effect of remittances on poverty is essential because their impact extends beyond monetary income to include developing human capital and expanding individual and collective capabilities.

From an economic theory perspective, one of the most influential frameworks for explaining the dynamics of remittances and their relationship with development is the New Economics of Labor Migration (NELM), which was formulated by Stark (1991). This paradigm posits that migration decisions are not purely individual choices, but rather collective economic decisions made within the household context (Taylor, 1999; Taylor et al., 2008). Unlike neoclassical models, which focus on individual income maximization, NELM argues that families adopt migration as a risk management and income diversification strategy by generating remittance flows.

Based on this perspective, migration functions as an informal insurance mechanism against uncertainty and a lack of access to credit or formal insurance markets in local economies. Consequently, remittances operate as both income insurance and investment capital in contexts with financial market imperfections (De Haas, 2007). Thus, migration and remittances represent a strategy for household resilience and upward mobility, enabling families to overcome structural market failures and improve their living conditions.

The economic analysis of remittances and their relationship to poverty has centered on two primary theoretical approaches. The first approach is the income approach, which interprets remittances as a direct addition to household income. This monetary inflow results in a short-term reduction in monetary poverty and an increase in household consumption of goods and services, enabling families to meet basic needs and improve multidimensional well-being indicators, such as access to health care, education, and housing (Adams & Page, 2005; Ghosh, 2006).

The second approach, the Investment and Development Approach, views remittances as productive capital that can finance economic activities and improve households' structural conditions over the long term. According to Becker's (1964) human capital theory, allocating remittances to education or health generates returns in the form of higher productivity, economic growth, and intergenerational mobility (Ratha, 2003).

Within the framework of the New Economics of Labor Migration (NELM), various microeconomic models help us understand the relationship between remittances and

poverty. The life-cycle model, developed by Modigliani and Brumberg (1954), posits that remittances enable households to stabilize their consumption over the course of their lives. This reduces their vulnerability to income volatility and mitigates temporary periods of poverty. The Utility Maximization and Altruism Model, proposed by Lucas and Stark (1985), suggests that remittances stem from altruistic behavior or implicit contractual agreements between migrants and their families. These transfers aim to ensure the well-being of the family of origin and provide informal social protection during times of crisis.

Similarly, Becker's (1964) human capital model posits that the long-term effects of remittances depend on how much is invested in education and health because these investments enhance productivity and reduce intergenerational poverty. Analogously, Sen's (1999) capability approach and multidimensional poverty model expand the notion of well-being beyond income by viewing poverty as the deprivation of basic capabilities. From this perspective, remittances contribute to expanding individuals' real freedoms when allocated toward improving education, health, and housing. This promotes a structural, sustainable reduction in multidimensional poverty.

Together, these models show that migration should be understood as not only a labor phenomenon but also a strategy for family and community development. Interacting with the economic, social, and human dimensions of well-being, remittances can serve as catalysts for inclusive development, provided that public policies support their productive use by strengthening education, health, and financial inclusion in migrants' countries of origin.

From the perspective of the New Economics of Labor Migration, as well as the income-based and investment-development approaches, remittances are recognized as a strategic resource for improving the living conditions of recipient households. However, while Mexico's institutional framework ensures a formal system for the receipt and disbursement of remittances—primarily through regulated banking channels—it remains insufficient for establishing a systematic structure for the capitalization and financial utilization of these resources. Specifically, there are no dedicated regulations or financial services designed to channel remittances into sustained economic returns, such as savings instruments, productive investments, or inclusive financial mechanisms. As a result, remittances lack the institutional support necessary to generate medium- and long-term impacts on household welfare through structural financial integration.

Empirical Evidence on the Relationship Between Remittances and Poverty

The study of international remittances and their relationship to poverty reduction has been approached from multiple empirical perspectives. These perspectives highlight the role of remittances in improving immediate economic welfare and expanding long-term human capabilities. Among the leading scholars in this field are Adams and Page (2005), who provide robust empirical evidence that remittances significantly impact the reduction in monetary poverty, especially in low-income countries. They found that a 10% increase in international remittances reduces poverty incidence by about 3.5%, confirming the importance of remittances as a stable source of household income.

In this context, Ratha (2003), a leading World Bank expert on remittances and development, emphasizes that these financial flows are less volatile than other forms of external capital, such as foreign direct investment or official development assistance. This stability makes remittances a reliable, countercyclical source of income for countries with high emigration rates. Thus, remittances contribute to macroeconomic resilience and stabilize domestic consumption.

Thus, the economic analysis of remittances offers a comprehensive perspective, encompassing short-term effects related to increased consumption and financial security, as well as long-term effects linked to investment in human capital and development capacity.

Combining the human capital framework (Becker, 1964) with the capabilities approach (Sen, 1999) further enriches this analytical lens, illustrating how remittances can enhance quality of life and foster sustainable reductions in multidimensional poverty.

Recent empirical evidence reinforces this trend. According to UNCTAD (2023), developing countries received approximately $800 billion in remittances in 2022, nearly 80% of which went to low- and middle-income economies. International studies estimate that increasing remittances by 10% as a share of GDP could reduce global poverty rates by around 1.6%, reaffirming their role in alleviating poverty and reducing inequality.

From a macroeconomic standpoint, remittances contribute to higher national consumption and savings, strengthen international reserves, and improve the balance of payments. These factors support financial stability and external debt sustainability (Sutradhar, 2020). From a microeconomic standpoint, however, remittances have a more direct effect on household welfare by increasing disposable income and mitigating economic vulnerability. For example, during the pandemic, remittances played a pivotal role in mitigating income inequality in recipient countries (Song et al., 2021).

Moreover, several studies have highlighted the role of remittances in building human capital. In low-income economies, remittances enable families to finance their children's education, improve access to healthcare services, and meet basic needs. This helps reduce social deprivations (Ali Bare et al., 2022). Remittances may also stimulate domestic investment in small-scale productive activities and foster local economic dynamism (Dash, 2020). In rural areas, remittances have been found to improve health outcomes and food security by enhancing household nutrition and overall well-being (Szabo et al., 2018).

From a distributive perspective, Song et al. (2021) acknowledges the potential for remittances to be redistributed, but they also caution that this depends on the income structure of recipient households. Concentrated remittance flows among higher-income groups may exacerbate inequality, whereas reaching poorer segments can strengthen upward social mobility and promote the accumulation of productive assets (Dey & Basak, 2024; Masron & Subramaniam, 2018; Bettin et al., 2017).

Thus, remittances are a financially, socially, and humanly relevant mechanism for developing economies. Their transformative potential lies in their capacity to alleviate monetary poverty and contribute to the structural reduction in multidimensional poverty by expanding human capabilities, generating opportunities, and consolidating sustainable well-being.

4. Methodology

4.1. Data and Variables

This study uses a balanced panel dataset covering Mexico's 32 federal entities from 2010 to 2022. The dependent variable is the number of individuals living in multidimensional poverty $Iog(Poverty)_{it}$, as reported by the National Institute of Statistics and Geography (INEGI) and the National Council for the Evaluation of Social Development Policy (CONEVAL). This measure includes individuals experiencing at least one of six forms of social deprivation (see Table 2).

The explanatory variables include: (a) per capita labor income, deflated using the National Consumer Price Index (INPC) at first-quarter 2020 prices; (b) per capita GDP at constant 2018 prices; (c) social expenditure, measured as the logarithm of income from transfers, subsidies and assistance provided by state governments; and (d) the logarithm of remittance income, as reported by the Bank of Mexico (see Table 5).

Table 5. Independent Variables Used in the Econometric Model. Source: Author's own elaboration.

Variable	Description	Source
$InPoverty_{it}$	Logarithm of the number of people in multidimensional poverty, classified by federal entity.	INEGI and CONEVAL
$lnRemittances_{it}$	Logarithm of remittance income by federal entity	
$InLabor_income_{it}$	Per capita labor income, deflated by the National Consumer Price Index (INPC), expressed in first-quarter 2020 pesos, by federal entity.	
$lnGDP_per_{it}$	Logarithm of per capita GDP at constant 2018 prices.	PIBE/INEGI
$lnSocial_exp_{it}$	The federal entity's logarithm of income from cash transfers, allocations, subsidies and other forms of assistance.	INEGI

Based on this framework, this paper's primary objective is to determine whether the reduction in multidimensional poverty can be attributed to state-level social spending or income from remittances. To this end, a robust empirical analysis was conducted to estimate the magnitude and significance of the explanatory variables and their associated factors. Accordingly, the panel data model incorporates the years to capture the temporal and cross-sectional dynamics of the evolution of multidimensional poverty in Mexico.

4.2. The Econometric Model

Once the variables of interest for this study had been selected, the information was organized using a panel data structure considering $n = 1, 2, \ldots N$ federal entities and $t = 1, 2, \ldots T$ years. With $N = 32$ and $T = 7$, a micro panel with 224 observations $NT = N \times T$ was constructed, where $N > T$. Following Wooldridge (2012), the analysis first estimates a pooled (or restricted intercept) model, expressed as follows:

$$y_{it} = \beta_0 \sum_{j=1}^{J} \beta_j x_{jit} + \mu_{it} \quad (1)$$

The subscript i denotes the cross-sectional identifier and t represents the time dimension for the dependent variable y and the explanatory variables x. The parameter β_0 is the common intercept for all cross-sectional units i. The set of parameters β_j is associated with the explanatory variables x_{jt} for which information is available at a specific point in time and space. The μ_{it} component is a random error term with a composite structure of the following form:

$$\mu_{it} = \propto_i + \theta_i + \varepsilon_{it} \quad (2)$$

The term μ_{it} includes an individual-specific component, $\propto_i$, that remains constant over time but varies across cross-sectional units. Similarly, it contains a time-specific component, θ_i, which remains constant across entities but varies over time. Finally, there is a random element ε_{it}, which is assumed to satisfy the properties of white noise. By introducing dummy variables to capture cross-sectional and temporal fixed effects, Equation (1) becomes:

$$y_{it} = \beta_0 \sum_{i=1}^{N-1} \propto_i d_i + \sum_{t=1}^{T} \theta_t t_t + \sum_{j=1}^{J} \beta_j x_{jit} + \mu_{it+\varepsilon_{it}} \quad (3)$$

$$\propto_i = \sum_{i=1}^{N-1} \propto_i d_i \quad \& \quad \theta_t = \theta \sum_{t=1}^{T} \theta_t t_t \quad (4)$$

In this regard, Equations (3) and (4) enable estimation of a fixed-effects model. However, since $N > T$, introducing dummy variables for each cross-sectional unit could reduce

the degrees of freedom, thereby weakening the statistical inference process (Varela Llamas & Ocegueda Hernández, 2020). Therefore, it is preferable to estimate time dummies, which allow the intercept to vary over t while remaining fixed across i. This approach ensures that the specification tests determine the most appropriate panel data model.

When performing any fixed-effects estimation, it is important to note that parameter β_0 represents the intercept of the reference category. Therefore, only $N-1$ dummy variables are introduced to avoid multicollinearity, also known as the "dummy variable trap". In this context, the analytical units' intercepts will differ and are expressed as $\beta_0 + d_i$ or $\beta_0 + \theta_t$, depending on the chosen specification. Within the framework of Equation (3), if the model includes fixed effects in t but varying effects across i, β_0 is redefined as β_{0i}. Conversely, if the effects are fixed across i but vary over t, β_0 is denoted as β_{0t}. In the first case, $\beta_{0i} = \beta_0 + \varepsilon_t$; in the second case, $\beta_{0t} = \beta_0 + \varepsilon_t$.

In this case, the random effects model would be specified as follows:

$$y_{it} = \beta_0 + \sum_{j=1}^{J} \beta_j x_{jit} + \varepsilon_i + \varepsilon_t + \mu_{it} \tag{5}$$

$$w_{it} = \varepsilon_i + \varepsilon_t + \mu_{it} \tag{6}$$

$$y_{it} = \beta_0 + \sum_{j=1}^{J} \beta_j x_{jit} + w_{it} \tag{7}$$

In this regard, the most suitable model is selected based on econometric testing, after outlining possible estimation approaches and considering the nature and dimensionality of the data. Because multidimensional poverty changes slowly and the data are of this nature, the use of a generalized method of moments (GMM), as proposed by Arellano and Bond (1991), is ruled out. This is because the lags used as instruments may be weakly relevant, which could produce inconsistent estimates. Additionally, the small size of our sample could lead to overidentification issues and a loss of efficiency when using an instrument (lag), as discussed by Roodman (2009). Therefore, a fixed effects model with robust standard errors is more appropriate because it captures unobserved heterogeneity and corrects for autocorrelation and heteroskedasticity (Stock & Watson, 2008).

The following equation summarizes the model employed in this analysis:

$$y_{it} = \beta_0 + X_{it}\beta + \mu_{it} \tag{8}$$

where $y_{it} = In(Poverty_{it})$ is the independent variable and X_{it} is the vector of regressors, and the error term is decomposed as in Equation (2). Note that $\propto_i$ represents unobservable heterogeneity that remains constant over time for each entity. Thus, the final econometric model is expressed as follows:

$$\begin{aligned} In(Poverty_{it}) = \quad & \beta_0 + \beta_1 ln(Remittances_{it}) + \beta_2 ln(Labor_income_{it}) \\ & + \beta_3 ln(Social_exp_{it}) + \beta_4 ln(GDP_per_{it}) + \mu_{it} \end{aligned} \tag{9}$$

Due to the logarithmic transformation, the coefficients β represent elasticities, and the variables capture percentage changes between the dependent and independent variables. The fixed-effects model controls for unobservable characteristics specific to each federal entity, such as institutional conditions and social and productive structures, to avoid biased coefficient estimates. Equation (9) thus seeks to analyze the effects of labor income, social spending through transfers and monetary assistance, and remittances on reducing multidimensional poverty.

5. Results and Discussion

Before performing the econometric estimations, a bivariate correlation analysis was used to verify the absence of multicollinearity among the variables. The results indicate that the correlations between the variables are not high enough to suggest collinearity. The explanatory variable most correlated with multidimensional poverty ($Poverty_{it}$) is social spending ($Social_exp_{it}$). Social spending comprises transfers and subsidies directed toward areas with higher poverty levels, which is an expected relationship given that social programs target vulnerable populations.

Similarly, external income from remittances ($Remittances_{it}$) exhibits a moderate, positive relationship with multidimensional poverty. This suggests that federal entities with higher poverty levels tend to receive greater remittance inflows. This finding can be explained by migration patterns and dynamics that are often rooted in poverty and limited economic opportunities.

To determine the most appropriate specification for the panel data analysis, statistical tests such as the Breusch-Pagan test and the Hausman test were used to distinguish between fixed-effects and random-effects models.

The results of the model without time controls (Table 6) indicate that labor income is the most significant factor in reducing multidimensional poverty in Mexico. A 1% increase in labor income leads to a 0.76–0.73% reduction in poverty, confirming the labor market's central role as a sustained mechanism of economic mobility (Amarante et al., 2023). As labor income emerges as the primary factor associated with poverty reduction, this finding underscores the importance of formal employment and productivity as critical determinants of household well-being (Villalobos-López, 2023). The coefficients in Models 1 and 2 are highly significant, indicating that higher labor income corresponds to lower poverty levels. Therefore, the long-term decline in poverty can be attributed to more competitive wages and higher levels of labor formality. These results confirm the crucial role of paid employment in enhancing welfare and underscore the importance of formal labor markets in reducing structural vulnerabilities across the country (CONEVAL, 2024; Gasparini et al., 2023).

Similarly, economic growth, measured by per capita GDP, contributes to reducing multidimensional poverty; however, part of this effect reflects macroeconomic shocks over time (Esquivel, 2024). The coefficients are negative and statistically significant (Table 6), indicating that a 1% increase in per capita GDP reduces multidimensional poverty by between 0.45% and 0.28%. The effect remains observable when time-fixed effects are included, suggesting that some of the improvements stem from common external factors. These findings highlight the need for greater labor inclusion to foster long-term poverty reduction mechanisms. Furthermore, the findings reinforce the idea that regional economic growth is vital for mitigating social deprivations (López-Calva & Rodríguez-Castelán, 2016).

However, given the temporal effects, one might infer that income concentration and inefficient redistribution mechanisms persist during certain periods, a phenomenon documented in Mexico over the past decade (Campos-Vázquez & Esquivel, 2023).

Consistent with empirical evidence highlighting their role as a source of economic relief rather than a structural driver of development (Cota & Preciado, 2022), remittances exhibit a negative, albeit modest, impact on multidimensional poverty. In both models, the coefficients are negative and statistically significant, though relatively small. These results suggest that remittances are a complementary factor in poverty reduction. Their potential impact could be strengthened by capitalizing on these resources through financial education programs and policies that enhance productivity, employment, and entrepreneurship.

Table 6. Econometric Results with Time Dummies [1]. Source: Author's own elaboration.

	Model Without Time Control (1)	**Model with Time Control (2)**
$lnSocial_exp_{it}$	0.0919 **	−0.00899
	(0.0391)	(0.0569)
$lnLabor_income_{it}$	−0.760 ***	−0.728 ***
	(0.101)	(0.113)
$lnRemittances_{it}$	−0.0748 ***	−0.0834 *
	(0.0275)	(0.0428)
$lnGDP_per_{it}$	−0.450 ***	−0.279 ***
	(0.0719)	(0.105)
Year		
2012		0.0403 *
		(0.0241)
2014		0.0391
		(0.0306)
2016		0.0251
		(0.0360)
2018		0.0635
		(0.0457)
2020		0.123 **
		(0.0526)
2022		0.0445
		(0.0657)
Constant	18.04 ***	17.29 ***
	(1.017)	(1.485)
Observations	224	224
R-square	0.530	0.571
id number	32	32
Test Hausman: p-value < 0.05	Chi-Sq = 74.49	Prob = 0.000
Wald test: p-value < 0.05	Chi-Sq = 2389.19	Prob = 0.000
Pesaran's test of cross-sectional[2] independence	CD = −1.040	Prob > z = 0.2983
Test de Jarque–Bera[3]	Chi-Sq = 1.529	p = 0.4656

Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Notes: the models report robust standard errors to correct for heteroscedasticity and autocorrelation [1]; No correlation across units in the panel is found.

In contrast, the results for social spending suggest that the effects of transfers and assistance provided by state governments on the reduction in multidimensional poverty are inconclusive. In the model without time controls, the coefficient is positive and statistically significant. However, once temporal effects are included, the coefficient shows the expected negative sign, though it loses statistical significance. This finding aligns with Parker and Vogl's (2023) argument that public transfers operate reactively in response to poverty, yielding limited mitigation outcomes. Therefore, it can be argued that state-level social spending in Mexico has not effectively reduced multidimensional poverty because it does not alter the structural conditions under which poor households live.

Taken together, the findings in Table 6 support the idea that effectively reducing poverty in Mexico requires generating more labor income and promoting inclusive economic growth. These two factors appear to be the most influential in achieving sustained progress in poverty reduction.

Additionally, remittances seem to play a complementary role in providing moderate relief from poverty, particularly during economic crises, like the one in 2020 (Acosta et al., 2020). However, remittances are often allocated to immediate consumption rather than

asset accumulation or social investment (Maldonado & Harris, 2024). Furthermore, it can be inferred that, in the current context, remittances serve more as a response to poverty than as a means of achieving economic mobility (Maldonado & Harris, 2024).

Therefore, intervention programs that incorporate financial literacy initiatives to facilitate secure fund transfers and access to low-interest bank loans to cover migration-related costs are advisable. These programs could help sustain remittance inflows and foster long-term poverty reduction (Dey & Basak, 2024; Bettin et al., 2017).

On the other hand, social spending has not yielded conclusive evidence regarding its significance or effectiveness in improving the multidimensional poverty conditions of households. This underscores the need to evaluate public social expenditure based on clearly defined criteria and objectives to ensure its efficiency and measurable impact. Furthermore, addressing structural poverty requires moving beyond substantialist approaches and advancing comprehensive political and legal reforms aimed at promoting equity and strengthening the institutional foundations of social rights. Social programs tend to produce gradual and heterogeneous effects depending on institutional efficiency and territorial targeting (Skoufias et al., 2013; Medrano & Beltrán, 2024). These findings confirm that social transfers and assistance directed at individuals living in multidimensional poverty have not generated long-term structural changes in poverty reduction trajectories or produced transformative effects on social and economic dynamics.

Regarding temporal variables, 2020 shows a statistically significant increase in multidimensional poverty. This increase is associated with the economic consequences of the 2019 Coronavirus Disease (COVID-19) pandemic, which led to job losses, economic contraction, and intensified inequalities. The remaining years included in the model do not exhibit statistically significant effects, except for 2012, indicating that variations in poverty do not systematically respond to common shocks except during periods of extreme crisis (OECD, 2023).

6. Conclusions

This study examined the impact of remittances, labor income, social spending (including transfers, assistance and subsidies), and per capita gross domestic product (GDP) on multidimensional poverty in Mexico using biannual panel data from 2010 to 2022. Employing a panel fixed-effects specification, the analysis controlled for structural differences across federal entities and isolated variations within states variations over time. The results reveal several mechanisms that help explain why poverty reduction in Mexico remains incomplete, uneven, and highly sensitive to economic cycles and crisis effects.

The findings highlight the strong and consistent effect of labor income, confirming that improvements in household welfare in Mexico depend fundamentally on labor market dynamics. The magnitude of the coefficients in the econometric models suggest that changes in employment quality and wage levels have a considerably greater effect on multidimensional deprivation than redistributive policies or external income flows. This aligns with evidence showing that informality, stagnant productivity, and limited access to social security are key barriers preventing households from escaping poverty. The significance of time dummies in several years, particularly during the COVID-19 shock, indicates that even moderate labor income gains can be eroded by macroeconomic instability or crisis that reduce employment opportunities. Therefore, poverty reduction is not only the result of micro-level conditions but also by broader macroeconomic vulnerability.

Another important finding is the effect of remittances. Although modest, their impact on reducing multidimensional poverty is statistically significant, suggesting that remittances primarily supplement household income rather than catalyze structural transformation. Despite their countercyclical nature and ability to support households during economic downturns, the small size of the coefficients suggests that remittances do not

alter the underlying factors that perpetuate poverty, such as weak local labor markets, low productivity, and spatial inequality. While increased remittance inflows may help households in chronically poor states avoid deeper deprivation, they cannot compensate for persistent structural deficiencies or insufficient state capacity in Mexico. These findings align with the literature recognizing the moderate but favorable role of remittances in reducing poverty (Ekanayake & Moslares, 2020) and mitigating income inequality (Song et al., 2021). In this context, promoting financial education interventions that foster the economic inclusion of remittance recipients becomes essential. As Dey and Basak (2024) note, financial literacy programs promoting secure money transfers and access to affordable credit can transform remittance inflows into sustainable poverty reduction.

Regarding social spending, the analysis does not provide conclusive evidence that state-level expenditures significantly reduce multidimensional poverty. From a public policy perspective, the results underscore the importance of complementing social spending with strategies that promote income generation, labor formalization, and strengthening local productive capacities. The reversal of coefficient signs between models with and without time controls suggests that part of the observed relationship reflects reactive allocation of transfers to high-poverty areas rather than effective poverty alleviation. This pattern supports previous arguments that subnational spending tends to be fragmented, poorly targeted, or shaped by political cycles, limiting its capacity to generate sustained improvements in well-being. As currently implemented, state-level social spending appears insufficient to shift the structural determinants of multidimensional poverty, especially when compared with the stronger and more systematic effects of labor income and economic growth. Hence, it is imperative to articulate policies that promote upward mobility and integrate vulnerable households into higher-value economic activities (OECD, 2023; ECLAC, 2024).

The temporal structure of the results indicates that poverty trajectories respond asymmetrically to macroeconomic fluctuations. The sharp rise in multidimensional poverty in 2020 highlights the vulnerability of welfare gains and illustrates how adverse shocks can reverse long-term progress. After this disruption, the observed patterns show heterogeneous trajectories of poverty reduction and persistence across regions and demographic groups. These differentiated dynamics suggest that public policies—particularly social programs—must incorporate temporal and distributive heterogeneity in their design and implementation. Strengthening mechanisms that promote stable economic expansion, sustained integration into labor markets, and continuous improvements in living conditions is therefore essential. In this regard, structural dimensions such as the distribution of working hours and employment quality should be treated as core determinants of long-term poverty alleviation.

Taken together, the findings of this study suggest that the most effective drivers of poverty reduction in Mexico lie in strengthening households' capacity to generate stable and sufficient income—particularly through labor markets and economic growth. While remittances provide short-term resilience and help mitigate immediate shocks, they do not address the structural constraints that underpin persistent deprivation. Similarly, social spending at the state level appears limited by institutional inefficiencies that hinder the translation of resources into measurable improvements in well-being. These results highlight the need for policies that move beyond traditional welfare approaches and instead prioritize productivity enhancement, employment formalization, and balanced regional development.

The main limitations of this study relate to the periodicity of the available data, which restricts the analysis of year-to-year dynamics and prevents the examination of micro-level heterogeneity. Future research would benefit from quasi-experimental designs, longitudinal household data, and structural modeling approaches to achieve greater causal precision

(Loxha, 2019), and better understand the interactions among labor market dynamics, migration, and public policy interventions.

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Appendix A

Table A1. Remittance Growth Rates, 2010–2024, (Data by Federal Entity, in Percentages). Source: Own elaboration based on data from the Bank of Mexico.

	2010–2012	2012–2014	2014–2016	2016–2018	2018–2020	2020–2022	2022–2024
Aguascalientes	13.18	−2.64	22.25	19.52	14.08	57.95	5.48
Baja California	33.60	33.34	12.64	27.66	38.55	15.69	1.71
Baja California Sur	22.55	12.64	18.89	41.69	42.15	91.81	2.95
Campeche	1.03	0.26	16.81	21.74	45.29	37.69	4.13
Coahuila	21.15	38.36	7.10	40.20	20.75	47.57	5.01
Colima	5.04	20.32	16.32	27.68	8.16	33.08	3.89
Chiapas	−0.30	−12.33	14.84	42.31	39.28	175.91	4.93
Chihuahua	17.34	18.72	27.29	40.60	28.92	27.51	4.05
Ciudad de México	1.43	49.37	−6.91	1.98	49.00	47.36	3.57
Durango	13.71	13.89	23.02	33.93	18.09	41.02	4.56
Guanajuato	7.92	−1.96	15.06	26.77	13.44	45.87	4.70
Guerrero	2.46	−2.24	13.85	18.25	19.85	52.18	3.91
Hidalgo	0.84	−0.14	6.00	18.49	13.04	63.58	4.02
Jalisco	7.29	4.05	28.62	31.10	25.67	30.11	4.15
México	−4.50	−6.50	9.90	19.00	26.32	45.56	4.32
Michoacán	3.02	1.57	22.34	24.05	19.09	30.36	3.98
Morelos	1.15	−5.99	10.21	16.29	11.92	45.29	3.67
Nayarit	0.63	6.56	20.89	25.19	22.87	28.38	3.75
Nuevo León	19.73	80.71	6.75	45.44	7.38	42.08	3.90
Oaxaca	5.37	−11.08	16.91	22.30	9.25	53.01	4.10
Puebla	2.34	−4.60	9.03	16.86	9.81	46.64	3.85
Querétaro	6.78	5.18	31.87	26.16	21.08	49.27	4.21
Quintana Roo	7.51	12.56	23.50	28.33	43.86	63.62	4.87
San Luis Potosí	17.35	4.22	24.80	29.06	14.93	39.06	4.55
Sinaloa	6.59	3.15	20.43	29.62	28.78	16.35	3.22
Sonora	11.90	3.17	22.56	28.35	33.51	27.87	2.98
Tabasco	−0.07	17.71	17.72	35.05	34.23	52.86	4.79
Tamaulipas	20.68	71.61	−21.56	23.01	17.49	20.54	4.10
Tlaxcala	−2.04	−13.58	6.54	9.70	−4.53	56.96	4.08
Veracruz	−4.96	−10.94	7.31	23.11	16.66	45.05	4.45
Yucatán	5.77	8.50	10.42	43.92	18.58	60.98	5.11
Zacatecas	12.50	6.99	25.41	24.80	9.71	43.40	4.30

Notes

[1] The regional classification was carried out in accordance with the Mexican Ministry of Economy. The North region includes the states of Baja California, Sonora, Baja California Sur, Nuevo Leon, Chihuahua, Tamaulipas and Coahuila de Zaragoza. The North-Central region incorporates Aguascalientes, Michoacan, Zacatecas, Colima, Nayarit, Durango, San Luis Potosi, Jalisco and Sinaloa. The Central region comprises the Mexico City, Morelos, the State of Mexico, Puebla, Guanajuato, Queretaro, Hidalgo and Tlaxcala. The Southwest region contains Chiapas, Guerrero and Oaxaca, while the Southeast region covers Campeche, Veracruz de Ignacio de la Llave, Quintana Roo, Yucatan and Tabasco.

[2] The Pesaran test indicates that poverty shocks do not propagate systematically across federal entities, as there is no significant cross-sectional dependence among the states.

[3] The residuals of the model show no statistical evidence of deviation from a normal distribution, thereby satisfying the normality assumption of the error term in the estimated fixed-effects model.

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