

Urbanisation and Inequality in Zimbabwe: A Disaggregated Analysis

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Abstract— The world urban population has surpassed the 55 % mark, from 30% in 1950, 50% in 2007, and is projected to exceed 70% by 2050. Urbanisation is generally associated with human development and improved human welfare; however, contemporary literature also links it to increased inequality. This is partly explained by the urban wage premium resulting from rural-urban disparities in access to quality education and labour market unequal dynamics. This study investigates impact of urbanisation on income inequality in Zimbabwe, using 1992-2022 provincial-level disaggregated data. Employing the Fully Modified Ordinary Least Squares (FMOLS) and the Dynamic Ordinary Least Squares (DOLS) models, the study reveals that urbanisation increases income inequalities in Zimbabwe. These findings urban suggest that urbanisation in Zimbabwe is associated with urban decay, unequal access to education, employment opportunities, and other socio-economic amenities. It also reveals insufficient urban infrastructure, whose supply fails to keep pace with urban population growth. The study prescribes well-planned urban expansion, inclusive development policies, a strong rural development strategy and service delivery improvements in rural and peri-urban and informal settlement areas. Addressing inequalities in access to quality education and socio-economic opportunities, coupled with data-driven policy decisions and increased community participation remains critical to ameliorate inequalities associated with the urban expansion.

Keywords- Inequality, Urbanisation, FMOLS, DOLS, Zimbabwe

I. INTRODUCTION

Urbanization is one of the most transformative forces that shape contemporary global development trajectories. By 2018, 56% across the globe lived in urban areas. The United Nations estimates an increase in global population to 68% by 2050 (United Nations, 2018). UNCTAD, (2023) estimated the global urbanization rate at 57.3% in 2023. The report also highlights that urbanization remains most rapid in Asia and Africa. The UN SDG Report (2023) echoes this trend, stating that 55% of the global population currently live in urban areas, and projects this to rise to 70% by 2050 (UNCTAD, 2023). Urbanization is often associated with economic development, technological progress and improvement in human welfare. However, in some sections of the societies, its rise has been concomitant with increased inequalities, especially where urban development has outpaced the capacity of states to provide sufficient infrastructure, services and governance (UN-Habitat, 2020) The interlink between urbanization and inequality is recognized within the structure of the SDGs. SDG 10 seeks to "reduce within and between countries inequality, while SDG 11 aims to "make cities and human settlements inclusive, safe, and sustainable". In addition, SDG 1 "poverty alleviation" and SDG 8 "decent

work and economic development" are also closely associated with the dynamics of urbanization, focusing on eradicating poverty and promoting equitable economic opportunities (UNDP, 2025).

Globally, urbanization is associated with different outcomes. In developed economies, urbanization has often contributed to improving economic growth, enabled by strong urban planning and governance mechanisms. In contrast, many cities of the global south have experienced urban growth characterized by informal settlements, poor service provisions and rising socio-economic inequalities (Randolph and Storper, 2023). Coupled with improper planning, urban growth has been concomitant with exacerbated spatial segregation, inequalities in access economic opportunities and marginalization of the vulnerable populations. Many African cities struggle with high levels of urban poverty, informal employment, insufficient infrastructure and acute social inequalities. In Africa, urbanisation takes place within the context of weak institutional structures, limited fiscal space and sometimes political instability (Turok and Visagie, 2018; Akinbode, Bolarinwa and Hassan, 2020).

The urbanization trajectory of Zimbabwe mirrors the broader African trends, but is also shaped by particular national dynamics (Roy, 2024). After independence, Zimbabwe experienced significant rural-urban migration, motivated by better economic opportunities in the cities and land reform programmes. However, political instability and economic collapse, especially in the late 1990s and early in the 2000s, reversed the economic gains of independence and seriously impacted urban livelihood. Informal settlements mushroomed across all the cities, to which the government, in a bid to restore order, responded with "operation Murambatsvina", which led to the demolishing of informal settlements and businesses, displacing thousands of urban residents and further instigated inequality.

At the sub-national level, provinces reflect different levels of urban growth. Harare and Bulawayo are primarily urban, with relatively better infrastructure, better service provisions and vibrant economic activity (UNFPA, 2022). In contrast, provinces such as Mashonaland Central, Matabeleland North, and Manicaland are predominantly rural, with lower levels of urban development. The level of urbanization is likely to have profound implications on inequalities in these provinces. More urbanized provinces may experience more opportunities for income and wealth generation, access to education and services, while rural provinces be trapped in low development trajectories, with limited economic opportunities and high poverty rates. As a result, urbanization can contribute to, not only inequalities

within the provinces, but also to widen the socio-economic gaps between the provinces.

Today, urban Zimbabwe is marked by rising poverty levels, a growing number of informal settlements, and limited access to essential services such as clean water, sanitation, health care, and affordable housing. According to UNICEF (2024), over 70% of urban dwellers live in informal or poorly serviced environments. Zimbabwe's urban poverty rate has been on the rise, with macroeconomic instability and the COVID-19 pandemic as the extenuating factors. These challenges have deepened the urban inequalities, where the most vulnerable and historically marginalized groups are disproportionately affected by unemployment, inflation, and the breakdown of public services (Nhapi, 2022).

It is important to understand how urbanisation and inequality are interrelated in Zimbabwe, especially at the provincial level in order to come up with the right policies for inclusive and balanced development. Though most of the existing work relies heavily on national-level indicators, such as aggregate analysis tends to conceal significant subnational disparities in the urbanisation-inequality relationship. This study makes a novel contribution by employing high-frequency provincial-level data spanning the period 1992-2022. By integrating a long time-series dimension with local variation, the study uncovers heterogeneous inequality dynamics that are not observable in aggregate national studies.

II. LITERATURE REVIEW

Understanding of the main theoretical framework that explain how structural changes affect income distribution is important in the urbanisation -inequality nexus study. The Kuznets U hypothesis remains one of the most revered theoretical frameworks. It frames urbanization as a two - edged process: one that can widen inequalities in the short term, but can potentially reduce them in the long term. However, contemporary frameworks, such as the Developers Dilemma's view questions the inevitability of this stylized trajectory. It also highlights the dilemma faced by developing countries, where rapid urban development often occurs in contexts of limited institutional capacity, informal labour markets and fiscal obstacles, making inclusive growth difficult. These approaches provide useful lens to examine the context of Zimbabwe, where urbanization is growing, but inequality continues to bedevil societies. This review provides the basis for expected relationship between urban development and inequality Zimbabwe.

The Kuznets (1955) hypothesis is one of the most acknowledged relations between economic and structural transformation and inequality. Kuznets development of the hypothesis was centred on the transformation path of developing countries. The abundant factor, labour (in relation to capital) tends to migrate from the rural areas where it is lowly remunerated to the urban areas where it fetches a considerably high income. The movement of labour from the traditional sector to the capitalist sector led to overall growth. However, this movement of labour should also see a rise in inequality as not all rural workers would benefit. Furthermore, lowly skilled rural workers would struggle to find opportunities in the capitalistic sector. As cities offer higher wages for those that can find employment in the capitalist sector, capital and wealth accumulation increases in the cities while the traditional sector continue to be trapped

in the low output-low-income zone, and the rural-urban wage divide increases. Within the cities, early industrial workers and capitalists gain wealth, while migrants and informal workers struggle in low-wage, menial jobs. Furthermore, access to basic services and social amenities remain highly unequal, worsened by existing institutions that favour the urban established dwellers. The new migrants face difficulties in accessing these services, further deepening intra-urban inequalities. The Kuznets hypotheses generalization of initial rising inequality adequately captures intra-urban and rural-urban inequality, both of which are empirical realities in development discourse (Martínez-Navarro, Amate-Fortes and Guarnido-Rueda, 2020).

However, in the later stages of growth, inequality decreases. The political power of the urban low-income groups and the previously marginalized urban society will eventually push for the promulgation of progressive, redistributive legislation and policies (Topuz, 2022). Further, there will be huge investments in education and training by governments leading to reduction in skills disparity within and between sectors. Industrial growth spreads and urbanization increases, more people transition from agriculture to better-paying industry and services, leading to a broader distribution of wealth and income. Job opportunities boom in the cities; agricultural productivity expands due in investment in technology and infrastructure, leading to rural-urban income convergence. A wage compression takes place at the later stages of the transformation, being necessitated by competition for skilled jobs, strengthening of labour institutions aided by reactive public policy. Finally, this transformation sees the economy shifting from industry to services, where income distribution is more even compared to the early industrialization stage and this create a larger middle-income class thereby ameliorating inequalities.

While the Kuznets hypothesis is widely revered in literature for its attempt to characterize the relationship between economic transformation and inequality, it remains highly scrutinized for its empirical inconsistencies (Leal and Marques, 2022). Most Latin American economies' growth patterns do not exhibit a clear decline in inequality despite being at later stages of development. Furthermore, some developed economies still struggle with bouts of rising inequalities (Gastwirth and Shi, 2021). The hypothesis has limited applicability in modern contemporary economies that are services dominated, as opposed to industrialization led economies (Ali, Tariq and Azam Khan, 2024). Lastly gentrification and financialization in urban areas always lead to rising intra-urban inequality, which Kuznets never anticipated (Davidson & Lees, 2021).

The developers' dilemma theory contextualized in the urbanization process explores the tension and the trade-off between economic growth and inequality that economies face when they rapidly urbanize. The urban society is characterized by both progress and division as rural people move to the urban region for better socio-economic opportunities. This reflects on the complex task that policy makers have: to balance between urban growth and reducing inequalities. The urban areas often experience faster growth rates as compared to the rural outskirts. The highly skilled workers, the wealthy individuals and corporations benefit from urbanization disproportionately as compared to the poor and less skilled workers.

The developers' dilemma concept provides a realistic view of economic transformation and development and is very useful a framework for analysing development of the global south as it highlights the role of policy choices in shaping growth and inequality outcomes. However, the concept gives little role of external factors (globalization, technological change etc) that, presumably may moderate the supposed nexus. The trade-off concept is also a very strong assertion, and there is reason to believe that smart policies might go beyond striking a balance between the growth and inequality imperatives, but rather foster high growth coupled with falling inequalities

The speed of urbanization has created some undesirable consequences; demand exceeds supply of basic services, water, housing, health, and electricity. A significant urban population are forced to live in informal settlement, where there are less opportunities, and risk of forced displacement, which makes it difficult to balance urbanization, sustainability and high quality of life (Buchholz, 2023).

Literature suggest that urbanization is also associated with socio-economic ills that include increases in inequality, strain on urban resources like accommodation, water and health services. Income inequalities have since been a problem within our societies since time immemorial. Intra-urban equalities and the "urban wage premium" have been documented in literature as consequences of urbanisation.

Urbanization-led growth is often uneven, benefiting the wealthy while marginalizing the poor (Glaeser, 2011). Urbanisation-induced labour migration pattern has been accused of creating labour market polarization. Fields (2011) and ILO (2021) argue that urbanization suppresses informal sector jobs and wages, exacerbating wage-inequality between the formal and informal sectors. The influx of people into urban, activity areas raise concerns regarding housing and spatial segregation. While it is assumed to promote investment in housing and infrastructure, it also led to gentrification whose consequences are to displace low-income communities, further widening inequality (Harvey, 2003; UN-Habitat, 2016).

While urbanization creates cities that provide better education and skills development, the issue of access remains a challenge as quality education is often limited to the wealthy (UNESCO, 2021). Sassen (2014) notes with concern, that formal and informal institutions that control access and exclusion of resources, services and amenities develop in the cities, and these tend to leave out the underprivileged sections of the society Urbanisation is associated with improvements in digitalization and efficiency; However, digital exclusion leaves out low-income groups behind (Van Dijk, 2020; World Bank, 2020). From the governance perspective, authorities can capitalize on the urbanization process to effectively plan, tax, develop and execute social policies can reduce inequality. It is also evident that most developing economies do not have the capacity and governance effectiveness demanded, and are often marred with corruption which is another vehicle towards inequality (UNDP, 2021). Some researchers have sought to prove that urbanization expands job opportunities for a particular gender, and therefore, gender-based wage gaps and discrimination persist in urban economies (Kabeer, 2015). The UN-Habitat (2018) raised concerns that urbanization leads to increased pollution and climate risks that disproportionately affect the vulnerable populations.

Kuddus *et al.*, (2020) found that the urbanization process has a significant role in creating social and income inequality across the United States by estimating the urban-wage premium. However, the study also highlighted that the impact of urbanization on inequality is moderated by the level of education, race and gender. The study concluded that urbanization is strong associated with racial and gender wage income inequality. Using a panel dataset for 48 Sub-Saharan African countries for 1996-2019, Sulemana *et al.* (2019) found that there exist a positive association between urbanization and income inequality in the region. Guo *et al.* (2018) observed that urbanization of the rural Nanhai in the Pearl River Delta, China, led to rising rental income for the rural dwellers who owned land and buildings. The rentals increase faster than the wages of the local workers leading to rising inequality.

Empirical evidence suggest that urbanisation predominantly worsens income inequality in Africa. The relationship between the two, however, is complex and nonlinear, and it varies with the stages of urban development. Multiple studies have shown that following the urban growth initially widens inequalities, with inequality increasing in the initial phase of urbanisation and potentially decreasing in the later stages (Ongo Nkoa and Song, 2019; Maket, Kanó and Vas, 2023). Moreover, economic growth can mitigate these inequality effects (Kouadio and Koffi, 2024), thus demonstrating that the impact of urbanisation is not deterministic. Morsy *et al.*, (2023) found that that a one standard deviation increase in the movement of labour from low-productivity to high-productivity sectors would result in an overall inequality reduction by 0.5% in Africa. Hence, these findings indicate that strategic policy interventions, such as upgrading urban infrastructure, boosting industrialization, and creating inclusive urban development plans are pivotal in transforming urbanisation into a tool of economic opportunity and social mobility from being a potential source of inequality.

Again, evidence paints a complex and nuanced negative narrative of urbanisation and inequality in Southern Africa. Studies reveal that urban growth is often associated with rising inequalities characterised by uneven urban development and concentrated poverty (Gambe, Turok and Visagie, 2023). Studies reveal critical dynamics: urban growth rates are uneven amongst cities, with bigger cities expanding much faster than smaller ones, while urban densities are highest in the poorest countries, manifesting as overcrowded informal settlements. Kouadio and Koffi (2024) demonstrate that urbanisation ameliorate inequalities if it stimulates economic growth, which is not the case with the current Southern African cities. Titz and Chiotha (2019) support the idea that urbanization is generating systemic barriers to inclusive development and Magidimisha-Chipungu and Chipungu (2021) argue that the colonial history of the region adds to the complexity of these urban dynamics, as colonial era segregation continues to exist, with white colonial masters simply replaced by the black elites.

There is very scant current empirical literature on Zimbabwe's that links urbanisation to inequality. However, evidence suggests that urbanisation has been one of the mechanisms that sustained socio-economic disparities. Mazingi and Kamidza (2011) argue that colonial-era racial inequalities that established racially unequal system where 4% of the population (whites), who lived largely in the urban

cities controlled over 90% of the economy. Simon *et al.*, (1986) notes that migration trends reflect historical development contrasts between developed white-dominated areas and peripheral African zones. Matamanda *et al.*, (2021) emphasizes that a new class of urban elites has replaced the White people in the cities, and these continue to perpetuate inequities, leading to a continued stark urban-rural. Magidi (2024) noted that Zimbabwean cities face serious challenges in providing urban social service, which disproportionately impacts the poor and low-income urban populations. Ersado (2006) provides nuanced evidence that shows a huge contrast between income diversification and earning ability between urban and rural people, with urban households more able to pursue multiple sources of income whereas their rural counterparts have very limited sources of income.

In conclusion, studies that investigated the relationship between urbanisation and inequality produce mixed results in developed regions of the world despite level of development. In some cases, metropolitan expansion is associated with high -income services and rising housing costs, displacing low -income households (Ahmed *et al.*, 2018; Condon, 2024). Some studies found inclusive urban development, while others indicate increasing inequality within urban social segregation and limited social mobility. However, in the African and Southern Africa contexts, studies tend to concur urbanisation is associated with rising inequality. This is attributable to lack of inclusive planning in cities or insufficient service expansion with high rural-to-urban migration. Overall, the literature suggests that the urbanisation-inequality nexus is highly context-specific. Though there is very little literature on Zimbabwe, the available evidence inclines to the broader African and South African trend that associates urbanisation with rising inequality.

III. METHODOLOGY

The study used FMOLS and DOLS techniques as a control model to explore the extent to which urbanization influence inequality in the long run. According to (Phillips & Hansen, 1990), the FMOLS adjusts for both endogeneity and serial correlation using non-parametric techniques. According to Heifetz & Phillips (2023), FMOS further corrects the OLS estimator by modifying the error term based on estimates of the long-run variance, making it suitable for cointegrated I (1) variables. Therefore, it produces consistent and efficient estimates even when regressors are endogenous (Rahman *et al.*, 2021). DOLS, according to Stock & Watson (1993) also addresses endogenous or errors are serially correlated by including leads and lags of the first differences of the regressors in the model. The FMOLS have been used despite models such as Vector Error Correction Model because it is a non-parametric technique, it does not require data normality and other post estimation diagnostics.

The two techniques have been used in modelling financial development in the private sector (Olorogun, 2024), used by (Shaari *et al.*, 2024) to examine the interplay between green technology, carbon dioxide emissions, and life expectancy, El Asli *et al.* (2024) also used the FMOLS and the DOLS to analyse how macro-economic indicators influence economic growth. Therefore, it is evident that the two techniques have been widely used in applied econometrics to ensure robust long-run estimations.

According to (Phillips & Hansen, 1990), the basic FMOLS cointegration equation is specified as:

$$Y_t = \alpha + \beta X_t + \varepsilon_t \quad (1)$$

Where, Y_t is inequality, X_t are explanatory variables (urbanization, education, corruption, women in agriculture), β is the cointegrating coefficient vector and ε_t is the error term. The DOLS model improves on the basic cointegration regression by including leads and lags of the first differences of the regressors. According to (Stock & Watson1, 1993), the model is expressed as:

$$Y_t = \alpha + \beta X_t + \sum_{j=-q}^q \gamma_j \Delta X_{t-j} + \varepsilon_t \quad (2)$$

Where, ΔX_{t-j} represents leads and lags of the first differences of the regressors, γ_j are the coefficients of the dynamic terms, q is the number of leads and lags included and ε_t is the error term. Using this methodology, the study estimated the effects of urbanization on inequality using extrapolated and interpolation provincial data for Zimbabwe. The model has been estimated as follows:

$$INEQ_{it} = \alpha + Urbanisation_{it} + Education_{it} + Corruption_{it} + Women\ in\ Agric_{it} + \varepsilon_{it} \quad (3)$$

The variables depicted in equation (3) are described in Table 1. Corruption, education index and women in agriculture were used as control variables to capture the environment in which the study is being conducted. According to Afrobarometer (2021), there is approximately 55% prevalence of corruption in Zimbabwe. Corruption plays a critical role in increasing income inequality (Ambassa Messy, 2024). With regards to education, the education index for Zimbabwe is approximately 0.517 in 2023. This means that, on average, Zimbabwe achieves just over half of the maximum possible educational attainment measured by the index

TABLE I. VARIABLE DESCRIPTION

Variable	Description	Source
Inequality	Gini coefficient wealth inequality	https://globaldatalab.org/
Urbanisation	Percentage of people living in urban areas	https://globaldatalab.org/
Corruption	Comprehensive Subnational Corruption Index	https://globaldatalab.org/
Education	Education index	https://globaldatalab.org/
Women in Agric	% of women employed in Agric	https://globaldatalab.org/

Corruption, education index and women in agriculture were used as control variables to capture the environment in which the study is being conducted. According to Afrobarometer (2021), there is approximately 55% prevalence of corruption in Zimbabwe. Corruption plays a critical role in increasing income inequality (Ambassa Messy, 2024). With regards to education, the education index for Zimbabwe is approximately 0.517 in 2023. This means that, on average, Zimbabwe achieves just over half of the maximum possible educational attainment measured by the index. Furthermore, Zimbabwe's economic activity is highly dependent on agriculture with the majority of women

participating in agriculture (Civil Society Joint Submission to the UPR of Zimbabwe, 2022). By including these variables as controls, the model accounts for structural, institutional, and human capital factors that could independently influence inequality. This improves the credibility of causal inference, ensuring that the estimated effect of urbanization on inequality is not confounded by gender labour distribution, institutional quality, or education levels.

The returns of the variables have been used to analysed to provide descriptive statistics, which summarized the patterns and distribution of the data, and correlational analysis, which provided the degree of association between variables. The study further tested for unit root tests, determine lag length, establish the cointegration and estimate the effect of urbanization on inequality using the FMOLS and the DOLS.

IV. PRESENTATION OF RESULTS

A. Descriptive Statistics

Descriptive statistics summarized and simplified the variables, making it easier to understand key patterns, trends and measures of central tendencies such as standard deviation, mean, mode, median, variations, and potential outliers. The descriptive statistics are depicted in Table 2.

The corruption level across the provinces has a moderate standard deviation of 6.98, indicating relatively same corruption levels across the provinces in Zimbabwe, although the levels of corruption is right skewness (0.345) indicating few instances of unusually high corruption in other provinces. With regards to education index, there is a uniform attainment of education across provinces since there is a lowest standard deviation of 0.070 with a slight right skew of 0.459 and near-normal kurtosis (2.603) reinforce the impression of a relatively balanced distribution with minor outliers. On the other hand, urbanisation has a mean of 30.69 and a very high standard deviation of 34.94, indicating significant disparities in the level of urban across provinces in Zimbabwe with strong positive skewness (1.396) and slightly leptokurtic distribution (kurtosis = 3.107) imply that most provinces have

TABLE II. DESCRIPTIVE STATISTICS

	CORR	EDUC	URBN	INEQ	WOMG
Mean	59.537	0.529	30.687	0.346	26.183
Median	59.450	0.516	13.750	0.380	25.500
Maximum	77.400	0.695	100.000	0.560	69.000
Minimum	45.700	0.383	2.710	0.110	0.010
Std. Dev.	6.975	0.070	34.942	0.120	20.648
Skewness	0.345	0.459	1.396	-0.496	0.391
Kurtosis	2.531	2.603	3.107	2.194	1.835

Notes: CORR-Corruption, EDUC-Education, URBN-Urbanisation, INEQ-Inequality, WOMG-Women in agriculture

low urbanisation rates, with a few highly urbanised provinces pulling the average upward. In terms of inequality, the mean value is 0.346 with a standard deviation of 0.120, pointing to moderate variation. The distribution is negatively skewed (-0.496), suggesting that more countries experience higher inequality, although the platykurtic nature (kurtosis = 2.194) indicates fewer extreme values. Women's participation in agriculture has a high standard deviation of 20.65, reflecting wide disparities across provinces. The

distribution is moderately right-skewed (0.391), with a small number of observations showing exceptionally high female involvement in agriculture. A low kurtosis value of 1.835 further suggests a flat distribution with less concentration around the mean.

B. Correlation Analysis

Correlational analysis was performed to determine the degree to which the variables are associated. The correlational results of the study are depicted in Table 3.

TABLE III. PEARSON CORRELATION MATRIX

Pearson Correlation					
PROBABILITY	INEQ	CORR	EDUC	URBN	WOMG
INEQ	1.000				
CORR	0.151	1.000			
	0.019				
EDUC	-0.048	-0.810	1.000		
	0.456	0.000			
URBN	0.194	-0.445	0.800	1.000	
	0.002	0.000	0.000		
WOMG	-0.114	0.154	-0.116	0.026	1.000
	0.076	0.017	0.071	0.682	

The correlation matrix reveals association between inequality and explanatory variables. Corruption has a significant positive association with inequality, indicating that higher corruption levels are associated with greater high wealth inequality. This aligns with broader literature that identifies corruption as a barrier to equitable distribution of public goods and services. Education, shows an insignificant weak negative relationship between urbanisation and inequality, indicating the importance of education in reducing inequality. Urbanisation has exhibited a statistically significant positive correlation with inequality, indicating a more urbanised settings tend to experience higher levels of inequality. This may be due to spatial disparities in access to services and employment opportunities between urban elites and the urban poor. Women's participation in agriculture displayed a significant weak negative correlation with inequality, which is slightly above conventional levels of statistical significance. This result hints at a potential role for greater female involvement in agriculture in reducing inequality, possibly through enhanced household income stability or empowerment.

C. Unit Root Tests

Stationarity tests for urbanization, inequality, corruption, education and women in agriculture have been tested using the Levin, Lin & Chu t^* and the Im, Pesaran and Shin W -stat. The results are displayed on Table 4. The results have demonstrated that at levels, most variables show non-stationarity, indicating the presence of unit roots although the Levin, Lin & Chu test indicates that urbanisation and corruption are stationary at the 1% significance level when using an individual intercept. However, inequality and women in agriculture are non-stationary at levels. Education's results are mixed, showing stationarity in LLC but not in IPS or with trends included. After taking the first difference, all variables become stationary, as evidenced by highly significant test statistics for instance the first-

differenced inequality, urbanisation, corruption, education, and women in agriculture all reject the null hypothesis of a unit root at 1% significance levels. Therefore, the evidence strongly suggests that all variables are integrated of order one, I (1) that is they are non-stationary in levels but become

stationary after first differencing. This justifies applying cointegration techniques

TABLE IV. UNIT ROOT TESTS

Levels					
	Levin, Lin & Chu t*			Im, Pesaran and Shin W-stat	
	Individual Intercept	Individual Intercept and Trend	None	Individual Intercept	Individual Intercept and Trend
INEQ	1.01349	2.744690	-5.23477***	-1.32344	1.059216
URBN	-3.01237***	-0.85034	-1.40493*	-2.27282**	-4.08839***
CORR	-3.18424***	0.94711	-5.75666***	-1.59707*	-2.29442**
EDUC	-5.03655***	0.9462976	9.39672	-1.19516	0.94629
WOMG	2.74077	4.8416459	-0.29800	2.938795	3.43477
1 st Difference					
	Levin, Lin & Chu t*			Im, Pesaran and Shin W-stat	
	Individual Intercept	Individual Intercept and Trend	None	Individual Intercept	Individual Intercept and Trend
INEQ	-5.146703***	-2.55975***	-16.34069***	-13.06376***	-12.00589***
URBN	-15.79421***	-6.96376***	-6.96376***	-8.05022***	-12.34715***
CORR	-8.917497***	-5.99320***	-10.8548***	-8.83682***	-7.985155***
EDUC	-6.58785***	-6.00982***	-7.40042**	-7.05781***	-6.329259***
WOMG	-4.07884***	-3.20159***	-8.45026***	-4.0959528***	-2.394407***

D. Lag length determination

Since all the variables are integrated of order 1, it implies that there is need to use cointegration tests to examine the relationship between urbanisation in equality in the 10 provinces in Zimbabwe. When using cointegration tests to establish causations, there is need to establish the correct number of lag length to include in the model. Table 6 depicts the lag length determined by the model.

TABLE V. LAG LENGTH DETERMINATION

Lag	LogL	LR	FPE	AIC	SC	HQC
0	-112.9	NA	12.497	8.1950	8.6620	8.3444
1	-18.05	145.4*	0.02956	2.1371	2.791*	2.34636
2	-11.97	8.5185	0.02626	1.9982	2.8389	2.26715
3	-6.223	7.282	0.02417	1.8815	2.9091	2.21030
4	-1.171	5.72304	0.0237*	1.8116*	3.0259	2.200*

Key: LR- Likelihood Ratio, FPE-Final Prediction Error, AIC- Akaike Information Criterion, SC- Schwarz Criterion, HQC- Hannan-Quinn Criterion.

The lag order selection results provide guidance on the optimal number of lags to include in the model. According to the Final Prediction Error (FPE), Akaike Information Criterion (AIC) and the Hannan-Quinn Criterion, the model with four lags offers the best fit. However, the Schwarz Criterion (SC), which penalizes model complexity more heavily, recommends a model with only one lag; the same was also recommended by the Likelihood Ratio criterion. While including more lags may capture richer dynamics in the data, it also risks overfitting, particularly if the sample size is limited. Therefore, the choice between lag lengths should consider the trade-off between capturing the necessary temporal structure and maintaining model parsimony, with the SC's recommendation of two lags often favoured in practice for its conservative approach to complexity.

E. Cointegration

The Schwarz information criterion depicted 2 lags, the Hannan-Quinn information criterion depicted 3 lags while sequential modified LR test statistic, final prediction error, Akaike information criterion depicted 8 lags. Cointegration has been tested at all the lags given that they are at extreme levels. The trace and the Max-Eigen Statistic have been used to establish the long run relationship and the results are depicted in Table 6 below.

At 2 lags using the Schwarz Information Criterion (SIC), both the trace and maximum eigenvalue statistics reject the null hypothesis of no cointegration ($r = 0$) and of at most one cointegrating vector ($r \leq 1$) at the 5% significance level. This implies the existence of two cointegrating equations. At 3 lags using the Hannan-Quinn Information Criterion (HQIC), at least two cointegrating vectors under the trace test and with at least one cointegrating equation using the maximum eigenvalue test. At 8 lags, the trace and maximum eigenvalue tests reject the null hypothesis of no cointegration ($r = 0$), failing to reject for $r = 1$ or higher number cointegrating equations. The reduction in the number of identified cointegrating vectors at higher lags could be attributed to a loss in degrees of freedom.

TABLE VI. COINTEGRATION DETERMINATION

2 Lags									
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.050 Critical Value	Prob.** Critical Value	Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.050 Critical Value	Prob.** Critical Value
None *	0.229	105.237	69.819	0.000	None *	0.229	55.095	33.877	0.000
At most 1 *	0.123	50.141	47.856	0.030	At most 1 *	0.123	27.921	27.584	0.045
At most 2	0.082	22.221	29.797	0.286	At most 2	0.082	18.197	21.132	0.123
At most 3	0.018	4.023	15.495	0.902	At most 3	0.018	3.747	14.265	0.885
At most 4	0.001	0.276	3.841	0.599	At most 4	0.001	0.276	3.841	0.599
3 Lags									
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.** Critical Value	Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.** Critical Value
None *	0.291	123.367	69.819	0.000	None *	0.291	69.461	33.877	0.000
At most 1 *	0.123	53.906	47.856	0.012	At most 1	0.123	26.409	27.584	0.070
At most 2	0.110	27.497	29.797	0.090	At most 2 *	0.110	23.448	21.132	0.023
At most 3	0.018	4.049	15.495	0.900	At most 3	0.018	3.733	14.265	0.886
At most 4	0.002	0.316	3.841	0.574	At most 4	0.002	0.316	3.841	0.574
8 Lags									
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.** Critical Value	Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.** Critical Value
None *	0.252	75.214	69.819	0.017	None *	0.252	44.057	33.877	0.002
At most 1	0.128	31.157	47.856	0.658	At most 1	0.128	20.880	27.584	0.284
At most 2	0.049	10.277	29.797	0.976	At most 2	0.049	7.590	21.132	0.927
At most 3	0.015	2.687	15.495	0.979	At most 3	0.015	2.364	14.265	0.980
At most 4	0.002	0.323	3.841	0.570	At most 4	0.002	0.323	3.841	0.570

F. FMOLS and DOLS Estimates

After establishing the long run relationship between variables using the trace and the Max-Eigen Statistic long estimates must be estimated. The FMOLS and DOLS estimates were opted due to their ability to deal endogeneity and serial correlation. The vector error correction model failed to provide unbiased estimates since the coefficients were marred with serial correlation and endogeneity. Since the model was normally distributed, study then used the FMOLS and DOLS to estimate the effects of urbanization on inequality. The results are depicted on Table 7.

TABLE VII. FMOLS AND DOLS LONG RUN ESTIMATES

FMOLS				
	Coefficient	Std. Error	T-statistic	Prob.
CORR	0.001	0.000	2.998	0.003
EDUC	-0.150	0.033	-4.535	0.000
URBN	0.001	0.000	5.180	0.000
WOMG	-0.042	0.015	-2.775	0.006
DOLS				
	Coefficient	Std. Error	T-statistic	Prob.
EDUC	-0.173	0.033	-5.243	0.000
URBN	0.001	0.000	5.245	0.000
CORR	0.001	0.000	4.049	0.000
WOMG	-0.042	0.016	-2.587	0.010

The FMOLS and DOLS models has shown that one increase in urbanisation is associated with a 0.001 increase in income inequalities. While urbanisation is often associated with economic growth and increased access to services, its benefits are not always equitably distributed. In many developing economies contexts, urban expansion occurs unevenly, concentrating wealth and services within the affluent urban enclaves while marginalising informal settlements and low-income communities. The rapid growth of cities can also strain public infrastructure, resulting in uneven access to housing, healthcare, education, and employment opportunities. These urban divides intensify socio-economic disparities, contributing to a widening inequality gap.

The study has further found that education index has a negative effect on inequality. This implies that one unit increase in education index is associated with 0.150 decline in inequality in FMOLS and 0.173 in inequality using the DOLS. Education enhances individual earning capacity and expands access to economic opportunities, making it a powerful equaliser. The study has further revealed a positive relationship between corruption and inequality. This implies that one unit increase in corruption is associated with 0.001 increase in inequality in both models. This implies that as corruption increases, so does inequality. Corruption disproportionately benefits elites and diverts resources from social investment. The results highlight the need for governance reforms and stronger anti-corruption mechanisms as part of inequality reduction strategies. The study further found a negative relationship between women's participation in agriculture and inequality. It implies that one unit increase in women's participation in agriculture is associated with 0.042 decline in inequality for both models. This may reflect the role of women in supporting household food security and community-level income distribution.

V. DISCUSSION OF RESULTS

Urban migration is commonly driven by the pursuit of better life and more opportunities. However, this study's findings shows that the fast growth of the urban population has diluted the expected welfare gains from urbanization, as the demand for public infrastructure and services has often exceeded their supply. The crowding effect thus limits the distributive benefits of urban growth, and a large proportion of the city population does not find itself in a better situation, and in some cases even worse off, despite the increase of the total urban income.

These findings resonate with the Kuznets (1955) hypothesis, which expect inequality to worsen at earlier stages of development as economic activities and opportunities become concentrated in urban, skilled workers and elite groups, whereas, new migrants, who normally lack skills, capital, and social networks are still stuck in low, paying informal jobs. This research in a way also acknowledges the "developer's dilemma" where urban growth leads to both economic expansion and economic inequalities, thus making it difficult for policymakers to achieve inclusive development.

Empirical evidence from most developing countries supports this interpretation. As a consequence of rapid urbanization, the demand for housing, healthcare, transport, and utilities rises at a much higher rate than supply, thus resulting in the growth of informal settlements and the enhanced vulnerability of the low- income groups. Urbanisation is often associated with wage premiums in cities and deepening inequalities instead of serving as the equalizing factor. Moreover, urbanization leads to reducing the wages of the informal sector relative to those of the formal sector, thus broadening labour market segmentation and further facilitating inequality.

Spatial dynamics further amplify these outcomes. While urbanisation has the potential to attract investment in infrastructure and housing, it also has inequality dynamics that work against the poor and marginalised sections of the society, such as gentrification, displacement of low-income households from the core of the urban areas to peripheral areas. Exclusion is often exacerbated by existing institutions that governs and controls access to urban resources, which are often in favour of the elite urban community, leading to unequal access to quality education, digital infrastructure, socio-economic opportunities that constrains social mobility. Overall, the findings of this study shows urbanization may functions less as a mechanism for shared prosperity and more as a process that entrenches existing inequalities if it is not carefully planned and managed.

VI. RECOMMENDATIONS

The results of this research reveal a link between urbanisation and increasing inequality in Zimbabwe. They indicate that a considerable proportion of the population has not benefited from urban growth. The study prescribes policy interventions, focusing on correcting inequality-transmission mechanisms embedded within Zimbabwe's urban transition. The rapid growth in urban population place significant pressure on the existing public infrastructure and services, creating congestion in schools, healthcare, housing, transport, and water systems reduces. Urban planners and government budgets should prioritise infrastructure investments in high density settlements. congestion in schools, healthcare,

housing, transport, and water systems reduces Improving the provision of basic services and affordable housing facilitates social inclusion. The findings also reflect possible urbanisation induced labour-market polarization that relegates low skill-urban migrants to low-paying and informal employment. Urban skills development, vocational training, and informal sector support should be prioritised to address labour-market segmentation by enabling rural-urban migrants and low-income workers to access productive employment and participate more equitably in the benefits of urban growth. The findings also point to possible existence of intra-urban inequality and the urban wage premium, where benefits accrue disproportionately to skilled workers, corporations, and capital owners. Urbanisation dynamics favour the affluent and big corporations, with the poor and small organisation disadvantaged disproportionately. Therefore, Zimbabwean economic policy should incorporate inclusive urban-growth instruments, such as support small enterprises, improved access to finance for low-income residents, and labour market protections for informal workers.

Spatial dynamics that include informal settlement growth, housing shortages and gentrification are often the key inequality channels. Market-driven urban development often leads to displacement of low-income communities. Therefore, urban planning frameworks in Zimbabwe reflect pro-poor land use and housing priorities, such as rent regulation, serviced land provision, and spatial integration strategies. Furthermore, there is need to strengthen urban institution to prevent forced displacement and spatial segregation so that urbanisation does not entrench long-term inequality. The concentration of economic activity and public investment in major cities, such as Harare and Bulawayo, exacerbates regional and spatial inequality which favours dominant metropolitan areas. Policymakers should redirect strategic investment towards peripheral towns- Zimbabwe should take the devolution agenda to the next level. The results indicate possible exclusionary institutions and weak urban governance structures that limit access to resources and services for vulnerable populations. Strengthening local government capacity and providing fiscal autonomy allow local government to tailor-make tax and redistribution policies for a more inclusive service delivery.

Finally, unequal access to quality education and digital technologies reinforces existing social and income inequalities. Urban development strategies should therefore integrate digital inclusion policies, equitable education access, and targeted social protection mechanisms. Overall, the findings show that urbanisation in Zimbabwe should be managed as part of a broader national development and inequality reduction strategy, and should not be treated as a self-correcting process. Without deliberate, inclusive, and well-governed policy interventions, urbanisation processes will continue to raise inequality, as rising urban tide does not lift all boats.

VII. CONCLUSION

The findings of this study provide evidence on the relationship between urbanization and inequality in Zimbabwe. The positive relationship shows that urbanization is associated with rising inequality in Zimbabwe's provinces. This finding does not board well with SDG 10 - reducing inequalities and SDG 11 - making cities inclusive, safe, resilient and sustainable. It highlights that urbanization in Zimbabwe need to be properly managed in order to make

positive contribution to human development by improving access to services, employment and infrastructure. Theoretically, the study finding suggest Zimbabwe might still be in the worse half of the Kuznets U-curve hypothesis, which, considering its stage of development, might be expected. Rising inequality in Zimbabwe in the recent years places a toll of policy makers and governance institutions. The results of the study question the effectiveness of urban planning, central and local governments as well as other development institutions in Zimbabwe as the Developers 'dilemma continues. Policy prescriptions provided in this study focused on urban planning, better delivery of services in informal settlements, improving investment in urban infrastructure, promoting decent work and supporting informal sector employment for broad-based gains. If properly exploited, urbanization can be one of the drivers for achieving Zimbabwe's Vision 2030 and SDG goals.

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