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## Economic Dimensions of Urban Transformation in India

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## ABSTRACT

This paper analyzes the multidimensional economic transformation underway in urban India post-1991 liberalization. Utilizing official data from the Periodic Labor Force Survey (PLFS) and reports from authoritative institutions like NITI Aayog, the analysis quantifies the economic dividend generated by urban agglomeration, revealing a stark duality. Indian cities, occupying only 3.0% of the nation's land, contribute a massive 60.0% to the Gross Domestic Product (GDP), underscoring the immense efficiency gains from spatial concentration. This concentrated growth is characterized by significant productivity gradients: economic benefits, innovation, and higher earnings cluster significantly in larger Tier 1 cities, yet growth is increasingly dispersed, with Tier 2 and Tier 3 cities emerging as critical secondary hubs. However, this expansion is fundamentally constrained by structural imperfections. The urban labor market is defined by pervasive informality, with nearly 87% of the total workforce lacking formal contracts and social security benefits. This structural reliance on low-cost labor persists even among the highly educated, indicative of a “low road to growth” strategy that undermines the long-term potential of the demographic dividend. The paper critically evaluates the efficacy of national urban missions (Smart Cities Mission-SCM, Pradhan Mantri Awas Yojana-Urban-PMAY-U, Atal Mission for Urban Rejuvenation and Urban Transformation-AMRUT) in mitigating infrastructure deficits and structural inequality. The findings emphasize the urgency of transitioning from reactive, project-based interventions to integrated regional economic planning, coupled with deep institutional and regulatory reforms to ensure equitable and sustainable urban prosperity.

## 1. Introduction

The global urbanization trend is particularly salient in India, which is projected to become the world's most populous country this decade. The country is currently the second-largest urban community globally, and is expected to add another 416 million people to its cities by 2050, pushing the urban share of the population toward 50 percent. This demographic transition presents a critical window for leveraging the nation's demographic dividend for sustained economic growth [1-4].

Historically, India's urbanization trajectory has been shaped by policy interventions that often ran counter to economic logic [1]. Post-independence planning, particularly regulations restricting the location of industries within urban areas until the 1991 industrial policy reforms, effectively denied industries the economic benefits typically derived from urban agglomeration effects. The onset of economic liberalization in 1991 catalyzed a structural shift, accelerating the pace of urban growth. This transformation involves a necessary shift from primary sector activities (like agriculture) towards economic activities in the secondary and tertiary sectors, which inherently rely on spatial proximity and population concentration [5].

The speed and scale of this transformation post-1991 highlight that India's urban growth is heavily concentrated and, arguably, distorted by the legacy of past policies that suppressed natural agglomeration. The rapid, often unplanned, nature of modern Indian urbanization can be viewed as an attempt by institutional change to align physical planning with deregulated economic realities. This accelerated demand for urban services has often overwhelmed planning capacities, leading to deficient measurement and limited conceptualizations of what constitutes the “urban,” particularly at the rapid rural-urban transition zones where geographically dispersed urban formations are taking shape [1, 2].

While the literature widely acknowledges the macro-level contribution of cities to the national economy, there remains a limited integrated analysis that simultaneously addresses the economic disparities and

structural constraints that actively limit India's [6] true potential productivity. Specifically, the analysis of urban economic transformation must move beyond simple population metrics to integrate spatial dynamics, labor market segmentation, and policy efficacy [7, 8].

This paper contributes to the academic discourse by offering an integrated framework that combines quantitative evidence of the significant “agglomeration dividend” with a critical assessment of the resulting [2] “low road to growth” driven by pervasive labor market informality and institutional fragility in urban governance. The examination of the urban system across hierarchical tiers (Tier 1, Tier 2, Tier 3) and the critique of financing mechanisms for infrastructure offer a nuanced perspective essential for future policy design [9].

The primary objectives of this research paper are: 1) To quantify the economic significance of urban areas in post-liberalization India, focusing on their contribution to GDP, and to analyze the role of city size in generating economic benefits such as higher innovation rates and wage premiums; 2) To analyze the spatial distribution of economic growth across India's urban hierarchy, specifically examining the emerging significance, drivers, and infrastructure constraints of Tier 2 and Tier 3 cities; 3) To characterize the structural imperfections of the urban labor market, detailing the scale of informality and its implications for job quality, income inequality, and the realization of the demographic dividend and 4) To critically assess the economic impact and institutional efficacy of major national urban missions (SCM, PMAY-U, AMRUT) in mitigating infrastructure deficits and achieving equitable, sustainable development.

## 2. Experimental Methods

## 2.1 Data Sources

The analysis relies on multiple authoritative sources to ensure empirical rigor and comprehensive coverage of the economic dimensions of urban transformation.

- *Periodic Labor Force Survey (PLFS) and National Statistical Office (NSO)*: These are the primary sources for official labor force

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indicators, providing annual estimates of the Labor Force Participation Rate (LFPR), Worker Population Ratio (WPR), and Unemployment Rate (UR) since 2017-18. This data is crucial for analyzing trends and providing detailed classification of workers (formal hired, informal hired, working owners, etc.) essential for characterizing employment quality and the scale of informality [10].

- *NITI Aayog and Government Reports*: Data from the NITI Aayog's "Cities as Engines of Growth" report and related documents provide macro-economic metrics, including the urban share of GDP, the correlation between urban population shares and district GDP (2.7% increase per percentage point urban population rise), and evidence of agglomeration benefits like higher earnings and innovation rates.
- *Ministry of Housing and Urban Affairs (MoHUA) Platforms*: Data from digital platforms such as the Smart Cities Open Data Portal (SCODP) and the India Urban Observatory (IUO), along with official parliamentary and press releases, are utilized for evaluating mission outcomes, job creation metrics, and the institutionalization of data governance in urban management [11, 12].

## 2.2 Analytical Framework

The research employs a dual-pronged analytical framework:

- *Agglomeration Economics and Spatial Analysis*: This framework is applied to analyze the efficiency gains and positive externalities of spatial concentration. The concept is extended to interpret the differential growth patterns across the urban hierarchy (Tier 1 vs. Tier 2/3) [13]. The analysis also considers the positive spillovers of urbanization, such as the substantial and systematic poverty-reducing effect urbanization has on surrounding rural areas [14].
- *Dual Economy/Labor Segmentation Model*: This model is used to interpret the co-existence of a high-growth, high-tech formal sector and a vast, unprotected informal sector. The framework helps explain why informality persists even among the highly skilled and highly educated, indicating structural constraints rather than simple labor illiteracy.
- *Comparative Urbanism Methodology*: This approach integrates macro-level census data and governmental statistics with micro-level observations concerning the rural-urban transition and small-town dynamics. This ensures that the analysis captures emergent urban formations often missed by conventional, static conceptualizations.

## 2.3 Conceptual and Measurement Challenges in Planning

A critical precursor to effective policy is the institutional recognition of information deficiencies. Past urbanization efforts were frequently criticized for being unplanned and hampered by inadequate data. In response, there has been a significant strategic investment in data governance by central bodies. The development of digital platforms like SCODP, IUO, and the appointment of city data officers reflects an implicit recognition that sustainable urban growth requires timely, accurate information. This shift toward establishing a data-smart city ecosystem is essential for moving from reactive, project-based responses to proactive, predictive modeling, ensuring timely execution of initiatives [2].

Furthermore, traditional economic metrics often obscure the complexities of urban life. While high per capita income is a common measure of economic well-being, it fails to capture the deep inequalities within cities and does not reflect the struggles of a significant portion of the urban poor who lack the resources to meet basic needs. The spatial and conceptual challenge of accurately measuring urban formations, especially at the edges of the traditional "city" boundary (the rural-urban transition), remains a persistent methodological hurdle.

## 3. Results and Discussion

### 3.1 The Economics of Agglomeration and Spatial Tiers

#### 3.1.1 Quantifying the Urban Economic Dividend

The core economic power of India is rooted in its urban centers. The sheer density of economic output is evident in the fact that Indian cities contribute 60.0% of the national GDP while physically occupying only 3.0% of the land area. This high concentration underscores the substantial efficiency gains derived from spatial agglomeration, where proximity facilitates knowledge spillovers, input-output linkages, and shared infrastructure use [7, 8]. This efficiency is strongly correlated with city size and scale. The NITI Aayog analysis indicates that city size acts as a key determinant of economic sophistication. Firms located in a city twice as large as another are significantly more likely to engage in product innovation (by 17.5%) and conduct research and development (by 21.2%). This confirms the foundational principles of agglomeration theory, linking scale to innovation capacity.

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The benefits of scale also translate directly into improved human capital returns. Full-time wage and salaried workers in cities with 1.5 million or more residents tend to have, on average, 16% higher monthly earnings than their counterparts in smaller cities, and approximately 36% higher earnings than those in rural areas. Furthermore, larger cities exhibit a more formalized employment structure, showing a higher share of regular workers (91.2%) among wage and salaried employees, compared to just 78.8% in smaller cities [7, 8].

#### 3.1.2 The Emergence of Tier 2 and Tier 3 Cities and Decentralized Growth

While Tier 1 cities remain the primary hubs for innovation and high-value services, the urban economic transformation is increasingly dispersed. Tier 2 (population 1-5 million) and Tier 3 (population 0.1-1 million) cities are transitioning from mere support hubs to independent drivers of national growth [13, 12]. These smaller cities collectively house 45% of India's urban population and contribute 37% to the country's GDP. Their growth is propelled by factors such as a lower cost of living and operations compared to metros, fostering MSMEs, and rapidly adopting digital connectivity, with 95% of villages already having internet access [7, 8]. This quantified productivity gradient based on city size reveals that the urban system functions as a complex economic hierarchy. Growth policies must, therefore, focus not merely on nurturing individual cities but on strengthening the functional linkages between Tier 1, 2, and 3 centers to maximize overall efficiency. If the innovation and R&D benefits concentrated in Tier 1 cities are functionally integrated with the cost-effective labor and land resources available in Tier 2 and Tier 3 cities, the overall national agglomeration benefit is enhanced. Consequently, policy prescriptions from bodies like NITI Aayog advocating for regional incentive policies and integrated regional planning are necessary to maximize the efficiency of the entire urban hierarchy and mitigate the critical infrastructure bottlenecks—such as reliable transportation and advanced technology parks—currently constraining smaller cities [7, 8].

Principal component 1 (PC1) appeared as a crucial factor, showing strong positive loadings with total dissolved solids, calcium, chloride, total hardness, and total alkalinity. This component suggests that the general mineral content and hardness of the water are essential in explaining the variance within the dataset. These parameters are often associated with the overall quality of water, influencing everything from taste and safety to chemical reactivity and the efficacy of disinfection processes. Principal component 2 (PC2) shown a significant correlation between microbial activity and the levels of Fluoride in the water. This relationship suggests that fluoride levels can interact with microbial viability or growth, potentially influencing the presence and survival of multi-drug-resistant *E. coli*. The high loading of *E. coli* on this component highlights the importance of microbial indicators in understanding water quality and safety. Principal component 3 (PC3) is influenced by pH, which is a critical factor in water chemistry, affecting solubility, chemical reactions, and biological processes. The involvement of pH in this component points to its role in the stability or reactivity of the water, which could impact microbial dynamics and the effectiveness of water treatment methods.

It is evident from the PCA results that certain chemical properties of water specifically, mineral content (TDS, calcium, chloride, total hardness and alkalinity), fluoride levels, and pH are crucial in understanding the dynamics of multi-drug-resistant *E. coli* in drinking water systems. Since hardness and mineral content significantly influence water quality, adjusting these parameters through treatment processes could potentially mitigate the risks associated with harmful bacterial presence. Managing pH levels could be critical in maintaining chemical balance and preventing conditions favourable for the growth of resistant bacteria. These observations can help in developing targeted water treatment strategies and regulatory measures to monitor and control the presence of multi-drug-resistant *E. coli* in drinking water, ensuring public health safety. The Table 1 summarizes the observed economic characteristics across the urban hierarchy.

**Table 1** Urban economic hierarchy: Characteristics and contribution

Urban Tier Classification	Tier 1 Cities (Metro)	Tier 2 & Tier 3 Cities
Population Size Range	> 5 Million (Implied)	0.1–5 Million (Combined)
Approx. Share of Urban	N/A	45% Population
Approx. Contribution to National GDP (%)	Largest Share (Implied > 23%)	37%
Key Economic Characteristics	Highest R&D, innovation rates, significant wage premium (16-36% higher); Focus on manufacturing and modern services (48% employment share)	Emerging hubs, lower cost of living, focus on MSMEs/regional development; Independent centers of entrepreneurship; Infrastructure bottlenecks

### 3.2 Structural Imperfections in the Urban Labor Market

#### 3.2.1 Labor Force Dynamics and Informality

Table 2 shows that trends in India's overall labor market indicators. The Indian labor market has demonstrated positive macro trends, with the Worker Population Ratio (WPR) for persons aged 15 years and above increasing steadily from 46.8% in 2017-18 to 52.9% in 2021-22, and the unemployment rate (UR) declining from 6.0% to 4.1% in the same period.

**Table 2** Trends in India's overall labor market indicators (Ages 15+; usual status)

Year	Worker Population Ratio (WPR) (%)	Labor Force Participation Rate (LFPR) (%)	Unemployment Rate (UR) (%)
2017-18	46.8	49.8	6.0
2018-19	47.3	50.2	5.8
2019-20	50.9	53.5	4.8
2020-21	52.6	54.9	4.2
2021-22	52.9	55.2	4.1

Source: PLFS Reports

However, the dominance of informal employment remains the central characteristic of the Indian labor market, particularly in urban areas. Based on PLFS 2023-24 data, nearly 550 million workers (87% of the total employed workforce) are informally employed, lacking access to formal contracts, social protection, and benefits. While agriculture remains the largest source of informality, non-agricultural sectors—specifically the services and industry sectors—contribute almost equally to the non-agricultural informal workforce, with approximately 130 million informal workers in each [10].

Analysis of employment types in key urban sectors reveals the embedded nature of this informality. In 2023-24, formal hired workers comprised a negligible share: only 2% in the services sector (Trade and Other Services combined) and a marginal 0.4% in the manufacturing sector. This reliance on the Urban Informal Economy (UEI) provides the largest source of employment and income generation, resolving immediate socioeconomic challenges like poverty and unemployment [7].

#### 3.2.2 The 'Low Road to Growth' Paradox

The combination of high urban productivity and pervasive informal labor highlights a profound structural contradiction. The evidence suggests that institutional frameworks fail to formalize the immense economic value generated by urban agglomeration. This leads to a scenario where employers, even formal enterprises, utilize "informal arrangements" for hiring to minimize costs associated with providing social security benefits and formal contracts. This practice, characterized as a "low road to growth," prioritizes output at minimal labor cost over job quality and worker protection.

This institutional failure to capture and formalize economic value is highly detrimental to long-term sustainable growth and constrains the expansion of the formal middle class [9]. The informality paradox is particularly striking among highly educated individuals; informality and underemployment persist even among degree holders. Highly educated and experienced individuals are increasingly hired by formal enterprises in informal arrangements, dispelling the traditional notion that the informal workforce consists solely of the illiterate or undereducated. This structural mismatch, where education levels rise faster than the quality of urban service jobs, contributes significantly to wage inequality within the labor market and acts as a structural impediment to realizing the full potential of India's demographic dividend [9].

### 3.3 Financing Urban Infrastructure and Addressing Equity

#### 3.3.1 Infrastructure Deficit, Inequality, and Growth Constraints

Despite massive central government investment in urban missions—exceeding Rs. 2.68 lakh crore across schemes like AMRUT, PMAY(U), Swachh Bharat Mission (SBM(U)), and the National Urban Livelihoods Mission (NULM) India continues to face increasing infrastructure deficits [7]. These deficits compromise the potential of cities to sustain high rates of economic growth [15].

The consequences of this deficit extend beyond mere economic capacity to profound issues of social and economic justice. Urban infrastructural inequalities are not just gaps in service provision; they actively lock in social and economic inequalities, severely constraining universal access to essential services and negatively impacting public health and well-being [16, 17]. Furthermore, as economic theory suggests, if public capital (infrastructure) falls below a certain minimum level, inequality increases, and the benefits of growth accrue disproportionately to the upper class who own private infrastructure. This emphasizes that high-level per capita income data for cities must be treated with caution, as it obscures the resource scarcity faced by the urban poor [18].

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#### 3.3.2 Public Investment and Pro-Poor Growth

Productive public investment in infrastructure has been theoretically shown to have a negative impact on income inequality while simultaneously generating greater output. The models developed in economic literature suggest that the differential impact of access to specific types of infrastructure on income distribution means that public interventions must be consciously designed to achieve pro-poor growth outcomes [18].

The necessity of closing the fiscal gap for infrastructure necessitates innovative financing (IF) mechanisms. Established strategies like Public-Private Partnerships (PPPs) have been widely adopted for large infrastructure projects, including metro rail and airports. Emerging instruments are also crucial, such as Value Capture Finance (VCF), Tax Increment Financing (TIF), infrastructure bonds, and green finance. However, the adoption and effectiveness of these mechanisms depend critically on the quality of institutional frameworks and strong governance.

The economic imperative to finance infrastructure creates a distinct financing-equity dilemma. While IF tools like VCF are financially necessary, they carry the risk of disproportionately benefiting landowning interests and high-income groups unless explicitly designed with equity safeguards. The political economy of urban land management in India, which involves complex state-market alliances and the involvement of the poor and lower sections of society, dictates that financial strategies must ensure that the generated revenues are reinvested equitably, particularly in subsidized housing (PMAY-U) and improved access to services for informal settlements. Robust institutional oversight is required to ensure that public capital genuinely helps reduce income inequality.

#### 3.4 Economic Assessment of Major Urban Missions and Governance

##### 3.4.1 Mission Investment and Economic Multipliers

The central government's investment in urban missions has acted as a critical stimulus to urban economic activity. The substantial commitment of funds is definitively a driver in urban sector development and job creation. For instance, the Pradhan Mantri Awas Yojana-Urban (PMAY-U) [19] has been instrumental in generating employment, estimated to have created around 689 crore person days of employment, translating into approximately 246 lakh jobs [3]. This investment supports over 200 allied economic sectors, demonstrating a strong, positive economic multiplier effect. Furthermore, missions like AMRUT, through investments in 105 lakh water tap connections and 78 lakh sewer connections, and the focus on resource efficiency through energy-efficient LED streetlights, contribute significantly to urban resilience, which is a fundamental prerequisite for sustained economic growth [20, 21].

##### 3.4.2 Critique of the Smart Cities Mission (SCM)

The Smart Cities Mission (SCM), launched in 2015, aimed to promote decentralized growth and empower mid-sized cities to emerge as centers of growth. The mission successfully promoted the importance of data for evidence-based planning and institutionalized a data ecosystem through the development of platforms and the appointment of city data officers [2].

However, critical academic analyses suggest that SCM, following the tradition of earlier project-based urbanization initiatives (like JNNURM), has inherited structural vulnerabilities. These include persistent hierarchical power structures, inadequate capacity within Urban Local Bodies (ULBs), and over-reliance on private players and exploitative market forces. This dependence risks generating a "top-heavy structure" that does not genuinely empower local bodies, potentially leading to inter-spatial conflicts and undermining the goal of creating resilient, locally governed cities. The effectiveness of massive central funding and strategic directives is ultimately constrained by weaknesses in the federal architecture, specifically the limited fiscal and administrative autonomy of ULBs [2]. Central missions may successfully boost temporary investment, but long-term economic resilience and decentralized growth require transferring substantive power and self-resource mobilization capacity to the city level. The National Urban Policy Framework (NUPF) rightly recommended that sectorial ministries dealing with economic and social policies should integrate urban planning, and emphasized the need for adequate financial provisions for cities through both own-source revenues and inter-governmental transfers. Failure to fully implement fiscal and administrative decentralization means that urban economic growth remains volatile, governed more by central political cycles than by sustainable local economic mandates [2].

##### 3.4.3 Governance Reforms and Integrated Planning

To harness urban potential, strategic guidance from institutions like NITI Aayog emphasizes systemic planning reform. This includes

developing a comprehensive economic vision spanning 10-15 years, instituting city economic councils, and adopting an integrated regional approach that links land use and resilient infrastructure planning across the wider urban region [22].

Operational reforms are also critical, transitioning to long-term, flexible, GIS-based master plans [23], implementing automated approval mechanisms for services, and digitizing and integrating land record systems. These measures aim to define and institutionalize the time required for land use change processes, streamline investments, and align action plans across various implementing agencies, ultimately preparing ULBs to become self-reliant and empowered economic entities.

### 3.5 Policy Recommendations

Based on the analysis of India's urban economic landscape, three core policy transitions are necessary:

#### 3.5.1 Mandate Integrated Regional Economic Planning and Institutional Simplification

Policy must move beyond city-centric planning to mandate regional economic planning that integrates Tier 1, Tier 2, and Tier 3 cities functionally. This requires enacting differentiated incentive policies to attract investment to smaller centers and coupling this with rigorous institutional reforms. Specifically, state governments must define and institutionalize the time period required for changes in land use processes and fully integrate land record systems (revenue, registration, survey) to drastically reduce transaction costs and improve investment predictability.

#### 3.5.2 Structural Labor Formalization and Quality Job Creation

The high incidence of informality, even among the highly skilled, must be addressed through structural policy interventions that mandate formalization and expand social security benefits across all employment arrangements. Aligning educational attainment with quality job creation in modern services requires dedicated initiatives to increase the formal employment share, moving away from a strategy reliant on low-cost, unprotected labor and thereby ensuring that the demographic dividend translates into sustainable middle-class expansion.

#### 3.5.3 Fiscal Decentralization and Equitable Infrastructure Financing

Substantive fiscal decentralization must be achieved, empowering Urban Local Bodies (ULBs) to become self-reliant entities with robust access to own-source revenues and innovative financing tools like Value Capture Finance (VCF). Crucially, all public infrastructure investment, regardless of the financing mechanism, must be subjected to an equity impact assessment. This ensures that public capital provision specifically targets the reduction of urban infrastructure inequalities, prioritizing access for low-income households, thereby ensuring pro-poor growth outcomes.

## 4. Conclusion

The economic dimensions of urban transformation in India are characterized by a pronounced duality. On one hand, urban centers function as highly productive engines of growth, generating a massive agglomeration dividend that drives two-thirds of the national GDP. This growth is geographically spreading, with dynamic Tier 2 and Tier 3 cities increasingly contributing to the national economy due to cost advantages

and digital penetration. On the other hand, this progress is structurally fragile. The vast majority of economic activity is facilitated by a massive, unprotected informal labor market (87% of the workforce), representing a dependence on a “low road to growth” that undermines the quality of employment and exacerbates income inequality. While central government missions inject crucial capital and generate significant job multipliers, their long-term impact is constrained by fundamental institutional deficits, specifically the limited fiscal autonomy of local urban bodies and the persistence of hierarchical governance structures. Sustainable urban prosperity requires resolving this contradiction between high economic productivity and deep structural and infrastructural insecurity.

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