

Evaluating the Effectiveness of Congestion Pricing in Low- and Middle-Income Cities

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Abstract : Traffic congestion remains a persistent challenge in urban centers worldwide, leading to economic inefficiencies, increased pollution, and diminished quality of life. While congestion pricing has proven effective in high-income countries, its implementation and outcomes in low- and middle-income cities (LMICs) are not as well understood. These cities often face unique challenges, including inadequate public transportation systems, informal transport networks, and socioeconomic inequalities that complicate the adoption of congestion pricing policies. This study evaluates the effectiveness of congestion pricing in LMICs, with a particular focus on Maputo, Mozambique, and its impacts on traffic patterns, environmental sustainability, and equity. The research employs a mixed-methods approach, combining quantitative analyses of traffic flow and emissions with qualitative insights from stakeholder interviews and policy reviews. Maputo serves as the primary case study, offering a unique perspective on the intersection of urban growth, informal transport dependency, and the socioeconomic dynamics prevalent in LMICs. Supporting data from other cities, such as Lagos and Bogotá, provides a comparative framework to contextualize findings. Key variables analyzed include reductions in vehicle kilometers traveled (VKT), changes in air quality indices, revenue generation, and the redistribution of funds to improve public transit infrastructure. The study also examines behavioral responses to congestion pricing, including shifts to alternative modes of transport and changes in travel patterns. Findings indicate that congestion pricing can significantly reduce traffic congestion and improve air quality in Maputo when designed with attention to local conditions. However, challenges such as public resistance, limited administrative capacity, and the need for robust enforcement mechanisms are critical barriers to successful implementation. The research underscores the importance of equitable policy design, particularly in a city like Maputo, where significant income disparities and reliance on informal transport systems complicate mobility solutions. Programs that include exemptions, tiered pricing, or revenue reinvestment in affordable public transit are more likely to gain public acceptance and achieve long-term benefits. Moreover, the study highlights the necessity of integrating congestion pricing within a broader urban mobility framework. Complementary policies, such as investments in non-motorized transport infrastructure, modernization of public transit systems, and public education campaigns, enhance the overall efficacy of congestion pricing initiatives. This research contributes to the growing body of knowledge on sustainable urban mobility in LMICs by providing actionable insights for policymakers and urban planners in Maputo. It emphasizes that while congestion pricing is a powerful tool for managing urban traffic, its success in Maputo depends on context-sensitive implementation, inclusive policymaking, and sustained public engagement.

Keywords : congestion pricing, urban mobility, transport equity, Low and middle income countries

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