

Labor Mobility and Urban Economic Resilience: A Review of Theoretical Mechanisms and Evolutionary Paths

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Abstract

In China, the "semi-urbanization" status workers exhibits the dual characteristic of high mobility and low institutional embeddedness. While this supports economic growth under normal conditions, it becomes a source of urban economic vulnerability during periods of shock. From the core perspective of labor embeddedness, this paper is based on comprehensive consideration of rural-to-urban, inter-city, and international mobility, systematically examines how labor mobility affects urban economic resilience via three pathways: scale effects, structural effects, and institutional effects, while introducing city types as examples. The study finds that the scale effects are double-edged: The mobile labor depends on institutional embeddedness for locking in pose risks. Otherwise, it rapidly outflow and bring about risk during shocks. Structural effects depend on the dynamic coupling of skill-industry matching. Lastly, institutional effects such as household registration, social security, housing, and education for accompanying children determine the level of embeddedness. This, in turn, decides whether mobility could enhancing resilience while improving urban economic efficiency.

Key words

Labor Mobility, Urban Economic Resilience, Labor Embeddedness, Institutional Effects

1. Introduction

Economic resilience is manifested as the comprehensive proactive ability of a city to maintain employment stability, guarantee basic public services, and pro-

mote industrial restructuring and upgrading when facing external shocks.

When external demand fluctuations or shock events affect economic operations, a city's labor market is often the first to respond. For example, changes in orders

may lead to employment adjustments, personnel flows alters the labor supply-demand pattern, and migration decisions influence the spatial distribution of human capital. These phenomena indicate that, from a systemic level, labor mobility is a crucial channel for shock transmission; at the individual level, how labor flows often reflects the personal preferences and risk-resistance capabilities of individuals when facing shocks.

This paper adopts Labor Embeddedness as the core analytical perspective to discuss how labor mobility influences urban economic resilience. It analyzes from types of flow of rural-urban mobility, inter-city mobility, and international mobility, and outlines the mechanisms of action from three dimensions—scale effects, structural effects, and institutional effects. What's more, it introduces city types and the corresponding scenarios as examples.

The main analysis is conducted under the policy context of urban-rural integration and regional coordination, which in order to explore how labor mobility enhancing the city's product efficiency while assets its resilience. Specifically, at various spatial scales and urban contexts, how does labor mobility affect a city's shock resistance, recovery speed, and adaptive reorganization paths in different ways.

2. Core Concepts and Theoretical Origins

2.1 Urban Economic Resilience

The Evolutionary Resilience framework proposed by Martin and Sunley emphasizes the path dependence, adaptability, and reorganization capacity of economic systems[1]. Meerow et al. further introduced the Adaptive Resilience theory, shifting the research perspective from system attributes to governance processes. At the urban scale, economic resilience is manifested as a city's comprehensive proactive capability to maintain employment stability, guarantee basic public services, and promote industrial restructuring and upgrading when facing external shocks [2].

2.2 Labor Mobility

Research on labor mobility exists three spatial

scales. In the rural-urban dimension, the Lewis-Todaro model explains the decision-making mechanism of rural-to-urban migration, while subsequent studies emphasize the impact of migration costs and skill endowments with human capital theory. However, Recent empirical studies reveal that labor mobility in China remains constrained by various institutional frictions, including the household registration system. For instance, Adamopoulos et al. point out that uncertainty in land rights independently impedes the permanent transfer of agricultural labor to non-agricultural sectors [3]. Meanwhile, although open household registration policies have promoted rural labor migration, micro-level evidence from Qin et al. indicates that residual institutional barriers continue to constrain the citizenization process of the migrant population by triggering wage inequality and labor market segmentation [4].

In the inter-city dimension, New Economic Geography emphasizes the shaping role of agglomeration economies on labor allocation. High-skilled labor gravitates toward core and developed cities, while low-to-medium skilled labor faces a drifting dilemma. In the international dimension, under the background of Global Value Chains, transnational labor mobility and trade flows are nested within each other, while global talent networks have become of great importance to innovation cities and enterprises in competition.

Labor embeddedness, proposed by Mark Granovetter, reveal the deep connection of labor within economic, social, and institutional networks [5]. This concept comprises three dimensions. One concerns how heavily labor relies on specific social relationships: weak ties provide non-redundant job information and occupational access, thereby facilitating both labor mobility and individual human-capital accumulation. Another dimension is the match between workers' skills and the local economic structure—this paper pays particular attention to workers' ability to undergo structural transformation under external shocks. A third involves institutional arrangements (e.g., the hukou system, social security schemes, and labor laws), which impose mobility costs on workers and thus substantially shape their degree of embeddedness in urban social networks.

3.Mechanisms of Labor Mobility Affecting Urban Economic Resilience

3.1 Scale Effects

Scale effects are frequently reduced to the notion of a demographic dividend, yet their implications for resilience hinge on how deeply the floating population is embedded.

Population growth does boost urban economic resilience, and industrial structure upgrading alongside human capital accumulation contribute positively to this process [6]. But when institutional embeddedness is absent—referring here to training systems, labor protection, and social security networks—these gains cannot be retained or reconfigured during a shock, which in turn generates social risks [7].

Labor inflow and outflow affect resilience in asymmetric ways. For inflow, the key lies in stability. Consider short-term, seasonal inflows: urban economies tend to rely on cheap, highly mobile labor for sectors like services and construction. When a public health emergency or extreme climate event strikes, that fragile flow chain snaps, and those labor-intensive activities grind to a halt. Outflow tells a different story. Its resilience depends on whether returning migrants bring back skills and capital. Although outflow shrinks the labor pool, moderate outflows that lead to return entrepreneurship can offset some of the brain drain relative to the broader region. Where skills acquired at the destination complement those at the origin, a stacking effect emerges [8]. Conversely, “drifting” mobility—low embeddedness movement that accumulates little transferable human capital—may worsen resource mismatches [9,10]. Response speed shapes agility. Quick mobility helps reallocate resources, but too much turnover can destabilize labor markets [11].

3.2 Structural Effect: Skill Composition and Adaptive Fit

The structural effect focuses on the impact of the skill structure of mobile labor and its alignment with urban industrial demand on industrial restructuring elasticity. Adaptability is not a static match but a dynamic coupling between skill accumulation and industrial evolution. The inflow of high-skilled labor promotes industrial diversification through knowledge spillovers, enhancing a city’s capacity for conversion in facing shocks. Empirical analysis by Sun Hongxue et al., which

based on the policy of higher education expansion, indicates that high-quality human capital significantly enhances urban economic resilience, with the mechanism lying in the promotion of technological innovation and industrial structure upgrading by high-skilled labor [12]. The success of this adaptation depends on knowledge spillovers and the embeddedness within industrial networks—when high-skilled labor embed itself into the local industrial ecosystem, its knowledge externalities drive the differentiation of related industries and the derivation of new industries, forming a positive “skill-industry” cycle.

Conversely, the excessive agglomeration of low-skilled labor may lock in their skills which has been depended. Autor and Dorn documented that once routine tasks were automated, lowskilled workers moved into lowskilled service occupations, generating employment polarization and locking in occupational path dependence [13]. In China, the digital platform economy has shifted the attachment of lowskilled labor from industry to platform. Fooddelivery riders, for example, face algorithmic “deskilling”—their skills become platform-specific, making crossindustry transitions difficult once they leave. This is another form of adaptation rupture: workers’ skill profiles diverge from the trajectory of industrial evolution, and human capital can no longer be recognized or reallocated across sectors. As *Economic Modelling* further confirms, macrolevel skill mismatch leaves industrial structures more exposed to shocks [14].

Adaptability hinges on two things: how portable human capital is, and how diversifiable the industrial structure is. High-skilled workers, equipped with general abilities and relatively strong individual capabilities, can embed themselves in tradable industries. Tradable industries do not depend on local demand; they serve external markets, which allows them to absorb shocks through channels beyond the local economy. When a crisis occurs, the industrial shift triggered by knowledge spillovers from skilled workers functions as a form of risk diversification. By combining industries with different technology cycles and geographic market orientations, a city reduces its vulnerability to any single disruption. Lowskilled labor, in contrast, clusters in non-tradable services—food delivery, domestic cleaning—where demand is closely tied to local consumption. Some workers have very specific skills; others have seen

theirs eroded over time. Either way, they are locked out of tradable sectors. The industrial structure, once spread across diverse fields, becomes concentrated in just a few. When local demand contracts, unemployment jumps across the board. With no external industries to absorb the slack, the city struggles to recover—what people call adjustment rigidity.

3.3 Institutional Effects: Labor Embeddedness and Resilience Accumulation

Now consider institutions. They sit at the center of the mediating mechanisms examined here. Hukou thresholds, fragmented social security, housing policies, migrant children's access to education, and overall societal inclusiveness—these collectively shape what migrants expect and how deeply they embed. They decide whether migration ends up as temporary drifting or long-term rooting. Put differently, this mechanism captures how employment conditions and social factors interact.

Start with employment stability, the foundation. Contract type, social security coverage, and vocational training opportunities shape migrants' income expectations and their capacity to withstand risk. Stable jobs encourage family migration; unstable ones keep individuals moving alone.

Housing matters next. It directly affects migrants' sunk costs and depth of embeddedness. High housing costs act as a barrier, weakening integration into local industrial networks. When migrants gain access to affordable housing or purchase incentives, their sunk costs rise, and their willingness to settle strengthens.

Education for migrant children is the core piece. Enrollment thresholds—household registration restrictions, point-based admission, school-district housing policies, and educational quality—directly shape whether migrants invest in human capital. When children can access high-quality schooling on equal terms, migrants form long-term expectations and make city-specific investments (buying homes, pursuing training). Educational exclusion, by contrast, splits families apart and creates the familiar "left-behind children" problem, locking migrants into short-term circular patterns. It may also hurt children's educational outcomes, potentially perpetuating the migration cycle.

Inclusivity adds a social dimension. An open urban environment helps migrants build networks, join community activities, and develop a sense of belonging. Discrimination and exclusion do the opposite—they reinforce a "passenger" mentality, lowering settlement intentions and social participation [15]. This inclusiveness affects not just individual psychology but also, through social capital accumulation, the flow of information and access to job opportunities in the labor market.

Put all these institutional pieces together, and they determine the level of labor embeddedness. High-embeddedness mobility means stable jobs, families together, children educated, and strong social identity. In that scenario, migrants develop long-term human-capital expectations, invest more in skills, show stronger entrepreneurial intentions, and deepen social participation—supplying the city with a stable labor stock and boosting its resilience during shocks. Low-embeddedness mobility, in contrast, means unstable jobs, single-person migration, no schooling for children, and social exclusion. This pattern produces high turnover, low skill accumulation, and weak social ties, ultimately making the urban labor market more fragile.

4. Resilience Evolution Paths and Urban Heterogeneity

Urban industrial trajectories, resource endowments, and institutional environments moderate the direction and intensity of the resilience effects generated by labor mobility. This paper identifies four policy scenarios to capture the heterogeneity in labor mobility characteristics and resilience evolution paths, each corresponding to a specific spatial policy context.

4.1 Manufacturing Export Hubs

Manufacturing export hubs maintain deep ties to global value chains, and their economies lean heavily on labor-intensive production. No city type feels external demand swings as immediately as these hubs do. Three things shape how their resilience unfolds. One is how far industrial diversification has gone—when a city pins its fortunes on just one export sector, employment turbulence during shocks is hard to avoid. Another is the size of the floating labor pool. A large migrant workforce can

absorb some of the shock, yet the same scale means a heavier adjustment burden when orders dry up. The third is institutional embeddedness. Where household registration rules are strict and social security thin, migrants stay loosely attached; when a crisis hits, they leave fast, and the city takes longer to climb back.

4.2 Centers/Provincial Capitals

Administrative centers and provincial capitals pull in high-skilled workers and public resources by concentrating public services in one place—this siphoning effect is hard to miss. Their resilience shows up mainly in public service stability, which props up employment when crises strike. But the same household registration barriers that keep the system running also block migrants from putting down roots. These cities grow stronger by drawing labor and capital from their hinterlands, yet every gain on their side is a loss somewhere else. The result is a familiar core–periphery split: resilience piles up in the center while the edges thin out. Accordingly, policy interventions should prioritize mechanisms that facilitate labor return, while coordinating industrial restructuring with human-capital training programs.

4.3 Innovation-Oriented Cities

Innovation-oriented cities' resilience rely on their innovation capacity, which depends on the agglomeration of highly skilled workers and global talent networks. However, high housing costs and household restrictions often crowd out a large group of workers, resulting in the coexistence of talent concentration and labor shortages. Under international shocks, their resilience largely depends on the stability of global talent networks. The departure of highly skilled international professionals may undermine local innovation capacity, whereas domestic talents can make up the lost resilience to some extent.

Within the framework of urban–rural integration policies, the extent to which highly skilled workers relocate to smaller cities and counties becomes critical for strengthening regional resilience. If innovation-oriented cities and their surrounding counties establish a gradient division of labor—keeping R&D activities concentrated in cities while shifting commercialization and application to rural areas—the crowding-out effect of labor can

be turned into a positive spillover effect.

4.4 Shrinking and Resource Depleted Cities

Shrinking cities experience persistent population loss, industrial hollowing out, and declining public services, placing their urban resilience at risk of dissipation. Labor outmigration often follows a self-reinforcing dynamic: population decline reduces the tax base and weakens public service provision, which in turn accelerates further population loss. Resource-depleted cities face the added challenges of youth outmigration and skill erosion, with population aging becoming increasingly severe.

Against the backdrop of coordinated rural revitalization and new urbanization strategies, the concept of “smart shrinkage” offers a potential pathway for resilience enhancement. These cities can pursue qualitative development despite demographic decline—by optimizing spatial layouts, improving the efficiency of public service delivery, and fostering niche industries such as elderly care and ecotourism. However, the success of this strategy ultimately hinges on the alignment between the skills of returning migrants and the capacity of local county-level industries to absorb and utilize their human capital.

5. Conclusion

Drawing on a comprehensive literature review, this paper builds an analytical framework organized around three axes—scale, structure, and institutions—with labor embeddedness at its core. The framework clarifies the multiple mechanisms and heterogeneous pathways through which labor mobility shapes urban economic resilience. How much mobility actually contributes to resilience, depends largely on the degree of labor embeddedness; that degree, in turn, reveals a city's capacity to retain labor and reorganize resources. Institutional factors matter here as well: they determine whether mobility merely improves efficiency or evolves into something that genuinely stabilizes a city against shocks.

Theoretically, this study moves labor from a background variable in resilience research to an active agent in resilience-building. For policy, the implication is

clear: strengthening urban resilience cannot stop at industrial diversification or infrastructure investment. The institutional embeddedness of migrant workers deserves to be treated as a form of strategic public investment in its own right. Only when stable employment, family settlement, and a socially inclusive sense of belonging are all in place can migrant labor become the kind of resilience asset a city can count on when shocks arrive.

As a theoretical review, this study has not yet conducted a unified quantitative test of the proposed mechanisms, nor has it identified the causal effects of different dimensions of embeddedness across various city types.

Future research could combine urban panel data with longitudinal surveys of migrant populations to develop a comprehensive Labor Embeddedness Index and examine its causal effects on urban resilience indicators. Further studies may also explore how the digital economy and artificial intelligence reshape patterns of labor embeddedness, deeply integrate the worker force into industrial networks or eliminate them.

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