Accounting and Corporate Management (2025)
Clausius Scientific Press, Canada

DOI: 10.23977/acccm.2025.070116
ISSN 2523-5788 Vol. 7 Num. 1

Literature review on labor cost stickiness: An analysis based on the background of high-speed rail

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Keywords: High-speed rail opening; Sticky labor costs; Labor mobility; Resource allocation efficiency

Abstract: After more than a decade of development, China's high-speed rail construction has led the world level and made an important contribution to China's economic growth, thus the discussion around the impact of the rapid development of high-speed rail has also become a key issue of academic concern. The construction of high-speed rail not only has a significant impact on the macroeconomic development level, but also plays a role in the behavioral mode of micro-enterprises, which cannot be ignored. As a part of the capital market, the operation mode and management decisions of enterprises are subject to the constraints of various factors inside and outside the enterprises. The environmental changes caused by the change in time and space distance will also affect the production and operation decisions of enterprises. However, there are fewer studies examining the impact of external macro transportation infrastructure on the cost management behavior of enterprises. Labor cost stickiness, as an important performance of enterprise cost decisions, reflects the efficiency of enterprise resource allocation. In the context of the normalization of rising labor costs, China's economic development into a new normal, and supply-side structural reform, how to optimize labor hiring strategy and strengthen labor cost management puts forward higher requirements for enterprises. Based on the above research background, this paper combines the national macro-level transportation infrastructure, and focuses on the impact of the adjustment cost changes brought about by the opening of high-speed rail to enhance the mobility of the labor force on the stickiness of labor cost of enterprises, and further enriches the theoretical research content of the opening of high-speed rail on the field of cost management of enterprises, to provide empirical evidence from the micro-enterprises for the economic effect of the reform of the market-oriented allocation of labor factors.

1. Introduction

The rapid development and excellent quality of China's high-speed railway have won wide acclaim worldwide. Examining its development history, it is not difficult to find that it is China's unremitting independent innovation that has promoted the remarkable progress of high-speed rail

infrastructure and mobile equipment. In terms of speed, China's high-speed railway has gone through a leap from 200 kilometers to 250 kilometers, then to 300 kilometers, and nowadays it is 350 kilometers per hour. Nowadays, China is proud to be among the most developed countries in the world in terms of high-speed rail network. By the end of 2023, the construction of the main corridors of China's "eight vertical and eight horizontal" high-speed railroad network has been fully completed and put into operation, with a cumulative mileage of 36,400 kilometers, and another 0.67 million kilometers are under construction. Comprehensive research on the opening of high-speed railways shows that scholars mainly focus on its impact on economic and social development and corporate investment and financing decisions, including economic growth, financial accounting, corporate governance, etc., and little literature is related to the field of enterprise cost management. Under the new trend and new background of labor market change in the new era, what kind of impact does the opening of high-speed rail bring to the adjustment of enterprise labor cost, and whether it suppresses enterprise labor cost stickiness by improving information transparency and resource allocation efficiency is a topic of concern.

The research significance of this paper lies in the following: firstly, the opening of high-speed rail helps to break the geographic space limitation and promote the flow of talent and the optimal allocation of resources among regions; meanwhile, as an important part of modern transportation infrastructure, the opening and operation of high-speed rail has a far-reaching impact on the economic development, industrial layout, and enterprise operation of the regions along the route. This paper can further reveal the role mechanism of high-speed rail in promoting balanced regional development and the economic effect of high-speed rail, provide a new perspective for understanding the role of high-speed rail on regional economic growth, and provide theoretical basis and empirical support for the formulation of relevant policies and planning. Secondly, this paper considers the impact of national macro-level transportation construction on enterprise cost management decisions, which is of great significance to enterprises in the era of high-speed rail, how to grasp the opportunities brought by the opening of high-speed rail in terms of transportation convenience and smooth information communication, and how to enhance the level of enterprise production and operation decisions. External investors are often constrained by time and distance and other problems, lack of on-site inspection and supervision of the company, and are unable to exercise their power to participate in corporate governance promptly, resulting in agency problems. Clarifying the impact of high-speed rail on the stickiness of labor cost of enterprises can help prompt external investors in information disadvantage to make use of the information flow and convenient transportation brought by high-speed rail to strengthen the supervision of the company's operation and management, inhibit the agency problem and the management's self-interested behaviors, optimize the allocation of resources, improve the company's operation efficiency, and realize the reduction of costs, improve quality and increase efficiency.

Therefore, this paper takes the opening of high-speed rail as the research background, and through the systematic combing and comprehensive review of the relevant literature in the field of enterprise labor cost stickiness at home and abroad, it comprehensively understands the current status and progress of the research on the opening of high-speed rail and enterprise labor cost stickiness, and identifies the shortcomings of the current research, to provide references and directions for the future research.

2. Economic consequences of the opening of high-speed rail

In recent years, the construction of high-speed railroads has been developing rapidly, affecting all aspects of the national economy and society, and receiving extensive attention from scholars at

home and abroad. Existing literature has carried out a large number of studies on both the macro- and microeconomic effects of the opening of high-speed railways.

2.1. Impact of the opening of high-speed rail on macroeconomic effects

First, the opening of high-speed railways affects the urban industrial structure. Sun Weizeng et al. (2022) pointed out that the opening of high-speed rail significantly promotes the improvement of the index of urban industrial structure and the adjustment of urban industrial structure, and accelerates the urbanization process.[1] Second, the opening of high-speed rail affects regional economic development and innovation levels. The opening of high-speed rail drives regional economic growth and enhances regional innovation levels by reducing commuting costs and promoting the flow of production factors (Bian Yuanchao et al., 2019).[2] Ahlfeldt and Feddersen (2017), by conducting a study on high-speed railroads in Germany, concluded that high-speed rail networks improve urban accessibility, expand the market scope, improve the remuneration of laborers, promote the transfer of labor to high-speed rail cities, and enhance the regional economic development.[3] Jia et al. (2017) argued by constructing a model that high-speed rail promotes the formation of high-speed rail economic belts by shortening the travel time between cities, strengthening the links between cities, accelerating the flow of economic production factors, and accelerating regional economic development.[4] Finally, high-speed rail construction affects the ecological environment. The opening of high-speed railways reduces urban carbon emissions and improves urban haze pollution by promoting the upgrading of industrial structure and enhancing the level of innovation thus improving urban haze pollution (Li Jianming and Luo Nengsheng, 2020).[5]

2.2. Impact of the opening of high-speed rail on microeconomic effects

For one thing, the opening of high-speed rail inspires enterprises' innovative behavior. The opening of high-speed rail enhances the number and quality of patent applications by enterprises in the opening place and along the route by increasing the proportion of educated and skilled employees (Eddie Ji and Yang Qing, 2020).[6] Fritsch and Slavtche (2008) similarly argue that transportation infrastructure is an important factor influencing firms' innovation and can facilitate the formation of a more systematic innovation network.[7] Yao and Li (2022) also found that the opening of high-speed rail significantly increased inter-city co-patenting, patent quality, and partnerships, and promoted collaborative innovation.[8] Second, the opening of HSR facilitates management and decision-making. In terms of cost management, the opening of high-speed rail strengthens the supervision of external investors in the company, improves information transparency, reduces the agency problem, and ultimately reduces the cost stickiness (Yang Guochao et al., 2021)[9]. In terms of investment decisions, the opening of high-speed rail reduces information asymmetry and thus increases firms' off-site investment (Ma Guangrong et al., 2020).[10] Third, the opening of high-speed rail is closely related to the capital market. The compression of geographic distance can reduce information asymmetry, information acquisition costs, and regulatory costs in the capital market, thus reducing the risk of stock price collapse of listed companies in high-speed rail opening places (Zhao Jing et al., 2018) and the synchronization of stock prices of firms along the route (Chen Kexing et al., 2022), significantly increasing the probability of successful listing of firms in high-speed rail opening places (Jin Zhi et al., 2021), and significantly lowering the firm's cost of equity capital (Guo Zhaorui and Huang Jun 2021).[11-14]

3. Factors affecting the stickiness of labor costs in firms

Labor cost, as one of the important features of enterprise cost management strategy, also exists in the law of delayed adjustment similar to cost stickiness. Dierynck et al. (2012) use the relevant data of Belgian private enterprises and find that a 1% increase in sales revenue increases labor costs by 0.60%, while a 1% decrease in sales revenue reduces labor costs by only 0.34%, which confirms the existence of "easy to increase and difficult to decrease" characteristics of labor cost. This confirms that labor cost has the sticky characteristic of being "easy to increase but difficult to decrease".[15] After that, domestic scholars Liu Yuanyuan and Liu Bin (2014) took China's manufacturing industry as a sample and empirically found that labor protection exacerbates the possibility of replacing manual labor with machines, which also leads to the enhancement of the stickiness of labor cost.[16] Existing studies related to the influence factors of labor cost stickiness mainly focus on the internal and external dimensions of enterprises.

3.1. The effect of internal firm factors on labor cost stickiness

First, from the perspective of managers' or shareholders' behavior, Pagano and Volpin (2005) found that when managers hold a small amount of equity and have high self-interested motives, the labor cost of the firm may be "sticky".[17] Dierynck et al. (2012) found that the management of higher-profit firms tends not to cut human resources or reduce compensation packages immediately to avoid or reduce reputational losses in the labor market when there is less pressure on surplus.[15] Fang Qiaoling et al. (2021) find that equity pledges enhance labor cost stickiness mainly through the mechanism of agency problems.[18] Second, from the perspective of corporate culture, Quan, Xiaofeng, and Zhu, Yuxiang (2022) argue that the "employee care" culture reflects the value orientation of the firm's human-centeredness, and in the event of a decline in performance, managers avoid layoffs as much as possible that are contrary to the firm's corporate culture, which in turn exacerbates labor cost stickiness.[19] Again, from the perspective of ownership structure, there are differences in the impact of ownership structure on labor cost stickiness across countries and systems. Under the influence of performance pressure, public banks are more willing to flexibly adjust labor resources and optimize labor cost management decisions (Hall, 2016).[20] Gu et al. (2020) found that labor costs are more sticky in state-owned enterprises than in non-state-owned enterprises.[21] Finally, from the perspective of labor characteristics, Golden et al. (2020) suggested that labor adjustment costs play an important role in cost behavior patterns and confirmed that high reliance on skilled labor will lead to greater cost asymmetry based on the theoretical foundation of asymmetric cost behavior.[22]

3.2. The effect of firm external factors on labor Cost stickiness

For one thing, from the perspective of government policy, the introduction of the Labor Contract Law has strengthened the protection of workers and also enhanced the stickiness of enterprise labor costs (Liu Yuanyuan and Liu Bin, 2014).[16] Lu Rui and Chen Shenglan (2015) combined the changes in the external environment with the economic activities of microenterprises, pointing out that compared with state-owned enterprises, the tight monetary policy has a stronger inhibiting effect on the labor cost stickiness of non-state-owned enterprises.[23] In addition, tight monetary policy can have a crowding-out effect on firms' investment in innovation, in which labor cost stickiness plays a negative moderating role (Qiaoxin Xie, 2018).[24] Hu Guoheng and Wang Zengwen (2022) argue that economic policy uncertainty will seriously compress firms' profit margins and enhance labor cost stickiness while constraining firms' profitability.[25] Second, from the perspective of market competition, Chen Shenglan and Ma Hui (2014) find that intense product

market competition increases labor cost stickiness.[26] And Qiaoling Fang and Hui Xu (2021), investigated the issue of the relationship between competition and labor cost stickiness in the banking industry and confirmed that peer competition significantly enhances labor cost stickiness within banks.[27] Third, from a demographic perspective, Zhang Bo et al. (2022) empirically found that population aging enhances labor cost stickiness based on aging data from the province where the firm is located.[28] In addition, Chen Hong et al. (2023) find that artificial intelligence suppresses firm cost stickiness.[29] Xu Hui et al. (2023) take private listed companies as the research subject to explore the relationship between natural disasters, such as floods and droughts, and corporate labor cost adjustment, and find that disaster shocks reduce the efficiency of labor cost adjustment, thus enhancing labor cost stickiness.[30]

4. Conclusions

By combing and summarizing the relevant literature at home and abroad, it can be found that existing studies have extensively examined the economic consequences of the opening of high-speed railways and the factors affecting the stickiness of corporate labor costs, and have achieved a large number of fruitful results.

Existing literature on the economic consequences of the opening of high-speed rail focuses on the impact on the macroeconomy and microsubjects. On the impact on the macroeconomy, scholars believe that high-speed rail shortens travel time by its speed, improves the closeness of the connection between cities, and the economic activities in different regions become closer and more frequent, which in turn has a certain impact on the industrial structure of the city, the level of regional economic development and innovation, and the ecological environment. From the micro subject level, the shortening of time and space distance accelerates the flow of information, improves the internal and external environment of enterprises, stimulates the innovative behavior of enterprises, strengthens the supervision of enterprises by external investors, and reduces the information asymmetry in the capital market. From the comprehensive viewpoint of existing research on high-speed rail, previous scholars have explored its impact on cost management less, thus the impact of high-speed rail opening on enterprise cost management decision-making is a direction that can be explored.

Current research on the factors influencing the stickiness of labor costs in enterprises mainly focuses on both internal and external aspects of enterprises. In terms of internal influencing factors, some studies have explored them from the perspectives of managers' or shareholders' behaviors, corporate culture, ownership structure, and labor force characteristics. In terms of external influencing factors, the effects of macro-environments such as government policies, market competition, demographics, and disaster shocks on labor cost stickiness have also been verified one after another. Although some scholars study the impact of policy and environmental changes on labor cost stickiness of enterprises from the national macro perspective, there are fewer studies based on the national macro transportation infrastructure. Therefore, this paper focuses on the impact of the exogenous variable of high-speed rail opening on enterprise cost management decisions, combining macro-national strategic planning with micro-enterprise production and operation decisions to explore the relationship between the two.

Summarizing the existing literature, high-speed rail, as a more common mode of access at present, can effectively shorten the geographical distance between two places, improve the internal and external environment of enterprises, and influence their cost management behaviors. Based on the listed enterprises, the opening of high-speed rail will affect the flexibility of adjusting labor resources by promoting labor mobility.

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