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The influence of enterprise dormitories on the urban integration of migrant workers in China: an exploration of two distinct migration stages of individual and family migration and the differences between them

Wanqing Wei [1,2] & Li Zhang[1]

The role of enterprise dormitories as the main living arrangements of Chinese migrant workers who are registered as rural residents but make their living in cities in pursuit of urbanisation cannot be ignored. However, the existing research on living spaces and the urban integration of migrant workers lacks sufficient focus on enterprise dormitories. Using the logit model to examine representative data on the Pearl River Delta and Yangtze River Delta areas and applying a national dataset taken from the China Migrants Dynamic Survey, we analyse how enterprise dormitories affect the urban integration of migrant workers across the different migration stages in this paper. The research results reveal that there are two migration stages in the urban integration of migrant workers. In the individual migration stage, based on the production target, enterprises accommodate migrant workers as a means of reducing their labour costs by increasing the labour time input of migrant workers. Moreover, in the family migration stage, enterprise dormitories are conducive to the low-cost integration of migrant workers into urban society, but they negatively affect further family migration because of the insufficient family living space that they provide. This research offers the intellectual foundation required for not only resolving the contradiction between the family reunification of migrant workers and their employment situation but also for the optimisation of housing policy.

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[1] School of Public Policy and Management, Guangxi University, Nanning, China. [2] Regional Social Governance Innovation Research Centre, Guangxi University, Nanning, China. ✉email: weiwq20050908@163.com

Introduction

Inspired by the poor facilities found in underdeveloped villages and the desire for money and a better life, a large number of farmers leave their hometowns to work in more developed cities and earn a decent living. To differentiate migrant farmers in the city from other workers who migrate from city to city, migrant farmers in the city are referred to as rural‒urban migrant workers or migrant workers for convenience. According to the seventh National Population Census of China, the Chinese migrant population totalled 376 million in 2020, among which rural‒urban migrant workers accounted for 66.26% of the total migrant population (National Bureau of Statistics, 2021).

The enormous demand for housing has led to an enormous increase in the number of migrant workers. However, the housing prices in large cities are extremely expensive for migrant workers. This living pattern not only plays an important role in understanding the urbanisation and industrialisation occurring in China but is also regarded as a microcosm of China's low-cost urbanisation. However, the growing gap between high housing prices and low wages is a phenomenon that is exclusive to the urbanisation process in China. Meanwhile, Chinese governments cannot readily meet the low-cost and public housing requirements of all its residents, and migrant workers are excluded from this social welfare protection.

A large proportion of migrant workers migrate to large cities, particularly to the Pearl River Delta and Yangtze River Delta areas, which signals a high living demand. However, it is difficult to meet the living demands of migrant workers because of the wide gap between their low wages and the high housing prices. With rapid economic development and urbanisation, the housing prices in China have increased dramatically (Li et al., 2017; Chen and Wen, 2017). In addition, this phenomenon is much more pronounced in developed regions and large cities, especially in the Pearl River Delta area and Yangtze River Delta area. Therefore, in the process of China's urbanisation and industrialisation, secure housing is in short supply.

As shown in Fig. 1, the proportion of social expenditure is relatively low, which reflects the obvious characteristics of productive social policies. The expenditures on social security, employment, education and medical and health care account for a relatively low proportion of the national fiscal expenditure, representing 18.67% of the total in 2007. In 2022, the national fiscal expenditure on social security and employment accounted for 7.99% of the total. The expenditures on social security and employment, education, and medical and health care accounted for 21.45% of the total. Figure 2 shows that the proportion of the

local fiscal expenditure on housing security was relatively low (Wei and Gao, 2020), at 1.35% in 2010 and 1.54% in 2018. Secure housing, however, is based on urban household registration, so migrant workers are ruled out (Wu and Webster, 2010).

As a result of the close connection between the household registration system and public housing, it is difficult for migrants without urban *hukou* registration to obtain urban welfare (Zang et al., 2015), let alone to apply for public housing. Under the dual pressure of excessively high housing prices and the absence of public housing, low-skilled migrants have no other options but to live in free enterprise dormitories or low-cost urban villages. In other words, the new labour force, which exists on a massive scale, sees uncommon commercial housing such as enterprise dormitories and urban villages as the optimum solution to making housing costs affordable. According to a monitoring survey conducted by the National Bureau of Statistics of China, in 2009, 50.5% of migrant workers were provided with free accommodations by their employers (National Bureau of Statistics, 2009). Only 2.9% of migrant workers are safeguarded by the housing security system, and 61.3% of them still met their housing demand through the renting of houses in 2018 (National Bureau of Statistics, 2018). As a result, most migrant workers now live in dormitories and urban villages, which is a good means of adapting to the city at a low cost.

Thus, how can the low-cost housing requirements of migrant workers be fulfilled in the face of the unbridgeable gaps between low wages and high housing prices? In fact, there are two approaches for realising the housing needs of migrant workers at a low cost. On the one hand, to save on living expenses, such workers can live in peri-urban villages (i.e., urban villages) where the average rent is much lower than that of other housing estates in the downtown district, but the dwelling environment is poorer than that of other areas (Wang, 2021). On the other hand, migrant workers generally live in free enterprise dormitories that are similar in terms of spatial features to the places where ethnic groups gather. As a mixture of work and living space, the enterprise dormitory plays a crucial role in the urbanisation of Chinese migrant workers (Ngai et al., 2019).

Do enterprise dormitories play a positive role in migrant workers' urban integration throughout their migration process? Is there any change during this process? In this paper, we argue that enterprises provide employees with dormitories based on their economic goal of reducing labour costs. Initially, enterprise dormitories attracted many single and unmarried migrant aiming to reduce their living expenses as much as possible. This is referred to as the stage of individual migration. As these migrants get older and get married, they have to take their families into account, which drives them into a more sufficient living space than that provided by enterprise dormitories. This is referred to as the stage of family migration.

The original contributions offered by this study are reflected in two ways. On the one hand, compared to the negative attitude of the existing research toward enterprise dormitories, we creatively focus on the effects of enterprise dormitories on migrant worker urbanisation across different migration stages and on the heterogeneity between them, including both positive and negative aspects, thereby enriching the literature on the relationship between enterprise dormitories and the urban integration of migrant workers. On the other hand, this study can provide a reference for better understanding the role of migrant workers in China's urbanisation and promoting China's housing security policy.

The remainder of this paper is organised into six parts as follows: "Literature review and research hypotheses" provides an overview of the relevant literature and then presents the research
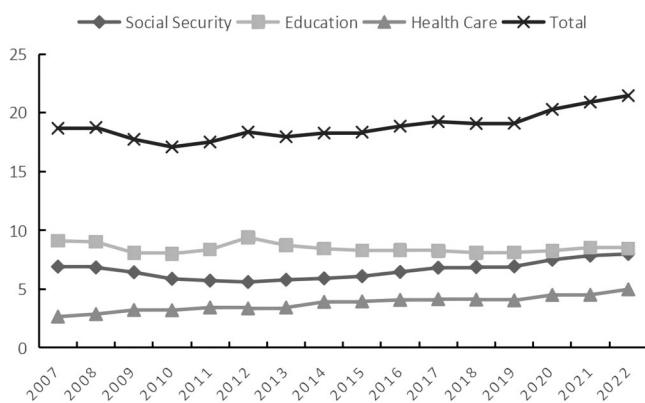

Fig. 1 The proportion of major social expenditures in public finance (%).
Source: National Database. The figure illustrates social security, education, health care and the sum of these three social expenditures as percentage of public finance from 2007 to 2022.

Fig. 2 The proportion of housing security expenditure in local fiscal expenditure (%) from 2007 to 2022. Source: National Database. The figure illustrates the dynamic process of housing security expenditure as percentage of local fiscal expenditure from 2007 to 2022.

hypotheses. "Data, variables and research methods" provides details of the datasets and variables, displays the results of the descriptive statistics, and defines the methodology. In "Results", the relevant hypotheses are tested and a robustness analysis is conducted. "Conclusion" summarises the research findings and presents the research limitations and prospects. "Discussion" presents a discussion of the consequences of the prevailing housing policy and then puts forward offers suggestions for corresponding countermeasures and suggestions.

Literature review and research hypotheses

Urbanisation of migrant workers: living patterns and urban integration. During the last three decades, China has experienced the largest migration in human history, which has also stimulated a great deal of research on migration both at home and abroad. Compared with internal migration in other countries, the most distinguishing feature of China's migration pattern is its household registration system, which is called *hukou* in Chinese (Chan and Zhang, 1999; Wang, 2005). *Hukou* divides China's population into two parts: urban residents and rural residents. Moreover, *hukou* is closely associated with individual welfare, medical treatment and children's education. Urban residents generally enjoy a series of privileges related to urban infrastructures (Solinger, 1999; Wang, 2005; Liang et al., 2014). In light of the *hukou* system, China's migrating population is divided into urban–urban migrants and rural–urban migrants. In regard to geographical characteristics, the migrating Chinese population is spread out across two main coastal regions: the Pearl River Delta area and the Yangtze River Delta area. In addition, in 2000, 57.6% of the interprovincial migrant workers in China resided in one of these two areas. Further, these two areas still accounted for 55% of interprovincial migrant workers in 2010 (Liang et al., 2014; Shen and Chiang, 2011).

Many studies have verified that *hukou* exerts an important effect on the professional attainment and housing choices of migrant workers. Generally, migrant workers live in the fringes of cities, where the housing and living conditions are poor (Di, 2005). Duan and Wang (2006) found that 39.6% of migrant workers live in rented houses and that more than 20% of migrant workers reside in simply furnished enterprise dormitories or shoddy shanties erected at building sites. By comparing the living patterns of migrant workers in Shanghai with those in Tianjin, Guo et al. (2006) uncovered a similarity in that the majority of migrant workers rent private houses and the minority live in public housing in both places. In addition, those in-between temporarily lived in crowded enterprise dormitories. Xia and Sun (2006) agreed that approximately 25% of migrant workers reside

in shanties of construction sites and that many migrant workers choose enterprise dormitories and rent houses around the city.

Numerous studies have discussed the urban integration characteristics of migrant workers in China. Generally, the urban integration of migrant workers can be divided into two stages. The first is the individual migration stage, in which the objective of migrant workers is to achieve economic integration and obtain better jobs and salaries. Migrants in this stage are usually viewed as sojourners in cities (Du, Li and Hao, 2018). To remit more money to their families, migrant workers tend to decrease their consumption and housing costs and opt to live in free enterprise dormitories (Xie et al., 2021). In light of their living patterns, migrant workers leave enterprise dormitories for rented houses to reunite with their families. Currently, a significant feature of migrant worker migration in China is the shift from individual migration to family migration (Liang, 2016).

Overall, the urban migration stages of migrant workers are significantly associated with their living patterns. However, previous studies have mainly agreed that living patterns are the consequence of urban integration and have discussed how housing tenure affects urban integration (Yang and Guo, 2018). In contrast, an examination of how living patterns affect urban integration has been neglected. For the above reasons, we emphasise the influence of living patterns on the urban integration of migrant workers.

The production logic of enterprise dormitories. As a housing pattern, the enterprise dormitory is an important indicator of China's industrialisation and urbanisation. Generally, residential patterns and housing supply capacity can affect the economic growth of cities by influencing the quantity and cost of the labour supply (Chen et al., 2014). Faced with high housing prices, low wages and an insufficient supply of public housing (Zhou and Ronald, 2017), migrant workers rely mainly on urban villages, small suburban property houses or enterprise dormitories to fulfil their housing needs. Informal housing is dramatically different from ordinary commercial housing, and it generally includes urban villages, suburban houses with limited property rights and enterprise dormitories (Joint Research Group of Development Research Centre of the State Council and The World Bank, 2014; Luo et al., 2017; Zhan, 2018). The average monthly rent of urban village housing is 16 RMB yuan per square metre per month, which is much less than that of housing in the city of Guangzhou in 2007 (Liu et al., 2010). Native residents usually rebuild their self-owned multistorey buildings into many cubicles (Wang, 2021). A lessee can only live in such a limited space. Additionally, enterprises are inclined to set up their factories in the suburbs,

which creates a long distance between the living areas and the workplace of migrant workers. Correspondingly, the for most migrant workers, namely, urban villages or enterprise dormitories, can be summarised as informal housing or uncommon commercial housing-dominated living modes, which has become a peculiar characteristic of China's urbanisation.

There are two living patterns for migrant workers, namely, living in urban villages or living in enterprise dormitories. However, the existing research has focused primarily on urban villages. These scholars believe that migrant workers' choice to live in urban villages is triggered by the undersupply of public housing and the insufficiency of their consumption patterns (Liu et al., 2010; Fan et al., 2015; Deng and Guo, 2016). Hence, there are few studies on enterprise dormitories. The perspective on consumption in regard to the logic of migrants' housing choice cannot be explained by the supply logic of enterprise dormitories. Given that providing dormitories increases costs, we pose the following question: why do interest-driven enterprises furnish dormitories for employees?

To answer this question, some researchers have proposed viewing the supply of enterprise dormitories from the perspective of capital logic from a global perspective. Smith's research on China's special economic zones suggests that the provision of dormitories to workers by enterprises in special economic zones partly stems from the traditional practice of Chinese state-owned enterprises, but its essence reflects a shift from state corporatism to private patriarchal management (Smith, 2003). Wage cuts in real terms compel workers to obtain housing through their enterprises. Meanwhile, the enterprise is willing to provide dormitories because dormitories contribute to their control of labour mobility and assurance of sufficient and stable labour resources. For example, based on the theory of capital logic and the labour process, Ren and Pan proposed that an enterprise dormitory represents a special labour institution, namely, a dormitory labour system (Ren and Pan, 2006b).

First, in terms of space, the dormitory labour system is different from the separate labour-living production system that exist in the market economy. It combines the product space with the daily reproduction space of the labour force, imbuing the enterprise with a community characteristic. Enterprise dormitories are located near the workplace to save workers' commuting time. Many migrant workers live in crowded conditions in these simply furnished dormitories that are provided by the enterprise, and there is little room for personal privacy.

Second, in terms of function, the dormitory labour system is different from that of state-owned enterprises in the era of the planned economy. At that time, state-owned enterprises were equipped with dormitories, housing and medical care, etc., which are integral aspects of welfare security. In contrast, currently, enterprise dormitories are instituted based on enterprises' race-to-the-bottom production strategy in the face of fierce global competition. Specifically, the enterprise can make full use of the dormitory labour system to monitor and manage their employees. The dormitory system not only imposes a strict system of discipline but also contains some Foucauldian panoramically open visual space and self-shaping technology in daily life. With the help of this system, enterprise managers (i.e., the representatives of capital) can use a series of procedures to thoroughly control and transform workers to fully leverage labour for capital.

Therefore, the system is equivalent to the reproduction of the daily life of the enterprise-centred labour force. Moreover, it is also used to exert control over workers' lives and for the optional extension and flexible control of working days and working hours to improve production efficiency. With the aim of recruiting single migrant workers at a low cost to maximise labour output on workdays, the dormitory labour system is well known for

keeping labour costs at a low level while driving high production efficiency. Thus, the dormitory labour system can ensure a sufficient supply of labour even in the absence of a long-term labour employment mechanism (Ren and Pan, 2006b). Smith and Pun (2006) argued that the dormitory labour regime, as a unique and specific space production politics, is not only a means of survival for migrant workers but also a highly patriarchal, intensive and mandated production system. The difference between contemporary enterprise dormitories and the housing solutions of the past is that the dormitory serves to separates the intergenerational reproduction of labour. From the view of class antagonism, Ren and Pan (2006a) regard the dormitory as a tool for imposing comprehensive control and exploitation on workers by capital. Through a quantitative survey in Jiangsu Province, Wu and Zhu (2011) verified that compared with a rental house, a dormitory labour regime deteriorates the living conditions of workers and damages their working rights.

Therefore, Hypothesis 1 is proposed as follows.

Hypothesis 1: To meet the needs of enterprise production and operation, the capital-dominated enterprise reduces its production costs by providing free dormitories for employees.

Specifically, in this paper, we analyse the production logic of enterprise dormitories from three perspectives: the wage system, labour time, and labour costs. Labour costs are calculated as unit costs measured by hourly wage and total costs measured by average monthly wage. Enterprises should control unit costs and total costs while increasing the labour input of employees. To concentrate on the demand side of migrant workers, we analyse three main aspects of how an enterprise dormitory impacts urban integration: job stability, spouse reunification and family reunification. To better examine the above assumptions, Hypothesis 1 is divided into the following four dimensions:

Hypothesis 1a: Enterprise dormitories are related to enterprise wage system, and enterprises that provide dormitories are more likely to adopt a basic wage system than an hourly wage system. This hypothesis is used to verify the relationship between enterprise dormitories and the wage system.

Hypothesis 1b: Enterprise dormitories are relevant to labour time. Moreover, the staff of an enterprise housed in dormitories tend to work longer. This hypothesis is used to examine the relationship between enterprise dormitories and labour time.

Hypothesis 1c: Enterprise dormitories are connected to labour cost control. The hourly wages of employees in enterprises that provide dormitories are lower than those in enterprises that do not. This hypothesis is used to verify the relationship between enterprise dormitories and hourly wages.

Hypothesis 1d: Enterprise dormitories are concerned with labour cost control. Although the working hours of the employees in enterprises that provide dormitories increased monthly, the monthly wage did not markedly improve. This hypothesis is used to inspect the relationship between enterprise dormitories and monthly wages.

In empirical research, two scholars are making contributions. On the one hand, Peng Fang conducted a field investigation of a South China Taiwan-funded factory and summarised the logic of controlling employees and costs. Specifically, enterprises spare no effort to exploit the floor effect and unpaid man-hours to accomplish their goal, namely, ensuring low wages under a time-rate salary system and augmenting labour time through the use of traditional social networking and human relationships (Peng, 2007). Using the logit model, Wei Wanqing tested the supply logic of enterprise dormitories and the important production mechanism of the manufacturing consent of enterprise dormitories to analyse the surveyed dataset of the Pearl River Delta economic zone (Wei, 2011). Despite the analysis of the supply logic of enterprise dormitories, these studies have given little

attention to the relationship between enterprise dormitories and migrant worker urban integration.

Low-cost urbanisation, enterprise dormitory and the urban integration of migrant workers. Zhang (2000) regards migrant workers as farmers who come from rural areas and flow into cities in pursuit of personal advancement. Compared to urban residents and laid-off workers, migrant workers are still identified as marginalised vulnerable groups. He and Zheng (2007) defined the concept of migrant workers from the perspective of economics and history, believing that in the process of national social industrialisation, the form that work takes for many farmers has shifted from farming to industrial labour, and migrant workers have certain economic and historical attributes. From the perspective of household registration and occupation types, Gu and Huang (2006) defined migrant workers as workers engaged in urbanisation construction who flow from primary to secondary and tertiary industries under the original urban and rural dual household registration system and employment system. The '2019 Monitoring and Investigation Report on Migrant Workers' issued by the National Bureau of Statistics provides the following definition of migrant workers: migrant workers refer to workers who are still registered in rural areas but are engaged in non-agricultural industries or work outside of those areas for more than 6 months one of the year (National Bureau of Statistics, 2019).

In 1951, the French sociologist Emile Durkheim first proposed the term 'social integration' in his study on the phenomenon of suicide. He noted that social integration is a process in which social individuals maintain the normal social order, which is based on the social division of labour, by leveraging the collective consciousness. Ren and Wu (2006) claimed that social integration is a process of mutual coordination and mutual adaptation among individuals, different groups or different cultures. Ma and Tong (2008) focused on urban new immigrants and verified that social integration refers to the process in which new immigrants are integrated into urban society in the areas of living environment, employment, values and lifestyle. Huang and Ga (2010) posited that the urban integration of migrant workers is a multidimensional process that includes mutual acceptance and recognition between migrant workers and urban citizens.

The research object of the literature on migrant worker urban integration is the migrant workers working in urban cities. These studies mainly discuss how migrant workers pass through system barriers and flow from rural to urban cities and how they can more quickly and effectively adapt to urban life and subsequently integrate into the city against the background of the current structural differences in the duality of Chinese urban and rural life. It is obvious that the destination of the migration considered here is the city. Therefore, the term 'urban integration' is better for referring to the adoption of migrant workers into urban life than the term 'social integration' because it is more targeted and realistic. It is obvious that urban integration is a mutual and bidirectional concept. It not only refers to the process of migrant workers unilaterally integrating into mainstream society but also the process by which urban society gradually accepts and embraces migrant workers. It places a greater focus on the two-way interaction and adjustment between these different cultural groups.

Traditionally, the life cycle of a family could be divided into nine periods, including a single period, an initial marriage period and a retirement period (Wells and Gubar, 1966). Similarly, the life cycles of migrant workers can be divided into individual migration stages and family migration stages. The initial migration of generally young and unmarried workers is referred to as the stage of individual migration, and its goal is economic integration. The family migration phase relates to married workers, and the goal of urban integration involves not only economic integration but also family reunification.

Family migration is a natural product of the development of population migration as migrants enter into a new stage, which is a new challenge to the urban living space that is posed by migrants and an important phenomenon in the process of China's urbanisation (Yang, 2013). Family migration is an advanced stage of migration (Sheng, 2014). The realisation of family goals is not a one-step process but rather a multistage decision-making process (Achenbach, 2017). Generally, migration begins with economic migration, which is characterised by migrants' need for employment opportunities and income, namely, the individual migration stage. When a core member has a stable work and life foundation, other family members (such as spouses) can then move into the city (Zhang et al., 2019). The realisation of phased goals affects subsequent migration decisions (Paul, 2011). Accordingly, the urbanisation of migrant workers is a process of gradual social and psychological integration based on economic integration. Consequently, migrant workers have different housing needs at different stages of their migration and social integration.

Urban integration is the process in which the migrant population builds relationships with urban residents, adapts to urban life and urban on the basis of various basic rights, and gradually narrows the gap between their situation and that of urban residents throughout this process. Specifically, the main concepts of migrant population integration in western countries are social adaptation, social absorption, assimilation and social integration (Yang, 2013; Ruiz-Tagle, 2013). Junger-Tas et al. proposed the famous three-dimensional model, which includes structural integration, social culture integration and the integration of political legitimacy (Junger-Tas, 2001). Zhang et al. used four dimensions to measure the degree of social integration of migrant families, namely, economic integration, psychological integration, identity integration, and community and cultural integration (Zhang et al., 2022).

If we take enterprise dormitories as a result of the pursuit of enterprise profitability, then the question remains as to how they affect the urban integration of migrant workers. The necessary forms of integration into city life differs for migrants in different integration phrases. This poses the following question: do enterprise dormitories differently influence the urban integration of migrants?

Migrants are pursuing economic integration when they initially enter city life by finding the right job and gaining a foothold in the city (Tian and Xu, 2015). In international migration, serving as a protective belt for immigrants, a transit station for social integration and a springboard for future development, ethnic communities are generally the first alternative for migrants to use as a specific working and living space when they initially arrive in their destination country (Carillo et al., 2023). Similarly, economically- and culturally-mingled settlements are involved in China's population migration. For enterprises, the enterprise dormitory space is often used for countrymen gathering, which characterises the enterprise management system to some extent (Lee, 1999). For migrant workers entering the city for the first time, living in the enterprise dormitory not only saves commuting time and living costs but also isolates the enterprise space from the outside space, or more precisely, it creates a protective belt between them. For example, living in enterprise dormitories can protect migrant workers from external factors, including swindles, theft and violence.

Overall, the enterprise dormitory has become an important option for helping migrant workers adapt to a city and reduce the

risks they face. In early research on the enterprise community, the workers serving as the research target were mainly unmarried girls (Jenny et al., 2013). Age serve as an important factor for the job stability of migrant workers. The younger that migrant workers are, the more likely they are to change jobs. In addition, social integration can increase the job stability of migrant workers (Tian and Xu, 2015). This finding implies that migrant workers who choose enterprise dormitories (which are the first choice of most young migrants) may have lower job stability.

As an increasing number of migrant workers enter into marriage, the disadvantages of the enterprise dormitory are gradually being recognised. Reuniting with families and addressing concerns about better education for their children are important factors that influence the migration decisions of migrant workers. For these reasons, migrants might even sacrifice certain economic interests (Xing and Zhang, 2017; Li et al., 2018). In contrast, an enterprise dormitory serves the needs of production and management rather than providing sufficient living space for a family. As a result, migrant workers either choose to live in enterprise dormitories at the cost of separation from their spouses and children (Jin, 2011) or to live in urban villages or commercial houses in close proximity to enterprises. Even worse, they may come to have no choice but to resign.

Faced with the reality of high housing prices in cities and the insufficient supply of public housing, living in urban villages has become an important way for migrant workers to meet the housing needs of their families at a low cost (Zhan, 2018). Therefore, as a balancing strategy between family reunification and work demand, the choice of living mode not only relies on housing cost but is also usually associated with employment choice. The root of this process is that single young workmen or workwomen are generally clustered in communities that have been constructed by enterprises (Wei, 2011). In contrast, married migrants generally live in urban villages accompanied by their wives and children (Liu and Jia, 2021).

Overall, the impact of enterprise dormitories on urban integration is related to the migration goals of migrant workers and their life cycle characteristics. From the perspective of unmarried migrants, there is no need to worry about separation from spouses and children. Notably, enterprise dormitories reduce the cost of urban integration, which is conducive to promoting the urban integration of migrant workers. However, this positive effect gradually disappears as workers enter into marriage and have children. There are only two ways meeting the needs for reuniting migrant workers with their families. Either enterprises can respond by raising wages, which results in higher labour costs, or migrant workers can compromise and remain in enterprise dormitories at the expense of reuniting with their families. As an increasing number of migrant workers vote with their feet to leave enterprise dormitories or even enterprises based on the objective of family reunification, labour shortages and recruitment difficulties may follow.

Therefore, Hypothesis 2 is formed.

Hypothesis 2: Guided by production demand, enterprise dormitories provide a shelter for fresh employees, which promotes their initial economic integration rather than supports their family migration.

We can explain Hypothesis 2 from the perspective of the life cycle characteristics of migrant workers. First, the enterprise dormitory is conducive to the economic adaptation of fresh and single employees, which results in the new and single staff choosing to live in enterprise dormitories. As migrant workers often use this living mode as a springboard, they are more likely to leave their jobs after a short period, thus driving job changes. As workers transition from single and unmarried to married and childbearing status, the negative effect of enterprise dormitories on urban integration gradually increases. With respect to the reuniting of migrant families, the enterprise dormitory entail sufficient family living space, which constrains family reunification and family migration. On this basis, Hypothesis 2 is split into five parts to verify the influence of enterprise dormitories on migrant workers in different migration stages, as follows:

Hypothesis 2a: Unmarried migrant workers are more likely to choose enterprises that provide dormitories. This hypothesis is used to verify the relationship between enterprise dormitories and unmarried migrants during the individual migration stage.

Hypothesis 2b: A job hunter initially entering the city is more likely to choose an enterprise that provides housing. This hypothesis is used to examine the relationship between enterprise dormitories and migrants who are working in the city for the first time during the individual migration stage.

Hypothesis 2c: Migrant workers who opt to reside in an enterprise dormitory are more likely to change jobs in the short term, thus exhibiting lower job stability. This hypothesis involves inspecting the relationship between enterprise dormitories and migrant job stability at the individual migration stage.

Hypothesis 2d: The enterprise dormitory excludes the living space of migrant workers, which hinders the reunification of families. This hypothesis is used to verify the relationship between enterprise dormitories and migrants' reunifications with their spouses during the stage of family migration.

Hypothesis 2e: Dwelling in enterprise dormitories is harmful to the migration and family reunification of migrant workers. This hypothesis is used to assess the relationship between enterprise dormitories and migrant family reunification during the family migration stage.

To obtain a better understanding of the relationships among the hypotheses, variables and existing research, we illustrate these relationships in Table 1.

There are an increasing number of studies focused on the influence of living space on migrant worker urbanisation. However, the existing research has mainly explored welfare effects among living space, immigrant economy and social integration (Wei and Gao, 2018; Zhang and Xie, 2013) and how urban villages affect the urban integration of migrant workers from the perspective of residential segregation (Zhu, 2015). Therefore, such studies generally pay little attention to the influence of enterprise dormitories on migrant worker urbanisation. According to studies on enterprise dormitories, negative attitudes prevail in this environment. Enterprise dormitories cannot provide a homelike environment for migrant workers (Li and Duda, 2013). In other words, the positive role of enterprise dormitories is inevitably neglected. Thus, how exactly do enterprise dormitories influence the urbanisation of migrant workers? Is the effect positive or negative? These questions constitute our research direction.

Data, variables and research methods

Data. In this paper, two datasets are adopted to explain the research topic more comprehensively. One is the survey data of migrant workers in the Pearl River Delta area and Yangtze River Delta area that was conducted in 2010, which focused on the situations and regional differences among the migrant worker labour rights and interests in these areas. By utilising these survey data, we can obtain explicit information on individual migrant characteristics. Generally, the enterprise and the employee remain unmatched in such datasets. This unique advantage enables us to complete all the analyses in this study. The other dataset is the national personal data from the China Migrants Dynamic Survey conducted in 2017, which captured information on the employment and housing of migrant workers and their families. Hence,

Table 1 Literature Table of Hypotheses and Variables.

General hypotheses	Vice-hypotheses	Variables	Research points	Researches
Hypothesis 1	Hypothesis 1a	Piece wage	The enterprises ensure the low wage under time-rate salary system and augment labour time by the means of traditionally social network and human relationship.	Peng (2007)
	Hypothesis 1b	Weekly labour time	The enterprise dormitory increases the labour time input of enterprise employees and controls the total amount of	
	Hypothesis 1c	Hourly pay	expenditure.	
	Hypothesis 1d	Monthly pay		
Hypothesis 2	Hypothesis 2a	Married	In the early researches on the enterprise community, the workers are mainly unmarried girls.	Jenny et al. (2013)
	Hypothesis 2b	Initial employment	The migrants aim at economic integration when they get into the city life for the first time: finding the right job and gaining a foothold in the city.	Tian and Xu (2015)
	Hypothesis 2c	Job stability	The younger migrant workers are, the more possible they will change their jobs.	
	Hypothesis 2d	Spouse reunion	Family migration is an advanced stage of migration.	Sheng (2014) Zhang et al. (2019)
	Hypothesis 2e	Family reunion	When a core member has a stable work and life foundation, other family members (such as spouses) move into the city	

this national dataset can provide a more comprehensive understanding of migrant family characteristics. The two datasets are used in separate empirical analyses to best leverage their unique features.

The strength of the survey data on the migrant workers in the Pearl River Delta and Yangtze River Delta for 2010 is that information on both the enterprise and the employee is included. This enables the matching of enterprise and employee data to better inform our topic. Moreover, there is another compelling reason for us to use survey data from the Pearl River Delta and Yangtze River Delta. That is, these data-collection areas represent the two most developed areas in China and have both attracted a good number of migrant workers. In addition, the Pearl River Delta is currently playing a prominent role in the economic transformation happening in China, and the workers in this region benefit greatly from its economic status (Wang et al., 2022). Hence, this approach can be used to capture sufficient information for this study. It is clear that the weakness of this approach is its limitation by region. Since this data survey was only conducted in partial regions, it cannot be extended to estimate the situation throughout the entire country.

For this reason, we use the national personal data taken from the China Migrants Dynamic Survey as evidence for the analyses conducted in this paper. This questionnaire collected information on all migrant families in 2017, including information on individual family members, family budgets, individual employment, individual migration, and health and social integration. This data can provide abundant information, such as the pertinent demographic characteristics in the stage of family migration and how this situation developed throughout China. Moreover, since the survey was conducted in 2017, it can reflect the situation prior to the outbreak of the COVID-19 pandemic. During that time, more migrant workers were active in businesses than there are today.

Nonetheless, the information collected on the enterprise in the China Migrants Dynamic Survey in 2017 is insufficient for examining the relationship between the enterprise and the employee. Rather, it only tells us whether the respondents live in enterprise dormitories or urban villages. Despite the aforementioned defects, these survey data were only updated through 2018 because of the COVID-19 pandemic. The 2018 questionnaire included fewer variables for this research than did the 2017 questionnaire, so we could use data from only the China Migrants Dynamic Survey conducted in 2017.

Variables and descriptive statistics. The key variable in the survey data of the Pearl River Delta and Yangtze River Delta is the enterprise dormitory. With respect to the production logic of dormitory supply, three aspects should be accounted for: labour time, wage system and labour cost. Specifically, the labour time is calculated according to the working hours of the interviewees. Moreover, the wage system is further divided into an hourly wage system and a basic salary system. The labour cost mainly comprises the unit time wage, namely, the immediate wage (taking the logarithm). The monthly wage is treated as the labour cost, which combines the labour time with the unit cost. When the wage system is complex, workers can obtain greater rewards through hard work under an hourly wage system. In other words, the working hours are in direct proportion to the completed amount of work, which definitely signifies higher weekly and monthly wages. However, enterprises exploit the floor effect of work tasks to maximise employee labour and time inputs, control gross payroll and satisfy the supervision standards of local governments (Peng, 2007; Wei, 2011). Family reunification includes not only spouse migration but also minor child migration.

Practically, the control variables from the survey data of the Pearl River Delta and Yangtze River Delta areas include the enterprise size, industry, nature of the enterprise, and the interviewees' age, gender, and education level. Enterprise size is divided into enterprises with fewer than 100 employees, those with 100 to 1000 employees, and those with more than 1000 employees. In accordance with property rights, enterprises are classified into three types: state-owned enterprises, European or American funded enterprises, and enterprises funded by Hong Kong, Macao or Taiwan. Self-employed enterprises are categorised into other modes.

For the national personal data from the China Migrants Dynamic Survey, the key variable is still the enterprise dormitory. The explained variables include weekly working hours, hourly wage, monthly wage, marital status, and spousal and family reunification. Moreover, the control variables, which are mainly used for the robustness test described in Table 7, consist of gender, age, marital status, education level, employment industry and years living in a city.

First, we use survey data from the Pearl River Delta and Yangtze River Delta areas to construct a descriptive statistics table for obtaining rudimentary data. The results are displayed in Table 2. Because of the lack of limitations, 4152 samples from the survey data of the Pearl River Delta and Yangtze River Delta areas

Table 2 Description of Main Variables.

Variables	Total sample		Non-dormitory group	Enterprise dormitory group	Mean value of two groups
	Mean value	Standard deviation	Mean value	Mean value	Difference
Enterprise dormitory	0.514	0.500			
Hourly wage	0.473	0.499	0.522	0.427	0.096***
Weekly working hours	241.4	61.64	235.805	246.882	−11.077***
Logarithm of hourly wage	2.053	0.480	2.077	2.030	0.047***
Mean monthly wage	7.537	0.403	7.538	7.536	0.003
Job loyalty	0.325	0.469	0.356	0.296	0.059***
Spouse migration	0.730	0.444	0.842	0.593	0.249***
Family migration	0.359	0.480	0.428	0.274	0.154***
Business scale					
Enterprises with less than 100 employees	0.322	0.467	0.321	0.323	−0.002
Enterprises with 100 to 1000 employees	0.436	0.496	0.436	0.435	0.000
Enterprises with more than 1000 employees	0.243	0.429	0.244	0.242	0.002
Enterprise sector					
Manufacturing enterprise	0.627	0.484	0.633	0.622	0.011
Service enterprise	0.293	0.455	0.313	0.272	0.041***
Construction enterprise	0.0800	0.271	0.053	0.106	−0.052***
Enterprise property					
State-owned enterprise	0.0970	0.295	0.098	0.095	0.003
Hong Kong, Macao or Taiwan-funded enterprise	0.105	0.307	0.092	0.118	−0.026***
Europe, America or Japan-funded enterprise	0.0720	0.258	0.090	0.055	0.035***
The ratio of housing price to income	6.208	3.734	6.291	6.131	0.160
Female	0.458	0.498	0.494	0.423	0.071***
Age	31.43	9.508	32.123	30.794	1.329***
Married	0.592	0.492	0.668	0.520	0.148***
Education level	10.21	2.760	10.095	10.314	−0.219**
Fresh workman	0.327	0.469	0.312	0.340	−0.028*

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$. The two-tailed test is adopted.

were retained for data analysis. From the basic sample information displayed in Table 2, it can be seen that 51.4% of the enterprises that employ migrant workers provide dormitories. In the total sample, the proportion of spouse migration accounts for 73%, while the percentage of family migration accounts for 35.9%.

In Table 2, the enterprise dormitory and nondormitory groups are distinguished for description and comparison. The difference test of the data shows that enterprises without dormitories are more willing to adopt an hourly wage system (whose proportion accounts for 52.2%), while the proportion of enterprises with dormitories that use an hourly wage system accounts for only 42.7%. In addition, there are evident differences in working hours and hourly wages between these two groups of employees. The working hours of enterprises without dormitories are shorter than those of enterprises with dormitories. However, employees can obtain higher hourly wages from enterprises without dormitories than they can from enterprises with dormitories. Nevertheless, their differences in monthly wages are negligible.

Moreover, enterprises with dormitories possess some characteristics that deserve to be mentioned. Employees in enterprises with dormitories are more likely to resign, accounting for 29.6% compared to the 35.6% of those in enterprises without dormitories. These employees are generally fresh workers who are employed in the urban labour market for the first time, with a higher proportion of workers involved in the urban labour market working for companies that offer

dormitories (34%) than those involved in the urban labour market working for companies that do not offer dormitories (31.2%). In addition, enterprises that provide dormitories have a greater proportion of employees who are single, accounting for 48% compared to the 33.2% of those who do not provide dormitories. Concerning enterprises that offer dormitories, the proportions of spouse migration (whose proportion accounts for 59.3%) and family migration (whose proportion accounts for 27.4%) are significantly lower than they are in enterprises that do not provide dormitories (which are 84.2% and 42.8%, respectively). In terms of the internal differences between the migrant workers in these two types of enterprises, the majority of migrant workers in enterprises offering dormitories are male (with a proportion of 57.7%) and have a higher education level (accounting for 10.314 years) than those in enterprises without dormitories.

Second, we utilise the national personal data from the China Migrants Dynamic Survey to inform the other descriptive statistical table to achieve a better understanding. All the results can be found in Table 3. For the China Migrants Dynamic Survey, the objects of analysis are limited to migrant workers under the age of 65 that hold agricultural household registration. After data filtering, 107560 samples were retained. Table 3 displays descriptive information about the China Migrants Dynamic Survey and the mean comparison results among migrant workers. Furthermore, differences lie between those living in enterprise dormitories and those that do not. It is clear that 14.5% of

Table 3 Description of Main Variables from CMDS2017.

Variables	Total sample		Non-dormitory group	Enterprise dormitory group	Mean value of two groups
	Mean value	Standard deviation	Mean value	Mean value	Difference
Enterprise dormitory	0.145	0.352			
Weekly working hours	58.267	17.997	58.272	58.238	0.034
Overtime	0.773	0.419	0.770	0.789	−0.019***
Logarithm of hourly wage	2.760	0.717	2.768	2.711	0.057***
Logarithm of monthly wage	8.147	0.604	8.152	8.114	0.038***
Spouse migration	0.679	0.467	0.724	0.408	0.316***
Family migration	0.471	0.499	0.505	0.272	0.232***
Gender	0.575	0.494	0.573	0.587	−0.014***
Age	35.859	9.834	36.160	34.079	2.081***
Martial Status	0.826	0.379	0.853	0.667	0.186***
Industry	19.515	25.515	18.696	24.346	−5.649***
Education level	9.698	3.085	9.689	9.750	−0.060**
Years of living in city	6.272	5.978	6.605	4.303	2.302***

***$p < 0.01$, **$p < 0.05$.

migrant workers choose enterprise dormitories as their residences. Among all migrant workers, the percentage of spouse migrants accounts for 67.9%, while the percentage of family migrants accounts for 47.1%.

According to the differences between migrants opting to live in dormitories and those who do not, migrants who live in enterprise dormitories are more likely to work overtime hours than migrants who do not. Moreover, compared to migrants who live in enterprise dormitories, migrants who live outside of dormitories more easily achieve spouse and family migration, with proportions of 72.4% and 50.5%, respectively. The results for the differences in gender and education level between migrant workers in these two types of enterprises are identical to those displayed in Table 2. Male migrants dominate among the migrant workers who live in enterprise dormitories, and most migrant workers residing in enterprise dormitories usually have a higher education level, accounting for 9.750 years compared to the 9.689 years for those in enterprises without dormitories. Because of the lack of information regarding the wage system, initial employment and job stability, some results are noncomparable. Generally, the comparison results of the other variables match those displayed in Table 2.

Research methods and model setting. In this paper, we examine how enterprise dormitories influence migrant worker urban integration in different migration stages based on the supply-side logic and demand-side characteristics of enterprise dormitories. Two datasets are adopted for exploring the research topic, including survey data from the Pearl River Delta and Yangtze River Delta areas taken in 2010 and data from the China Migrants Dynamic Survey conducted in 2017, both of which were collected via a sample survey. However, the data for the Pearl River Delta and Yangtze River Delta areas in 2010 are allocated by the ratio of the external population, while the gender, industry and regional distribution are all controlled. In contrast, the China Migrants Dynamic Survey conducted in 2017 used random sampling to study samples across all of the cities and areas in China. This study still has some limitations, however. For example, we used two datasets covering different years and sourced in different sampling surveys. The data from the China Migrants Dynamic Survey of 2017 cover all of China, in contrast to the data only covering the Pearl River Delta and Yangtze River Delta areas in 2010.

We assume that a greater number of migrant workers are attracted by enterprise dormitories because of their goals of economic integration in the individual migration stage. Most migrant workers are inclined to leave enterprise dormitories and relocate to somewhere that can provide sufficient living space for their families due to the goal of urban integration in the family migration stage. To verify this assumption, two hypotheses are proposed. Each hypothesis is further subdivided into several parts for separate examination. The data of the Pearl River Delta and Yangtze River Delta areas in 2010 and that of the China Migrants Dynamic Survey of 2017 are used to evaluate the life course of migrant workers. First, we provide a statistical description of these two datasets and use some basic information to inform a preliminary understanding. Second, based on the research topic surrounding the supply logic of enterprise dormitories and the phased influence of enterprise dormitories on the urban integration of migrant workers, we establish several models for analysis.

Hypothesis 1 is an assumption regarding the enterprise dormitory supply logic regarding why enterprises provide dormitories for employees. Its key independent variable is whether a focal enterprise provides dormitories. Which model we choose depends on the character of the dependent variable used in that model. As a dependent variable, the wage system (reflecting whether an hourly wage system is used) is a dichotomous variable. Therefore, the logit model is applied to the analysis. The labour hours, the labour unit wage cost (i.e., the logarithm of hourly wage) and the average monthly wage (i.e., the logarithm of monthly wage) are continuous variables. Therefore, we use the OLS model.

Hypothesis 2 is an assumption regarding enterprise dormitory demand logic. H2 corresponds to the influence of enterprise dormitories on migrant workers' urban integration throughout their life course. Through Hypothesis 2, we analyse the effect of enterprise dormitories in two migration stages. Migrants who enter the urban labour market face less risk in engaging with city life through residing in an enterprise dormitory. Migrant workers are more likely to choose enterprise dormitories if they are single, fresh workers who are using their present occupation as a springboard for developing their careers.

In Hypothesis 2, the corresponding key independent variables are unmarried status, initial employment and job stability, and the dependent variable is a dichotomous variable reflecting whether the enterprise dormitory living mode is chosen, so a logit

Table 4 Dormitory supply and production cost.

Variables	Hypothesis 1a Piece wage	Hypothesis 1b Weekly labour time	Hypothesis 1c Hourly pay (logarithm)	Hypothesis 1d monthly pay (mean)
Enterprise dormitory	−0.550*** (0.075)	10.331*** (1.917)	−0.048*** (0.014)	−0.009 (0.011)
Business scale				
Enterprises with less than 100 employees	−0.318*** (0.087)	7.871*** (2.222)	−0.047*** (0.016)	−0.022* (0.013)
Enterprises with more than 1000 employees	0.193** (0.095)	7.895*** (2.437)	0.011 (0.017)	0.048*** (0.014)
Enterprise sector				
Manufacturing enterprise	1.768*** (0.093)	6.129*** (2.188)	0.040*** (0.016)	0.085*** (0.013)
Construction enterprise	2.152*** (0.154)	4.430 (3.938)	0.239*** (0.028)	0.270*** (0.023)
Enterprise property				
State-owned enterprise	−0.014 (0.134)	−12.004*** (3.331)	0.040* (0.024)	−0.012 (0.020)
Hong Kong, Macao or Taiwan-funded enterprise	0.126 (0.124)	−9.447*** (3.253)	0.036 (0.023)	−0.006 (0.019)
Europe, America or Japan-funded enterprise	0.049 (0.145)	−16.038*** (3.749)	0.105*** (0.027)	0.038* (0.022)
Female	0.093 (0.076)	−5.848*** (1.961)	−0.191*** (0.014)	−0.222*** (0.012)
Age	−0.073** (0.031)	−4.948*** (0.781)	0.062*** (0.006)	0.046*** (0.005)
Education	−0.267*** (0.015)	−5.307*** (0.373)	0.058*** (0.003)	0.037*** (0.002)
Married	0.055 (0.119)	3.593 (3.025)	0.085*** (0.022)	0.082*** (0.018)
Age squared coefficient	0.001 (0.000)	0.068*** (0.010)	−0.001*** (0.000)	−0.001*** (0.000)
Initial employment	−0.050 (0.079)	−3.456* (2.038)	0.004 (0.015)	−0.019 (0.012)
Intercept	3.171*** (0.542)	369.675*** (13.791)	0.494*** (0.099)	6.461*** (0.082)
Observation	3955	3957	3934	4052
R^2/pseudo-R^2	0.1842	0.097	0.241	0.240

(1) Standard error lies in brackets. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. (2) The reference groups of enterprise size, industry and enterprise are: enterprises with 100 to 1000 employees, service enterprises, and other types of enterprises (private individuals and joint-stock enterprises involved). The same below.

model is adopted. For married workers who desperately long for family reunification, problems with the enterprise dormitory living mode become increasingly prominent. Specifically, this low-cost living mode or adaptation strategy works at the expense of family and couple reunification. During this time, the virtual variable of whether the residence mode of the enterprise dormitory is chosen is used as the key independent variable, and the dependent variables, including both spouse and family reunification, are dichotomous variables. Consequently, we continue to use the logit model. Third, to verify these results derived from data on the Pearl River Delta and Yangtze River Delta areas, we use the China Migrants Dynamic Survey to conduct a robustness test in which the logit model and the LPM model are applied.

Results
Verifying Hypothesis 1: the supply logic of enterprise dormitories. As mentioned before, in Hypothesis 1, whether the enterprise provides dormitories is used as the key independent variable, and it is simultaneously applied to Hypothesis 1a, Hypothesis 1b, Hypothesis 1c, and Hypothesis 1d. First, in Hypothesis 1a, the dependent variable is piece wage. Second, in Hypothesis 1b, the dependent variable is weekly labour hours.

Third, in Hypothesis 1c, the dependent variable is hourly wage. Fourth, in Hypothesis 1d, the dependent variable is weekly wage.

The logit model and the OLS model are shown in Table 4. As the test results of the dormitory supply-side hypothesis in Table 4 reveal, overall, Hypothesis 1 is supported by the data analysis results. First, concerning the salary system, enterprises that provide dormitories are generally less likely to adopt an hourly wage system and more inclined to offer a basic salary. Hence, Hypothesis 1a is well verified.

From the perspective of working time, dormitory behaviour is significantly correlated with the working time of employees, which is consistent with the expectation of Hypothesis 1b.

Keeping other conditions the same, the employees of enterprises offering dormitories worked 10 more hours than did those who worked in enterprises without dormitories. The enterprise can effectively control costs through increasing labour time. The hourly wage of employees in the enterprises that provide dormitories is significantly lower than that of employees in the enterprises that do not provide dormitories (whose regression coefficient is −0.048 and significant at the 1% level). Hence, Hypothesis 1c is supported.

The data in the fourth column shows that the corresponding logit regression coefficient of the variable 'mean of monthly wage' is −0.009 and not significant. This finding verifies Hypothesis 1d.

This means that there is no significant difference between the two types of enterprises in terms of monthly wage expenditures.

Thus, Hypothesis 1 is supported by the survey data through an examination of its four parts. The production logic of enterprise dormitories is well supported by the data. On the one hand, the provision of enterprise dormitories effectively increases the labour time input of enterprise employees. On the other hand, under this provision, the total amount of expenditures (i.e., monthly wage) can be controlled and the goal of achieving minimum unit cost (i.e., hourly wage) can be achieved (Peng, 2007).

4.2 The first verification for Hypothesis 2: the enterprise dormitory and urban integration. Table 5 displays the inspection results for Hypothesis 2. The logit model and the LPM are illustrated in Table 5. As mentioned before, Hypothesis 2 is divided into five parts. In Hypothesis 2a, Hypothesis 2b and Hypothesis 2c, 'whether to live in enterprise dormitories or not' is used as the dependent variable. Correspondingly, the key independent variables in Hypothesis 2a, Hypothesis 2b, and Hypothesis 2c are marital status, initial employment status and job stability, respectively.

According to the statistical results of the corresponding models for Hypothesis 2a, Hypothesis 2b and Hypothesis 2c, the relevant hypotheses are well supported by the data. The corresponding logit regression coefficient of the dummy variable 'married' accounts for −0.769, which is significant at the 1% level. Obviously, the living pattern of enterprise dormitories is significantly related to marital status, which is more suitable for individual migrant workers than it is for married workers. Consequently, Hypothesis 2a is supported.

In the second column, the corresponding logit regression coefficient of the variable 'initial employment' can be seen to be 0.101, which is consistent with Hypothesis 2b but not significant. It can be seen that in the third column, the corresponding logit regression coefficient of the variable 'job stability' accounts for −0.157, which is significant at the 10% level. In addition, after controlling for the variable 'job stability', the corresponding logit regression coefficient of the variable 'initial employment' becomes 0.120, which is significant at the 1% level. Both Hypothesis 2b and Hypothesis 2c are supported by the statistical results. Specifically, the job stability of migrant workers is significantly associated with their choice of living pattern. Migrant workers who are not aiming to change jobs in the short term have a lower possibility of choosing enterprise dormitories. On the other hand, enterprise dormitories benefit migrant workers who view their present occupation as a springboard for further career development.

Generally, the living mode of enterprise dormitories is suitable for single workers who are entering into the urban labour market for the first time. It serves as the stop and transfer station of the individual mobility stage. Enterprise dormitories have a positive effect on workers who are pursuing economic integration and entering the urban labour market for the first time.

The second verification for Hypothesis 2: shifting from individual migration to family migration. If the living mode of enterprise dormitories plays a positive role in the individual migration stage, what kind of influence does it exert as migrant workers enter into marriage? The logit model used is shown in Table 6. Meanwhile, in Table 6, 'whether to live in enterprise dormitories' is applied as the key independent variable for Hypotheses 2d and 2e. Hypotheses 2d and 2e are examined through the use of two dependent variables, namely, spouse and family reunification, respectively. In the first column, the corresponding logit regression coefficient of the variable 'spouse reunification' can be seen to account for −1.198, which is

Table 5 Characteristics of migration and housing mode selection.			
Variables	**Hypothesis 2a** **Enterprise dormitory**	**Hypothesis 2b** **Enterprise dormitory**	**Hypothesis 2c** **Enterprise dormitory**
Business scale			
Enterprises with less than 100 employees	0.026	0.029	0.024
	(0.077)	(0.077)	(0.077)
Enterprises with more than 1000 employees	−0.079	−0.078	−0.080
	(0.084)	(0.084)	(0.084)
Enterprise sector			
Manufacturing enterprise	0.155**	0.154**	0.149**
	(0.075)	(0.075)	(0.075)
Construction enterprise	0.932***	0.920***	0.932***
	(0.139)	(0.139)	(0.139)
Enterprise property			
State-owned enterprise	0.004	−0.003	0.002
	(0.115)	(0.115)	(0.115)
Hong Kong, Macao or Taiwan-funded enterprise	0.290***	0.284**	0.287**
	(0.112)	(0.112)	(0.113)
Europe, America or Japan-funded enterprise	−0.507***	−0.502***	−0.500***
	(0.131)	(0.131)	(0.132)
Female	−0.223***	−0.230***	−0.226***
	(0.067)	(0.067)	(0.067)
Age	0.003	0.002	0.004
	(0.005)	(0.005)	(0.005)
Education	0.001	−0.000	0.001
	(0.013)	(0.013)	(0.013)
Married	−0.769***	−0.760***	−0.733***
	(0.092)	(0.092)	(0.093)
Initial employment		0.101	0.120*
		(0.070)	(0.070)
Job stability			−0.157**
			(0.074)
Intercept	0.344	0.342	0.319
	(0.230)	(0.230)	(0.230)
Observation	4053	4052	4048
Log lik	−2710	−2708	−2703
Pseudo-R^2	0.0351	0.0354	0.0362

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

significant at the 1% level. This means that living in enterprise dormitories constrains spouse reunification, which supports Hypothesis 2d.

In the second column, the corresponding logit regression coefficient of the variable 'family reunification' accounts for −0.658, which is also significant at the 1% level. It is clear that living in an enterprise dormitory also hinders family reunification. This finding substantiates Hypothesis 2e. Thus far, Hypothesis 2 has been verified by survey data through an examination of its five parts. For migrant workers aiming to pursue family reunification, living in an enterprise dormitory is not appropriate. The living mode of enterprise dormitories considerably reduces the possibility of spouse and family reunification. In other words, this low-cost adaptation strategy is adopted at the expense of family reunification.

Robustness test. The robustness analysis is based on the China Migrants Dynamic Survey conducted in 2017, and the results can be found in Table 7. For this robustness test, we use the logit model for dichotomous variables and the LPM model for other

variables. Since this dataset does not match enterprise and employee data and lacks information on enterprise property, scale and initial employment, Hypotheses 1a, 2b and 2c cannot be verified. However, the test results of the China Migrants Dynamic Survey are almost identical to the assumptions and expectations gleaned from the data on the Pearl River Delta and Yangtze River Delta areas.

When the production logic of the dormitory supply is reflected in extra work (i.e., working hours), hourly wages and monthly wages, the estimated results of the model support with Hypotheses 1b, 1c and 1d. Although the data from the China Migrants Dynamic Survey lack information on the stability of

employment and whether individuals are engaged in their initial employment, the demographic variables show that fewer married workers opt to live in enterprise dormitories than unmarried workers (with a logit coefficient accounting for -0.886, which is significant at the 1% level), which is consistent with Hypothesis 2a. Enterprise dormitories are beneficial for reducing outlay costs while extending labour time. In terms of their impact on family migration, enterprise dormitories considerably reduce the possibility of a worker's spouse and family reunification, which effectively supports Hypotheses 2d and 2e.

Conclusion

This paper is focused on a momentous phenomenon that occurs in the process of urbanisation and industrialisation in China in which enterprises provide free dormitories for their migrant workers employees. This approach is fascinating in regard to the migrant workers in the Pearl River Delta and Yangtze River Delta areas because free dormitories can help save a good deal of money and quickly adapt to city life with the assistance of enterprises. The living patterns of migrant workers in the Pearl River Delta and the Yangtze River Delta areas merit further attention. This is because the economies in these two regions are highly developed. The Pearl River Delta area, which includes 9 cities, is the largest economic centre in China, and it accounts for only 1% of China's territorial area but 4.3% of its total population. It contributes 26.8% of the trade volume of China's exports and 79.67% of China's economic aggregate, ranking third only behind the US and Germany. Driven by the national strategy, the Pearl River Delta area is working with Hong Kong and Macao to build the Guangdong-Hong Kong-Macao Greater Bay Area, which will become one of the four major bay areas in the world and is considered equal to the New York Bay Area, the San Francisco Bay Area and the Tokyo Bay Area.

The Yangtze River Delta area, which includes 41 cities and contains less than 4% of the country's total land area, represents nearly a quarter of China's economic aggregate and one third of its total import and export volume. Because of the financial opportunities, there is a burgeoning number of migrant workers looking for jobs in these two regions. However, the more developed that a place is, the higher that the housing prices are. Moreover, a slowly increasing salary cannot catch up with a sharply rising housing price. Migrant workers who are interested only in making money can live in enterprise dormitories without the pressure of high housing prices. However, those migrant workers who desire family reunification in the city in addition to simply earning money face housing pressure due to the fact that the narrow and small living spaces offered by dormitories cannot satisfy family life. Therefore, when and which living patterns migrant workers choose merit further investigation.

In this paper, we analyse the supply logic of enterprise dormitories and the influence of that logic on the urban integration of migrant workers. An empirical analysis is conducted based on the thematic survey data of enterprises matched with data on their employees.

According to the research findings, first, the dormitory follows capital logic and mainly serves the needs of enterprise production

Table 6 Housing patterns and family reunion of married migrant workers.

Variables	Hypothesis 2d	Hypothesis 2e
	Spouse reunion	Family reunion
Enterprise dormitory	−1.198***	−0.658***
	(0.102)	(0.092)
Business scale		
Enterprises with less than 100 employees	−0.032	0.105
	(0.117)	(0.103)
Enterprises with more than 1000 employees	−0.278**	0.063
	(0.131)	(0.119)
Enterprise sector		
Manufacturing enterprise	0.142	0.167
	(0.120)	(0.105)
Construction enterprise	−0.762***	−0.550***
	(0.169)	(0.187)
Enterprise property		
State-owned enterprise	−0.290*	0.084
	(0.160)	(0.150)
Hong Kong, Macao or Taiwan-funded enterprise	0.069	−0.237
	(0.180)	(0.160)
Europe, America or Japan-funded enterprise	−0.033	−0.331*
	(0.227)	(0.190)
Female	0.527***	0.162*
	(0.110)	(0.094)
Age	−0.016***	−0.017***
	(0.006)	(0.006)
Education	0.037*	0.118***
	(0.021)	(0.018)
Age squared coefficient	−0.098	0.106
	(0.107)	(0.097)
Initial employment	1.819***	−1.003***
	(0.383)	(0.343)
Observation	2388	2388
Log lik	−1237	−1480
Pseudo-R^2	0.110	0.0495

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Table 7 Summary of data inspection results from CMDS2017.

Variables	Hypothesis 1b	Hypothesis 1c	Hypothesis 1d	Hypothesis 2a	Hypothesis 2d	Hypothesis 2e
	Working hours	Hourly wage	Monthly wage	Married	Spouse reunion	Family reunion
Enterprise dormitory	0.662***	−0.067***	−0.038***	−0.886***	−1.257***	−0.967***
	(0.155)	(0.006)	(0.005)	(0.027)	(0.020)	(0.020)

(1) Standard error lies in brackets. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. (2) The control variables used are age, education, gender, marital status, employment industry, and years of living in the city.

and operation. Keeping other conditions the same, enterprises that provide dormitories are less likely to adopt a more productive hourly wage system than those that do not, while their workers tend to work longer hours for lower hourly wage. Consistent with the expectation of a dormitory labour system, the goal of providing dormitories is to extend labour hours, reduce labour costs and meet competitive needs.

Second, the effect of the enterprise dormitory living mode on migrant worker urban integration is closely linked to the demands of different migration stages. In the single-individual migration stage, the use of enterprise dormitories effectively reduce the living cost and adaptation risk of urban integration. On even ground, single migrant workers are more likely to choose enterprises that provide dormitories, and migrant workers who are entering cities for the first time are more likely to apply for a position in enterprises that provide dormitories. Simultaneously, migrant workers who see their existing job as a springboard or a transfer station are more likely to work in companies that offer dormitories. However, the basic purpose of this capital-dominated living mode is to serve the needs of enterprise production and operation, which are not aligned with the objective of family reunification. Research shows that on even ground, migrant workers who live in enterprise dormitories are less likely to reunite with their spouses and minor children in their cities.

Finally, a representative national microscopic dataset is used to further analyse the above hypotheses, and the relevant conclusions are found to be robust. Compared to the consistent negative attitude exhibited in the existing research on the role of enterprise dormitories, these findings shed new light on the different influences of enterprise dormitories on migrant worker urban integration across different migration stages, which include both positive and negative effects.

We can microscopically summarise the pathway of low-cost urbanisation by observing the residential model. We can probe low-cost urbanisation from two perspectives. First, from the point of the supply side of public services, the government allocates insufficient fiscal expenditures to achieve population urbanisation and the provision of public services. Second, migrant workers are not willing to spend too much to become involved in city life. In fact, migrant workers generally see themselves as passers-by in cities.

Additionally, those migrant workers who live in enterprise dormitories or urban villages tend to save more money which can be sent back to their families in the village for consumption or house-building. Every coin has two sides, and this living mode reduces the cost of adapting to city life. In the meantime, migrant workers face harsh housing environments (Arcury et al., 2012) and separation from their families, resulting in split families.

Discussion

The extant research emphasises the roles of enterprise dormitories and urban villages as characteristics of China's urbanisation and industrialisation, including the supply of a low-cost labour force against the background of high housing prices. Nevertheless, the extant research does not address why enterprises provide dormitories when there are a large number of villages in the city or how enterprise dormitories diversely influence the urban integration of migrant workers across different migration stages. These aspects differentiate this study from those that came before it.

In this paper, we answer the first question based on the production function of enterprise dormitories, which enriches our understanding of China's economic miracle. China's economic miracle is essentially a competitive miracle that is based on a low-cost advantage. It represents a dynamic in which global capital

absorbed and investment and employment are promoted via a low-cost advantage, which transforms the pressure of population size into a population size advantage that offers a demographic dividend. Enterprise dormitories located in industrial parks based on land subsidies further facilitate the input of labour time and reduce costs. This has enabled the Chinese government to devote more resources to infrastructure.

In reference to the second question, this paper demonstrates that unmarried migrant workers are more inclined to live in enterprise dormitories for the sake of earning money or gaining promotions during the individual migration stage. However, as they progress through the life stages of marrying and having children, they eventually confront a substantial challenge. That is, the enterprise dormitory is no longer an advantageous choice for simultaneously meeting their need to financially support the family and achieve family reunification. Obviously, the latter is more important for them during the stage of family migration.

This study is not only instructive for improving housing policies in the new era but also highly important for improving consumption and human capital. First, the dwelling patterns of enterprises and urban villages under low-cost urbanisation are built at the expense of housing quality and the of shifting social education costs, such as child-care expenses, to rural areas. This generates a number of urban villages and leads to more severe problems, namely, a mass of left-behind children (Jin, 2011; Yue and Fan, 2020). It is not only the reform of the housing system but also the strengthening of housing security that can be leveraged to optimise the quality of life of new citizens, promote the migration of migrant workers' families and relieve the pressure imposed by the phenomenon of left-behind children (Yu, 2022).

There are two primary solutions for solving the problem of left-behind children. On the one hand, migrant workers can return to the countryside when necessary and face the limited employment opportunities. On the other hand, the children of migrant workers can migrate to the city with their parents. However, as dedicated parents, migrant workers reluctantly become stuck in a crucial issue, namely, the desire for equal education, lower housing costs and other public service resources. Nevertheless, the employment opportunities in rural areas and small towns are insufficient, and urban public housing and educational resources cannot be provided for everyone. Practically, what migrant workers can do is simply to rely on their hometowns to educate their children. As a result, a large number of left-behind children reside in those local areas that serve as their permanent residence, which further affects the urbanisation of migrant workers and the future development of their children (Feng and He, 2022).

Three future research directions are highlighted in this study. The urbanisation goals of migrant workers differ across different stages. Their original urbanisation goal is the economic integration into the city. Then, the goal shifts to family migration. With improvements in quality of life, this goal develops into the effective development of children. Hence, the first future research direction should address children's growth. Correspondingly, the second future research direction should involve employing applicable datasets and reasonable indices to verify the research hypothesis. Currently, new changes in China's labour market and housing market, for example, changes have occurred in the prevalence of the use of robots, the construction of many new factories, decreasing housing prices, and the shift from China's housing system to a dual-track mode of commercial housing and affordable housing. Simultaneously, affected by many factors, the real estate market is facing multiple challenges (Li et al., 2021). How these changes affect the existence of enterprise dormitories, the living patterns of migrant workers and the urbanisation of migrant workers requires further observation and fresh data support. Therefore, these issues represent the third future

research direction. In terms of the limitations of this paper, a description of the situation in 2022 cannot be provided in the paper since due to the hysteresis in data dissemination. Additionally, the research objective of this paper is limited to the context of China's actual conditions. We hope to pursue these research directions and take the broader context of migrant workers into account in further research.

Policy implications

Currently, the demographic characteristics of migrant workers have undergone structural changes. According to the 2009 annual monitoring survey report of migrant workers nationwide that was released by the National Bureau of Statistics (National Bureau of Statistics, 2009) in 2009, 61.6% of migrant workers were under the age of 30, and 41.5% were unmarried. The average age of migrant workers in 2019 was 40.8 years, and unmarried migrant workers accounted for only 16.7% of the sample (National Bureau of Statistics, 2019). In 2021, the average age of migrant workers increased to 41.7 years, and the percentage of unmarried workers fell to 16.8% (National Bureau of Statistics, 2021). It is clear that migrant workers are getting older, and an increasing number of migrants have entered into marriage during the period of 2009 to 2021. This reflects the fact that enterprise dormitories cannot effectively meet the needs of migrant employees because these dormitories cannot provide sufficient living space for migrant families. The impact of the traditional low-cost urbanisation path on young single migrant workers is mainly related to work welfare, while for married middle-aged migrant workers, the low-cost urbanisation path not only affects their work welfare but also influences their chances at family reunification and their children's growth. Given that increasingly more workers are getting married, the family should be taken into consideration in both public policy and urban housing policy (Chen et al., 2022). Moreover, faced with the dual pressures imposed by the outbreak of the COVID-19 pandemic and the lack of support from governments, migrant workers prefer adopting household strategies for overcoming life difficulties (Tang and Li, 2021). Due to the failure of enterprise dormitories to meet migrant housing needs and the high housing prices in cities, an increasing number of migrant workers are calling for public housing. In the future, public housing will come to play a more significant role in the growth environment of migrant workers' children and thus the nation's social stability. Future policies should focus on amplifying the supply of public housing, inspiring children to migrate with their parents, and fulfilling family reunification goals.

Simultaneously, this study is expected to offer a valuable reference in regard to reforming both the housing supply side and the precise supply of housing security. For enterprises and workers, maintaining a distance between living space and working space makes great sense. A worthy advantage of living in enterprise dormitories, however, lies in the short distance between the living area and the workplace. This offers benefits to both the production and management of enterprises and the curtailment of transportation fees and time for migrant workers. One reason why migrant workers choose to live in urban villages is the proximity of these villages to their workplaces. Against the background of increasingly scarce land resources and rising housing prices, when formulating a site location strategy for affordable housing, the government prefers to construct such housing in the suburbs of a city to save land. This can cause a range of issues, including increased commuting costs, decreased public facility accessibility, a jobs-housing imbalance, a space mismatch, traffic jams and even brain drain. This is misaligned with the original intention of the housing security system, which was aimed at improving people's livelihoods. Therefore, the government should consider the job-housing balance and reduce the distance between affordable housing and working areas. Meanwhile, the transformation of urban housing policy in the new era not only signifies an increase in the intensity and coverage of housing security but also requires paying special attention to the matching of the public housing supply with its demand side, particularly to the matching of the location of the housing security supply with the workplace. On the one hand, such transformation not only contributes to the urban integration of migrant workers and the achievement of a balance between family and work but also helps curtail the cost of urban integration. On the other hand, it is important for enterprises to address their recruitment difficulties and labour shortages.

Data availability

The datasets of the Pearl River Delta area and Yangtze River Delta area were collected by the China's Ministry of Education financed research group of 'Research on Theory and Practice of Rights and Interests Protection of Migrant Workers' of Sun Yat-Sen University. All group members only have rights to use the datasets instead of publishing publicly. The datasets of 'China Migrants Dynamic Survey' are available by submitting the application of using data on the website (http://www.chinaldrk.org.cn). All datasets generated during and/or analysed during the current study are not publicly available due to absence of publishing right of data but are available from the corresponding author on reasonable request.

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Author contributions

Wanqing Wei performed the data analysis and wrote the manuscript. Li Zhang performed the data analysis and the revision.

Competing interests

The authors declare no competing interests.

Ethical approval

This article does not contain any studies with human participants performed by any of the authors.

Informed consent

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Additional information