# From the Digital Economy Perspective: A Review of Research on Social Insurance Policies for Flexible Employment Groups

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**Abstract.** Driven by the digital economy, the flexible employment group is constantly expanding, posing a challenge to the traditional social security system. This article employs the literature research method to conduct a policy research review on the pension insurance, medical insurance, work-related injury insurance, and unemployment insurance for the flexible employment group in the digital age. Research has identified issues of mismatch between institution and realities across various insurance schemes, alongside challenges such as heavy contribution burdens and restricted access channels for enrolment. There is a significant gap in the development process and maturity of policies. The regulations for participation in pension insurance and medical insurance are relatively clear, but the fairness of benefits needs to be improved. Work-related injury insurance and unemployment insurance are mainly piloted in local areas and have not yet formed a unified national system. At present, the social security policy for flexible employment groups is at a critical stage of transitioning from filling institutional gaps to system integration. In the future, it is necessary to build a multi-level and flexible social security system and promote the coordinated development of various insurance types.

**Keywords:** Digital economy; social insurance; flexible employment group.

## 1. Introduction

China's flexible employment group has grown rapidly and has become one of the mainstream employment models. Under the wave of the digital economy, new forms of employment represented by food delivery riders, online live-streamers, and ride-hailing drivers are constantly emerging, presenting new characteristics such as flexible employment methods, complex job identities, mobile workplaces, and diverse income structures. These changes pose a challenge to the traditional social security system based on stable labor relations that was formed in the industrial age.

On the one hand, the digital economy brings new opportunities for the development of the social insurance system. The Internet platform economy has created a large number of jobs, broadening the wealth base for social security funds. Digital technology has driven the intelligence, precision and efficiency of social security services, enhancing the handling efficiency and coverage capacity. Big data and artificial intelligence help achieve risk identification throughout the entire life cycle and provide technical support for building a high-quality social security system [1]. On the other hand, new business forms have also exacerbated the insurance participation predicament of flexible employees. Due to the fact that its employment form is difficult to be incorporated into the framework of traditional labor relations, flexible employment has a low compatibility with the current social security system. The flexible employment group are still in a predicament of 'high risk and low security' in terms of social security.

In recent years, social insurance policies have been continuously optimized, such as relaxing the restrictions on household registration for participation, implementing the 'one relaxation and three flexibility' payment policy, and promoting the pilot program of occupational injury protection, achieving positive results. However, the current system still has obvious shortcomings in terms of adaptability to flexible employment groups, contribution burden and participation benefits.

Against this backdrop, the reform and optimization of the social insurance system are particularly important. At present, the academic circle has carried out extensive discussions on the social security issues of flexible employment groups. However, most studies focus on the analysis of the overall

institutional predicament and the exploration of optimization paths, or focus on a specific insurance type, lacking differentiated analysis and systematic integration of different insurance types. To this end, this paper employs the literature research method, based on the new characteristics of the flexible employment group in the digital age, to conduct a policy research review on the individual insurance types of old-age insurance, medical insurance, work-related injury insurance, and unemployment insurance, providing a reference for promoting the construction of a social security system that meets the development requirements of the digital age.

## 2. Conceptualisation of the Flexible Workforce in the Context of Digital Transformation

The flexible employment group in the digital economy era presents new characteristics, and currently, the academic community has not formed a unified definition for this group.

Internationally, the concept of 'non-standard employment' is adopted and further classified into three categories: temporary employment, part-time employment, and independent self-employment [2]. Chinese scholars have proposed concepts such as new forms of employment practitioners, new occupational groups, new gig economy workers, and platform economy practitioners, each with distinct emphases. The new business form practitioners emphasize platform dependence and non-standardized labor [3]. The new occupational group emphasizes new vocational skills under the background of industrial upgrading [4]. The new gig economy group focuses on the characteristics of task-oriented and fragmented employment [5]. Platform economy practitioners emphasize relying on platforms, covering platform service providers and operators [6].

Based on the viewpoints of scholars, this article refers to the flexible employment group in the digital economy as 'new workers'. This group breaks through the binary framework of traditional employees and self-employed individuals, presenting non-standard labor relations or intermediate forms of employment characteristics. Their labor process is highly dependent on platform algorithms and digital technologies, and their labor relations share commonalities such as weak subordination, task-oriented, and flexible.

## 3. Obstacles to Insurance Enrollment and Future Concerns: Pension Insurance

### 3.1. Institutional Design as a Barrier to Participation

Currently, flexible workers have two primary channels for participating in pension insurance. If workers form an employment relationship with an enterprise, they can join the employee social insurance scheme. Others may participate in the basic employee insurance scheme, paying contributions personally; alternatively, they may enroll in the urban and rural resident pension insurance scheme at their place of household registration.

Scholars point out that this dual framework of 'employee-based social insurance and resident-based social insurance' is difficult to adapt to new workers. The labor relations of them are in a blurred state. It is hard for them to participate in insurance via employer registration. If one participates in the employee pension insurance as an individual, the policy contribution rate is relatively high, and the system has a 'crowding-out effect' on this group [7]. In terms of absolute amount, the benefits of the urban and rural resident pension insurance are far lower than the minimum living allowance and per capita disposable income, and cannot support their elderly care needs [8]. In low and middle-income countries, the willingness of informal economic workers to pay pensions particularly depends on institutional flexibility and government subsidies [9]. The current policies have a weak ability to mobilize the willingness of this group. Their ability and willingness to participate in insurance remain relatively low [10].

### 3.2. Rights and Interests Hard to Guarantee during the Transfer-Continuation Process

New workers have strong mobility, with a considerable proportion of migrants. The majority are local rural migrant workers and the floating population from outside. Although the new regulations clearly state the lifting of household registration restrictions, the lack of specific policy support still makes it difficult to participate in the resident social security in the place of employment. Although the current policies clearly define the transfer paths of insurance relations among urban employees and between employees and urban and rural residents, many new workers are unable to achieve the transfer and continuation due to problems such as complicated procedures in practice, fragmented regional policies, lagging informatization, and low awareness [9]. More importantly, the urban and rural resident pension insurance is heavily subsidized by the government. However, when transferring, only the full amount of the individual account is transferred, while the pooled account is not. The setting of the contribution base is mostly based on the local average social wage. Some new workers take part-time jobs on different platforms, and their actual income is difficult to calculate. The setting of the contribution base is clearly not suitable for new workers. Therefore, the switch between different types of insurance and different regions will harm the existing contribution and protection rights of new workers [11].

### 3.3. Long-term Risks: Financial Crisis and Poverty in Old Age

Under the prospects of the digital economy, the social security reform for new workers is a long-term process. As mentioned above, a large number of new businesses have flocked to the resident pension insurance system. This essentially transfers part of the pension insurance pressure that should have been borne by the market to the state. As this group grows in size, it will inevitably increase the financial burden on the state and pose a challenge to the sustainable development of the social insurance system [7]. Furthermore, if the rate of new job creation is lower than that of old job replacement within a certain period of time, the resulting ‘net replacement’ will lead to the growth rate of pension benefit recipients exceeding that of contributors. Coupled with the intensification of population aging, in the long term, the ‘gray rhino’ risk of poverty among elderly workers will gradually emerge [10].

## 4. Medical Insurance: Continuous Optimization yet with Potential for Expanded Enrollment

### 4.1. Lagging Institutional Design and Imbalanced Policy Tool Structure

At present, the core predicament that flexible employees face in the field of medical insurance under the digital economy is the low compatibility of the existing system with this group. The current medical insurance system is mainly designed based on the template of regular employment and has not yet fully adapted to the characteristics of new entrants. This has led to significant gaps in policy coverage [12]. From the perspective of policy tools, there are problems of insufficient infrastructure and capital investment on the supply side. The environmental aspect overly relies on institutional guarantees, while the application of key support tools such as finance and law is insufficient. On the demand side, there are obvious shortcomings in services such as publicity and guidance as well as cross-regional transfer and continuation [13]. This structural imbalance makes the system inefficient in covering flexible employment personnel. This judgment has been empirically supported by scholars. Through data from CFPS, it was found that some flexible employees have even become a ‘narrow group’ that is difficult to be effectively covered by both employee medical insurance and resident medical insurance [14].

### 4.2. Abandoned Insurance Enrollment Behaviors and Choices

Existing research has found that multiple factors have led to the current situation of low participation rates. On the one hand, the current system has significant difficulties in participating in

insurance. The heavy payment burden, complex enrollment procedures, limited enrollment channels and stubborn household registration restrictions constitute objective barriers hindering enrollment [12]. Scholars start from the workers themselves. When some workers make decisions on insurance participation, there is a significant phenomenon of 'adverse selection'. Younger and healthier flexible employees are more likely to voluntarily give up insurance participation, which not only affects the health of the risk pool, but also the consequences of not participating in insurance may increase future medical expenses [14].

## 5. Work Injury Insurance: Pilot-Based with Narrow Coverage

### 5.1. Structural Obstacles in Institutional Design

Reviewing the existing work injury insurance policies, there are two major obstacles for new employers to participate in the insurance. One of them is the ambiguous definition of the employer's responsibility. It is uncertain whether the sharing economy platform bears the responsibility of payment. There is a lack of clear standards for the division of payment subjects among part-time workers on multiple platforms. The second point is that the principle of 'three types of work identification', namely 'working hours, workplace, and reasons for work', is difficult to apply to new business forms. The investigation and evidence collection are fraught with difficulties due to the scattered working scenarios and flexible working hours [15]. From the perspective of the pooling level, China's work-related injury insurance has long been under county-level pooling, and it was not until the end of 2020 that provincial-level pooling was basically achieved. The decentralized management model at a low level of coordination leads to huge regulatory pressure and inconsistent policy regulations, making it difficult to adapt to the cross-regional flow characteristics of new business forms [16].

### 5.2. Insufficient Fairness of Benefits under the Dominance of Commercial Insurance

Existing research consistently holds that the current occupational injury protection for new business form practitioners mainly relies on commercial accident insurance, but there is a significant phenomenon of unfair treatment. By comparing the commercial accident insurance benefits for riders on a certain platform, scholars have found that there are significant differences in the coverage and compensation levels between cooperative riders and crowdsourced riders. This difference stems from the degree of association between identity and platform. The rights and interests of crowdsourced riders have been significantly compressed as they have no direct labor relationship with the platform [15]. Meanwhile, there is an inherent conflict between the profit-making nature of commercial accident insurance and the non-profit demand for occupational injury protection. To cut costs, platform enterprises often force practitioners to purchase low-coverage commercial insurance on their own. Commercial insurance has numerous exemption clauses and high compensation thresholds, making it difficult to cover the high occupational injury risks of new business forms [17].

### 5.3. Strengths and Limitations of Local Pilot Practices

The academic circle has classified local pilot projects into four typical models, each with its own characteristics but varying in effectiveness.

The traditional industry special expansion model is represented by the 'Joint Voyage Program' in the construction industry. Through 'single insurance type opening' and 'project-based participation', it allows project parties to have priority in handling work-related injury insurance. This model is a feasible solution for flexible employment groups in high-risk industries to participate in insurance. However, it relies on the promotion of large enterprises in the industry and cannot fully adapt to other industries. Early flexible employment pilot models were explored in places such as Nantong, Jiangsu and Wujiang, Suzhou, allowing flexible employment groups to participate in insurance through agency institutions. However, these pilot projects have not achieved economies of scale. New forms special pilot model in Huzhou, Zhejiang Jinhua '1 + 1' mode of the most innovative. This model

breaks through the traditional restrictions of bundled insurance participation and implements a single type of work-related injury insurance plus supplementary commercial insurance. This model clearly defines the dispatching enterprise as the responsible entity and implements ‘total quantity lump-sum and dynamic real-name’ participation in insurance. It effectively covers some high-risk groups. However, due to the principle of voluntary participation and insufficient cooperation among platforms, the effectiveness of the protection remains to be observed [15]. The single insurance type plus mutual assistance protection model is typical in Shanghai. This model supplements the multi-level social security system the practices of collective participation and trade union leadership are exemplary. However, although the mutual aid protection compensation is higher than that of commercial insurance, it is still lower than that of work-related injury insurance. Moreover, it relies on local exploration and has not yet formed a unified standard [16].

## 6. Unemployment Insurance: Unclear Policies and Local Tentative Trials

### 6.1. Coverage Difficulties and Legal Deficiencies of the Current System

China's current unemployment insurance system is mainly based on ‘Social Insurance Law’ and ‘Unemployment Insurance Regulations’ construction. Participation in insurance and the collection of benefits are still based on the premise of a stable labor relationship. In the case of ambiguous labor relations and unstable employment status, it is difficult for new workers to meet the three basic conditions of ‘cumulative payment of fees for one year’, ‘involuntary unemployment’ and ‘registration of unemployment’ [18]. Scholars further emphasize that the ‘involuntary unemployment’ of flexible employees is difficult to prove on their own, and the unemployment registration scope clearly listed in the ‘Regulations on Employment Services and Employment Management’ does not include them, resulting in them having no basis to rely on in the current system [19]. Moreover, the concept of ‘involuntary unemployment’ has limitations in the present era. The development of the digital economy has led to the replacement of both the quality and quantity of workers. Internal competition among workers is prevalent. Resignation due to objective reasons such as physical health is difficult to obtain support, which violates the fairness of the system and also weakens the role of the system in resolving risks [20].

### 6.2. Local Exploration and Institutional Breakthrough in Policy Fields

Though no national unified system is in place yet, some regions have launched pilot programs. In 2021, Guangdong Province became the first to cover platform employees and non-employer self-employed individuals in insurance schemes, clarifying the contribution base, rate and the specific conditions of involuntary unemployment. Hunan Province has been boosting new-type workers’ social insurance participation via expanding coverage and enabling online services. Since July 2022, the occupational injury protection pilot for new business form employees in seven regions nationwide has offered valuable experience for unemployment insurance system reform. Scholars note its innovations, such as unit-based fixed payment, government-led and commercial-operated models, and benefits referencing work-related injury insurance standards. Drawing on these pilot insights, unemployment insurance needs adaptive reforms in contribution methods, operation models and benefit design, with a focus on matching the platform economy’s characteristics.

## 7. A Review of Existing Research

Existing research focuses on new-form workers in the digital economy era and analyzes the social insurance system from aspects such as policy design, policy implementation, and pilot experience. There are both summaries and reviews based on previous studies, in-depth research based on interview data, and empirical studies using quantitative methods. Through multi-dimensional mutual verification, the prominent flaws of the existing policies and the underlying mechanisms have been revealed, providing a basis for the social insurance reform in the digital age.

However, the existing research has insufficient exploration of the theoretical improvement. There is a lack of a theoretical framework to integrate the complex research perspectives of scholars. Therefore, it is difficult to deeply analyze the compatibility of the social insurance system with the characteristics of flexible employment personnel. In terms of research content, most focus on the optimization of the system itself, but neglect the key details in the policy implementation process, such as the contribution base and benefit calculation. The existing parameter designs also lack empirical support. The ambiguity of these factors will impede the implementation of policies. Meanwhile, although there are analyses of insurance participation decisions based on internal factors of workers, there is a lack of research that integrates both internal and external factors, making it difficult to form a comprehensive and in-depth understanding of insurance participation behavior.

## 8. Conclusion

This article reviews the research on the relevant policies of the four major insurance types, and summarizes the deficiencies of the social insurance policies for the flexible employment group in terms of system design, coverage, and benefit level and implementation effect. All types of insurance are confronted with the core issue of insufficient institutional compatibility. In addition, problems such as heavy payment burdens, unsmooth participation channels, and difficulties in cross-regional transfer and continuation are also reflected. There are obvious gaps in the development process and policy maturity among various insurance types. The pension insurance and medical insurance systems were established relatively early and have formed relatively clear participation paths. However, there is still room for improvement in terms of fair benefits and the attractiveness of the systems. In contrast, the institutional construction of work-related injury insurance and unemployment insurance is still mainly based on local pilot projects, and a unified national institutional framework has not yet been formed. Although feasible models of work-related injury insurance have been explored in some regions, the coverage is limited and the level of protection is uneven. Unemployment insurance has yet to achieve a breakthrough in its system due to the lack of legal basis and ambiguous criteria for determination.

Overall, the current social insurance policy for flexible employees in China is at a critical stage of transitioning from filling institutional gaps to system integration. Future policy optimization should build a multi-level and flexible social security system that matches the employment characteristics of the digital age. Researchers need to promote the transformation of various insurance types from separate governance to synergy, and drive the social security system for flexible employment groups towards high-quality security.

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