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RESEARCH ARTICLE

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Tearing social safety net: platform fast-fashion and marginalization of garment workers

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ABSTRACT

Existing research on platform labour has predominantly focused on service-sector gig workers under direct algorithmic control, leaving manufacturing workers who face indirect algorithmic pressure unexplored. This study investigates why informal garment workers in China's fast-fashion industry remain excluded from social insurance system. Rather than blaming weak government enforcement, it argues that the platform-driven production regime systematically decouples the production-welfare nexus. First, highly flexible production fragments employment into daily spot-market transactions, dismantling the stable labour relations that employee-based social insurance requires. Second, algorithmic pricing squeezes profit margins, leaving workers' wages too thin and volatile to sustain fixed social insurance contributions. Third, the industry's ultra-fast turnover relies on urban villages, where informal spaces make the workforce administratively untraceable to the statutory social insurance system. Together, these three mechanisms accelerate garment workers' marginalization from existing social insurance system, revealing a fundamental clash between fluid platform capitalism and rigidly status-based East Asian welfare regime.

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KEYWORDS
Platform economy; informal manufacturing; social insurance; production regime; social security; garment workers

1. Introduction

The ready-made garment industry has powered Asia's industrial ascent, offering millions of workers in countries like China, Bangladesh, India and Vietnam a crucial bridge from rural subsistence to urban industrial employment (Matsuura & Teng, 2020). The garment factory has long been associated with labour exploitation and unsafe working conditions, a reputation reinforced by the tragedy of 2013 *Rana Plaza* collapse in Bangladesh (Anner, 2020). Today, Asia remains the hub of global garment manufacturing, but the industry has undergone a profound transformation. Platform-led fast fashion is reshaping the nature of garment work, as well as the way workers' social rights are protected or eroded.

Platforms like *Amazon, TikTok*, Taobao and *SHEIN* have revolutionized clothing consumption with a few clicks. Garments are now as cheap as a cup of coffee, instantly deliverable, rapidly cycled in style, and thus increasingly treated as disposable fast-fashion items. Sustaining this front-end efficiency requires unprecedented flexibility from the supply chain (López et al., 2022). As a result, small and localized production networks are increasingly replacing traditional large-scale garment factories. In Guangzhou, Southern China's largest metropolis, thousands of micro-workshops and a hundred thousand informal garment workers are packed into an urban enclave known as a '*Taobao* village'. These workers appear to engage in traditional manufacturing, but are in fact deeply entangled in the platform economy. Their manual labour directly absorbs the fluctuations of platform-generated demand.

This connection points to a puzzle in workers' social protection. Over the past two decades, China's statutory social insurance has expanded dramatically, exceeding a 95% coverage rate (MOHRSS, 2023). Yet garment workers in these workshops remain largely uninsured. Given the state's strong commitment to universal coverage, attributing this alarming exclusion merely to institutional legacies like the *hukou* system or weak government enforcement appear insufficient. Instead, as the industry transforms from traditional factory floors to platform-mediated workshops, the platform-driven production regime itself warrants closer attention.

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Against this background, drawing on a case of a Chinese *Taobao* village, this paper asks: How does the platformization of the fast-fashion industry impact garment workers' access to social insurance, and through what mechanisms is social protection dismantled within this contemporary platform-driven landscape?

2. Literature review

2.1. Social insurance participation under platform employment

The platform economy refers to economic activities organized through digital platforms (Schor et al., 2020). Though distinctions are often made between platforms that mediate physical goods, digital goods and services, and those that facilitate click work, crowd work, or crowdfunding (OECD, 2016), their business models share a common logic of extracting value through data (Srnicek, 2017). Platforms escalate a cost-reduction imperative to an unprecedented level by deploying algorithmic capabilities to optimize and manage labour task-by-task with surgical precision (Rahman & Thelen, 2019; Vallas & Schor, 2020). By institutionalizing such fragmented employment, platform capitalism poses fundamental challenges to the modern welfare state's capacity of guaranteeing welfare entitlements, labour rights and social protections (Busemeyer et al., 2022; Silva, 2024).

To date, most discussions have focused on the platformization of service workers, such as food delivery riders. This type of service work occupies an ambiguous space that fits neither standard nor non-standard employment relationships (Kalleberg & Vallas, 2018). Platforms leverage this ambiguity to circumvent employer responsibilities. They frequently evade social insurance obligations by misclassifying workers or outsourcing them to third-party agencies (Huang, 2023). Power asymmetries between platforms and workers, compounded by the state's weak regulatory power, further intensify the situation (Au-Yeung et al., 2025). Nevertheless, workers persistently struggle for minimal formal protection (Lei, 2021), prompting recent state interventions aimed at regularizing these non-regular workers. China, for instance, has attempted to insure so-called 'new forms of employment' through pilot schemes such as occupational injury insurance. However, actual participation remains low due to information gaps and cost-benefit considerations (Zhang & Liu, 2024).

A less-discussed yet equally vital area is the platformization of the manufacturing sector. Unlike the service sector, where visibly new employment forms drive the lack of social insurance, the manufacturing sector is often assumed to remain within the traditional dichotomy of formal and informal workers, with informal workers' under-coverage framed merely as problems of weak enforcement and individual reluctance. China, for example, has expanded its social insurance framework to cover flexible and rural migrant workers (Ngok, 2016), yet studies highlight self-selection behaviours driven by limited benefits and *hukou*-constrained migrant status, framing firms' non-compliance as a rational response to weak monitoring (Jiang et al., 2018). In this dominant narrative, social insurance participation among manufacturing workers is reduced to a tension between the state's coercive inclusion and individuals' 'voting-with-feet' evasion. Correspondingly, proposed solutions are restricted to strengthening state monitoring (Qian et al., 2024). However, this perspective largely ignores the structural role of the industry itself.

2.2. The platformized fast-fashion industry and melting labor

Driven by the platform economy, manufacturing value chains and their associated production regimes have undergone fundamental restructuring. Unlike service workers, who are subject to direct algorithmic management, manufacturing workers are embedded in a longer and more complex value chain where platform control operates indirectly. Therefore, analysis of the manufacturing sector must move beyond the traditional employer-labour dynamic to include the mediating role of the platform. The fast-fashion industry, characterized by surging online consumption and extended supply chains, offers a highly representative case of platformized manufacturing sector.

The fast-fashion literature traces a clear trajectory of intensifying labour precarity. Earlier global value chain (GVC) studies focused on a buyer-driven model, in which lead firms placed predictable and large-scale seasonal orders. To maximize profits, they squeezed suppliers, forcing factories to rely on physical coercion and informal subcontracting (Abernathy et al., 1999; Tokatli, 2008). More recently, however, the industry has

entered a platform-driven wave characterized by 'platform-centric flexible specialization'. In this model, online retailers crowd onto digital platforms, competing fiercely for consumer clicks and traffic, and orders dictated by real-time data become hyper-volatile (Fan, 2021). This new wave thrives on extreme labour flexibilization and pervasive informality, shattering employment stability and shifting market risks entirely downward onto atomized workers.

Therefore, treating these manufacturing workers merely as traditional outsiders facing an enforcement problem is analytically flawed. The digital transformation of supply chains dissolves the stable contracts and fixed workplaces on which the traditional welfare state relies to deliver social insurance. Lee (2023) conceptualizes this phenomenon as 'melting labor', whereby the platform economy systematically liquefies traditional employment. Viewed through this lens, the widespread lack of insurance among garment workers signals not a enforcement gap, but a profound structural decoupling of the production-welfare nexus.

3. Analytical framework

This paper adopts the Welfare Production Regime (WPR) as its theoretical foundation. While GVC theory well captures how platform control cascades down to the labour process of informal workshops, it often leaves welfare dimensions untheorized. The WPR framework helps bridge this gap. As a core extension of the Varieties of Capitalism (VoC) literature, it illustrates how social protection systems are institutionally complementary to specific industrial regimes (Estevez-Abe et al., 2001), with welfare institutions reinforcing firms' product market strategies and employees' skill trajectories (Hall & Soskice, 2001).

The WPR framework was developed to analyse traditional manufacturing sector, where generous welfare institutions once secured formal employment and skill accumulation. However, platformized fast fashion represents an industrial mutation that fundamentally disrupts this logic. By substituting traditional management with algorithmic governance, it structurally decouples social insurance from the industrial regime it once served. To understand how this production-welfare nexus operates under platformization, this study examines the process through three intersecting mechanisms: organizational, economic, and socio-spatial.

The organizational mechanism links social protection directly to industry's production coordination and skill requirements. According to the WPR theory, coordinated market economies (CMEs) rely on robust protection systems to secure worker loyalty and safeguard their investments in specific skills, whereas liberal market economies (LMEs) rely on competitive market units, flexible labour markets and general skills, rendering social protection minimal and residual (Hall & Soskice, 2001). Applied to platformized fast fashion, this lens reveals how the industry's evolving production patterns and shifting skill demands alter employers' incentives to invest in social insurance in the first place.

The economic mechanism discerns the structural relationship between product market strategies and the financial capacity required for social insurance. Theoretically, diversified quality production (DQP) strategies generate the financial surplus necessary for co-contributory social insurance schemes, whereas price-based competition prioritizes cost minimization, compressing the profit margins needed for welfare contributions (Streeck, 1991). In the platform era, this cost-cutting logic is further amplified by platform competition and algorithmic efficiency. This lens thus examines how pricing mechanism along the value chain determines the financial viability of social insurance contributions within the industry.

The socio-spatial mechanism extends the traditional WPR approach by treating production space itself as a core mediator of welfare governance. Building on Harvey's (2001) concept of 'spatial fix', wherein capital actively reconfigures geography to sustain accumulation, this paper argues that platformized fast fashion leverages the informality of urban villages to minimize production costs and achieve administrative illegibility, thus allowing firms to bypass institutional compliance. This spatial reconfiguration further undermines workers' welfare agency. Concentrated big business functions as sites of socialization, fostering the institutional knowledge and civic integration necessary for workers to navigate social insurance systems (Chen, 2023). By contrast, the extreme mobility and spatial fragmentation, which are inherent in platform-driven production, disrupt this socialization process, atomizing workers before they can accumulate knowledge of the statutory system. This spatial dimension is especially critical for linking production regimes to social insurance outcomes in the Global South (Gu & Shen, 2003), where uneven urbanization creates informal spatial enclaves that insulate production activities from the reach of the state's welfare apparatus.

Together, these three mechanisms illustrate how platformized fast fashion systematically dismantles the institutional anchors of traditional manufacturing and replaces them with new extractive logics. Organizationally, the strategic need for skill retention gives way to labour flexibility, eliminating firms' incentive to provide welfare. Economically, the financial surplus once available for welfare contributions is hollowed out by extreme price-based competition. Socio-spatially, the administrative legibility of formal factories is displaced by the deliberate informality of spatial enclaves, which obscure the production and atomize the workforce. By bridging macro-level production logics with micro-level labour dynamics, the WPR framework reveals that the widespread non-participation among garment workers is not merely a failure of regulatory compliance, but a deeper institutional crisis of platform capitalism.

4. Methodology

To investigate the mechanisms driving welfare decoupling, this study adopts a qualitative and explanatory single-case study approach (Yin, 2018), a method well suited to elucidating the intermediate structural causes that link a phenomenon to its outcomes within a real-world context (Gerring, 2004).

4.1. *Case selection:* Kanglu *Village*

This study selects *Kanglu* Village (comprising the two sub-villages of *Kangle* and *Lujiang*) in Guangzhou as its primary research site. *Kanglu* is not a village as defined by China's official administrative structure, but former agricultural land absorbed by the expanding city. Originating from the spontaneous gathering of street vendors in the late 1980s, it has since grown into the largest textile trading hub in South China and a crucial supplier node for *Taobao*-platform retailers. Within a highly compressed land area of just 1 square kilometre, it houses a baseline population of 100,000 workers (300,000 at peak) and nearly 16,000 small garment factories, generating over 200 billion yuan (approximately $28 billion) in annual transactions (Zhuang & Wang, 2023). Workers here are overwhelmingly hired on a temporary basis, and the majority remain unregistered in the host city, making *Kanglu* an ideal site for studying the intersection of flexible platform production and institutional welfare detachment.

4.2. *Data collection and triangulation*

To ensure the validity and reliability of the case study, this research adopts a data triangulation approach, systematically collecting and cross-verifying across three primary sources (Yin, 2018). First, semi-structured interviews. The qualitative core of this study relies on in-depth interviews with 30 workers, which were conducted between July 2023 and August 2024. Participants were approached at hiring markets and recruited through snowball sampling. Because the timeframe spanned both off-season and peak-season periods, their labour conditions, social lives and bargaining processes were well recorded across a complete product cycle. Each interview lasted 45–60 minutes. To cross-verify these worker-centric findings, we supplemented the sample with interviews of online retailers ($n = 3$) and garment workshop owners ($n = 5$).

Second, field observations. To anchor the interview data in real-world context, the research team conducted participant observations in August of both 2023 and 2024. Researchers spent extended periods in the informal hiring streets and dense micro-factory clusters. This enabled direct observation of fast-paced, and fragmented production, as well as the daily bargaining between transient workers and workshop owners.

Third, survey data. The study further incorporates original survey data from informal garment workers alongside the research team's previous datasets as an empirical baseline. Detailed statistical results are presented in Section 4.4. These broader survey datasets help cross-verify and substantiate the qualitative findings.

4.3. *Recruitment and sampling*

Table 1 details the interviewees' backgrounds. Unlike in formal garment factories, men make up the majority of this informal labour force. Most interviewees are over 30 years old with a middle-school education,

Table 1. Background of interviewees.

Characteristics	Total(n = 30)
Gender (Male/Female)	20 /10
Age(20–29/30–39/40–49/50+)	3/13/9/5
Marital status(Single / Married)	7/23
Educational attainment (Primary/ Middle school)	6/24
***Hukou* status** (Rural *hukou*)	30
Duration in the informal market (<10 yrs/ ≥10 yrs)	13/17
Production section (Sewing/Finishing/Packing)	12/10/8
Social insurance (No insurance/ Only rural health)	18/12

reflecting a broader shortage of young workers in China's garment industry. Over half have worked as daily labourers for more than 10 years. The sample is distributed evenly across sewing, finishing and packing, which are most commonly outsourced sections in the production process. All informants were strictly anonymized and oral informed consent was obtained prior to each interview. Participants received clear explanations of the research purpose, data confidentiality, and their right to withdraw at any time.

4.4. Data analysis

Data analysis proceeded in two complementary stages. The first stage establishes an empirical baseline through primary survey data. The Chinese government has made significant efforts to weave a comprehensive social insurance net (Mok & Qian, 2019). By 2015, national pension and health insurance coverage had reached 82% and 95% respectively (Qian et al., 2024). Yet this system fails to reach garment workers. Our team's 2023 survey shows that 60% of respondents have never participated in any employee- or resident-based insurance. The remaining 40% rely solely on hometown resident-based health insurance and opt out of the long-term pension scheme altogether. Notably, half of this insured group had paused their contributions at the time of the survey. For comparison, drawing on the underlying survey data from our previous study on 490 gig workers during the Covid-19 pandemic (Wu et al., 2022), we found a similar uninsured rate of 57.8%. Of the remainder, nearly 10% participated in urban employee social insurance schemes, 32.2% chose resident-based health insurance, and 25.3% held a resident-based pension. The current garment worker sample aligns closely with these earlier figures, highlighting this group's status as a predominantly uninsured segment even within the broader gig workforce.

This stark contrast between national policy ambition and workers' lived reality raises a critical question: What prevents these labourers from entering the social insurance net? To answer it, the second stage involves an in-depth textual analysis of all qualitative transcripts and field notes. In accordance with the logic of an explanatory case study design, an explanation-building approach was employed to unpack the mechanisms driving this structural decoupling. This approach ensures that the qualitative findings directly account for the statistical results identified in the first stage.

5. Findings

5.1. The technological premise: why does fast fashion mandate informal labor?

Before unpacking the specific mechanisms of welfare detachment, it is necessary to understand why informal workers, rather than formal workers in regulated garment factories, constitute the core workforce of the contemporary fast-fashion industry. While informal manufacturing units have long existed in the garment industry, so their persistence and recent proliferation cannot be understood as a legacy of under-development, but as the structural outcome of two broad yet imbalanced waves of digital transformations.

The first imbalance lies in the disparity between retail and manufacturing technologies. Over the past twenty years, the expansion of fast-fashion industry has been overwhelmingly driven by digitization processes in retail and logistics. Big-data analytics, cloud computing, digital supply chain management(SCM) systems, and radio-frequency identification (RFID) scanners together establish a digitally integrated, demand-driven and cost-efficient e-retail network (Brun et al., 2019). In stark contrast, automated sewing technology has lagged far behind, leaving manual labour as the most critical cost component in the value chain (Abernathy et al., 1999). To bridge this gap, capital continuously seeks out cheap labour and fragments

production across a dispersed global network of suppliers. To minimize labour costs, orders are further outsourced from factories down to small production units, labour contractors, and ultimately hard-to-track home-based workers, thereby deliberately creating a specialized informal garment workforce (Merk, 2014).

The first imbalance did not resolve uniformly across the industry; instead, it triggered a second related divergence, in which different market tiers adopted starkly different production models in response to the same technological gap. Medium- and high-end apparel brands have largely pivoted towards formal garment factories equipped with semi-automated technology and computer-aided design, while online fast-fashion retailers depend heavily on informal, non-factory production units that supplies the elasticity to absorb extreme market fluctuations. This widespread informality is thus better understood as a rational outcome of modern industrial involution-a mode of growth achieved through the intensification of labour rather than technological upgrading- not a transitional phase of industrialization.

Yet informality alone cannot explain the causal impact of platformization on workers' welfare, since informal manufacturing predates platforms. In the pre-platform era, the buyer-driven model still followed relatively predictable seasonal cycles, leaving suppliers a degree of production autonomy and a theoretical window for workers to be gradually incorporated into the state's expanding social insurance system. Platformization disrupts this by shifting the industry to an extreme consumption-driven logic. Instant algorithmic signals strip suppliers of production autonomy, replacing seasonal cycles with hyper-volatile and small-batch orders. It is therefore not informality per se, but the platform-specific rupture of temporal predictability, that fundamentally changes the nature of the work. The following three sections unpack how this algorithmic rupture systematically dismantles the theoretical anchors for social protection : the organizational anchor of skill retention (5.2), the economic anchor of financial surplus (5.3), and the socio-spatial anchor of administrative legibility (5.4).

5.2. The organizational mechanism: extreme flexibility and expanded daily-worker sector

Building on the understanding of informality as a persistent feature of the apparel industry, this section specifically explains how platformization has intensified that trend, rendering the workforce structurally incapable of being incorporated into the social insurance net.

Clothing sold through e-commerce platforms appeals to consumers who prioritize fashion trends and low prices over product quality. Unlike traditional fast-fashion brands (like *Zara* and *H&M)*, which plan product cycles over months, e-commerce shops operate on a 'test-and-repeat' model built on small-batch orders (typically 30–100 items) and rapid replenishment. During the pre-sale period, online retailers deploy click tests, livestream promotion and bidding searches to gauge consumer interest. Based on immediate feedback, they modify designs or place reorders, compressing lead times to just 7–15 days to sustain consumers' attention (Fan, 2021). Centralized assembly lines, which rely on standardization and economies of scale, are fundamentally incompatible with this volatility. As one factory owner explained:

> We are unwilling to produce Taobao orders. Small-scale orders can be completed in just a few hours on a standard line. Once workers become familiar with a particular style, the style changes again, making it difficult to optimize production. So we usually outsource small orders to family workshops. (20230801TB)

To meet the wildly fluctuating demand, the industry has decentralized from vertically integrated factories to networks of family workshops. This shift has structurally altered workforce composition, driving a massive expansion of the specialized daily-worker sector. One interviewee described this transition:

> The year 2012 seems like a watershed. Before then, what we produced were supplied to offline retailers and the orders were comparatively stable. Garment factories usually hired 80% long-term workers. But when Taobao shops displaced offline stores, daily workers have become the main workforce, and long-term workers now account for only 20%. (20240622BAB).

This expanded daily-workers sector destroys the organizational imperative for social protection in three key ways. First, it dissolves traditional employment relations into fleeting market-based spot transactions. Every morning in the street labour market, workers negotiate highly individualized and ephemeral agreements based on an on-the-spot examination of sample clothing. Once terms are agreed, they enter job sites immediately. Pay is determined solely by hourly output, decoupling income from any employer-provided

safety nets. As one worker noted, this purely output-based earning structure leaves no room for other benefits:

> We get paid per piece. The total amount depends on the complexity of the item. For something simple like a T-shirt, I earn 1–2 yuan (approx. $ 0.14–0.28), and I can produce a dozen in an hour. (20230803FU, age 35)

This commodified piece-work system further traps both parties in a legal vacuum. The unregistered and mobile small workshops cannot legally act as qualified employers, while workers' hyper-mobility simultaneously prevents the formation of labour ties that employer-sponsored social protection requires.

Second, the extreme volatility of working hours fundamentally conflicts with the flat-rate contribution model of social insurance. To keep pace with rapid online turnovers, workers engage in extreme self-exploitation, often working up to 70 hours per week, in direct contravention of Chinese labour law. During peak seasons, 15-hours (from 8 a.m to 11 p.m) workdays allow them to earn 300–500 yuan (approx. $41–69) daily, though their actual hourly wage frequently falls below the statutory minimum. Daily workers accept this gruelling intensity in exchange for immediate cash settlement. Yet this peak-season earning power is highly deceptive, and fiercely tethered to algorithmic retail traffic. This income fluctuation makes any fixed deduction for social insurance contributions practically impossible, as one older worker acutely summarized:

> During the peak season, I can earn 15,000 yuan (approx. $ 2,055) per month, but it drops to around 4,000 to 6,000 yuan (approx. $550 to 820) during the off-peak season. Our income is highly dependent on platform seasonal traffic, making it impossible to commit to a fixed monthly social insurance payment plan. (20230724 MA,age 53).

Third, and most importantly, the daily-worker model eliminates the traditional function of social insurance as an organizational incentive for skill retention. Historically, industry utilized social insurance to retain skilled workers. Today, that investment has become structurally redundant, as skills are externalized and can be easily drawn from the centralized street market instead. As formal manufacturers adopt semi-automated technologies, many older workers lacking digital literacy are pushed into the informal sector, where their manual versatility remains valued. As a result, it gives employers access to a massive and on-demand pool of skilled labour, rendering long-term retention strategies redundant. The platformized fast-fashion industry thus currently treats social insurance as an unnecessary cost rather than a vital asset for skill reproduction, leaving workers to bear the full risk of precariousness. As one worker observed this stark contrast:

> About ten years ago, when I was in a large and formal factory, the managers often discussed enrolling the highly-skilled senior workers in the employee social insurance program, regardless of their hukou status. We knew it was a great benefit. But now, many of them have become daily workers and quit from the scheme, let alone ordinary workers like us. We never think about participating in the urban scheme anymore. (20240506LI, age 49).

Ultimately, grounded in this highly mobile daily-working pool, the flexible specialization model produces a complete structural decouple. By replacing organizational stability with flexibilization, the platformized production model dismantles the organizational foundations required for formal social protection.

5.3. The economic mechanism: algorithmic margin squeeze and 'cash-in-hand' rationality

This section examines the specific pricing mechanisms of the platform economy as a critical economic barrier to individual social insurance contributions. Unlike traditional buyer-driven value chains, the e-commerce industry is distinctly infomediary-driven. Platforms act as powerful intermediaries controlling the flow of information, and translating vast consumer data into rapid production signals (Li et al., 2019). If consumers repeatedly click on a certain dress or linger over a sweater, the platform instantly populates their screens with a multitude of identical items from competing sellers, inviting direct price comparisons. In effect, algorithms pit retailers against each other in real-time. This data-driven competition creates a predatory pricing system that structurally eradicates the financial surplus that workers require to sustain social insurance contributions. This squeeze unfolds through a top-down chain of value extraction.

First, the highly competitive landscape of Chinese e-commerce platforms triggers a'race to the bottom'in clothing prices, directly devaluing physical labour. While *Taobao* historically dominated the market, the aggressive entry of platforms like *Pinduoduo* (20%-25% market share) and *Douyin* (10%-15%) has disrupted the ecosystem through 'double-low' strategies that pair low prices with low quality. Through direct-to-

consumer (DTC) models, group buying, flash sales and time-limited discounts, these platforms have institutionalized razor-thin profit margins. Consequently, piece-rate wages at the bottom of the supply chain are further compressed. Worker He, who has worked in *Kangle* Village for 15 years, vividly illustrates how algorithmic pricing has degraded wages over time:

> Accompanied by the economic recovery after the 2008 financial crisis, wages suddenly surged from 1,500 to 4,000 yuan(approx. $214–$571) in large factories. Yet with the rise of platforms like Taobao after 2012, online orders quickly occupied market and intensified competition. Profit fell from 25% to 8%-10%, forcing many factories to reduce workers' wages. Now we mainly handle orders from Douyin live-streaming sales, which come with extremely thin profit and tight deadlines. For a regular T-shirt, the boss usually earns 4 yuan(approx. $0.55) per piece, but for each stitch producing we can earn only ten or twenty fen(approx. $0.01–0.03).We have to work very long time to earn very little (20230815HE, Age 53).

Second, platforms extract the vast majority of surplus value through algorithmic marketing costs, leaving manufacturers with essentially no financial room to maintain decent wages or provide social benefits. Online retailers report that roughly 40% of a garment's retail price is absorbed by platform marketing expenses, such as search bidding, homepage promotions and live-streaming sales, often exceeding the portion attributed to labour costs altogether. As one online store owner broke down the costs:

> We purchased our Tmall store for 70,000 yuan(approx. $10,000). Then we paid 60,000 yuan(approx. $8,571) in annual technical fees and 50,000 yuan(approx. $7,142) as a guarantee deposit. Last year, our store had a turnover of 1.5 million yuan(approx. "We purchased our Tmall store for 70,000 yuan(approx. $10,000). Then we paid 60,000 yuan(approx. $8,571) in annual technical fees and 50,000 yuan(approx. $7,142) as a guarantee deposit. Last year, our store had a turnover of 1.5 million yuan(approx. $0.21 million), yet over one third was spent on advertising services alone. These expenditures far exceed our total labor costs".21 million), yet over one third was spent on advertising services alone. These expenditures far exceed our total labor costs. (20230807XIONG, Age 45)

Third, stripped of pricing power, online retailers are further compelled to implement strict bidding systems, externalizing competitive pressure onto an already oversaturated labour market. Industry giants like SHEIN operate as ruthless price-setter rather than negotiating partners, forcing factories into hyper-competition. A factory owner explained this structural disempowerment:

> SHEIN orders have their pros and cons. The volume is larger than that of small online shops, but the profit is even lower and rigidly fixed. SHEIN implemented a bidding system among suppliers, meaning that no matter how slim the margins are, there will always be a factory willing to take the order. Before, we could calculate costs, set our price, and secure our margins. Now, platforms increasingly determine pricing, leaving us with no option but to find ways to cut costs. (20240715YANG, Age 37)

This compression translates directly into deteriorating conditions behind the sewing machine:

> We are forced to compete for jobs by accepting lower wages. In the past, factory owners treated daily skilled workers as valuable assets and offer extra pay. Now, they refuse to raise piece-rates because they know there will always be a cheaper, and more desperate worker ready to take the jobs. (20240607LIU, 35)

Faced with this price squeeze, workers develop a distinct 'cash-in-hand' rationality regarding social protection. Although the flexible employee social insurance scheme is nominal available for daily workers, its annual contribution of approximately 19,000 yuan (the minimum standard in Guangzhou, approx. $2,600) remains an unbearable burden against stagnant and hyper-volatile piece-rate earnings. Forced to weigh long-term security against immediate survival, workers come to perceive deferred welfare as a financial risk rather than a safety net. As one young worker summarized this logic:

> Since it is getting harder to make decent money here, I am hesitant to pay into any social insurance in Guangzhou. I feel much safer having cash in hand. If things don't improve, I might switch to food delivery job. (20240607WEN, age 20).

To cope, many workers adopt strategies of minimum coverage, typically limiting themselves to basic and subsidized rural medical insurance. As one breadwinner explained:

> As my income decreased in recent years, rural medical insurance is already affordable, but adding a pension contribution makes it financially impossible to manage. (20230125B, age 36).

In sum, the platform economy's model of algorithmic value extraction creates a financial ceiling on social insurance. The widely observed 'cash-in-hand' mentality is not merely an individual choice born of short-sightedness, but a forced survival rationality structurally imposed by the predatory pricing mechanisms of the production regime. When income is volatile and the future uncertain, immediate liquidity takes precedence over institutional trust. This dynamic vividly demonstrates how macro-level algorithmic profit-squeezing translates directly into micro-level welfare alienation.

5.4. The socio-spatial mechanism: platform's 'spatial fix' and administrative illegibility

Beyond organizational and economic barriers, workers' welfare detachment is further driven by a profound spatial mechanism. When translating the theoretical 'spatial fix' into empirical reality, this study finds that the platform regime relies on unregulated urban villages like *Kanglu* as its geographical infrastructure. Specifically, to satisfy algorithmic demands for high-speed turnover while maintaining razor-thin margins, capital resolves this tension by physically overlapping spaces of production and living. This spatial compression is a structural necessity for 'just-in-time' production, as one owner articulated:

> Orders must be finished within 24–36 hours, meaning workers have to live right in the neighborhoods. If we are delayed in shipping, the retailers would be heavily fined by the platform. (20240715YANG, Age 37)

To understand the consequences of this spatial fix, it is firstly necessary to contextualize China's geographically segmented social security system. Unlike unified national welfare systems, China's social insurance is highly localized and historically tied to the *hukou* system. When millions of rural migrants cross provincial borders to work in cities like Guangzhou, their baseline social security data does not automatically follow them. They remain institutional outsiders to the host city unless formally registered by a recognized local employer. Operating within this fragmented national system, the urban village functions as a spatial catalyst that breaks the tie between the state and its workers. This rupture manifests as a mutual decoupling, whereby the workforce becomes administratively illegible to the state, and the state becomes institutionally irrelevant to the workers.

On one side, extreme physical agglomeration is coupled with profound administrative illegibility, effectively shielding this massive workforce from the state apparatus. Because cross-provincial data is not interconnected, the Guangzhou municipal government lacks baseline data of these migrant workers. Meanwhile, rooted in China's dual land-ownership structure, the village's complex geography and collective autonomy create a jurisdictional grey zone that municipal regulators struggle to map. Tens of thousands of daily workers are densely packed into the village, yet their hyper-mobility between unregistered family workshops generates no traceable employment records whatsoever. Faced with this opacity, the local state often adopts a pragmatic logic of stability maintenance (*weiwen*). As long as the enclave poses no threat to public safety, it is left to self-regulate. Crucially, because mandatory welfare contributions require precise spatial anchors, such as verifiable workplaces or registered residential addresses, the government's inability to 'read' this territory allows platform capital to mobilize a massive workforce entirely off the regulatory grid.

On the other side, this spatial enclosure fosters profound institutional and cognitive alienation, rendering the state apparatus practically irrelevant to workers' daily survival. The urban village is highly self-sufficient, providing all basic necessities from food to pharmacy, which enables workers to live for years without ever interacting with the mainstream institutions of the host city. Operating entirely within this self-contained spatial enclave, workers develop a deep subjective detachment from state-led protection. As one worker described:

> I have worked here for over twenty years, but I rarely interact with the local government. The village provides all the basic necessities I need . . . When disputes arise, I simply accept my bad luck. I don't even know what I would need the government to do for me, let alone provide social insurance. (20230825E, age 43)

Furthermore, the spatial practices within the village- what Lefebvre (1991) terms the daily routines of production- disrupt the formation of civic ties and institutional trust. The micro-scale of the workshops and the street-level daily recruitment model replace stable workplace communities with atomized market interactions. Workers constantly rotate among different workshops, stripping them of the stable social

networks necessary to accumulate knowledge about social rights. Consequently, their unprotected status is normalized:

> We change workshops almost every two days. We are all strangers to each other and seldom talk about this topic. I think most of us are temporary workers, maybe it is not allowed to buy social insurance here. (20240710B,age 36)

Through these daily routines, the spatiality of the village does more than simply house labour; it constructs a cognitive boundary that renders formal social insurance fundamentally irrelevant.

In sum, the urban village functions as a spatio-temporal fix that sustains the industry's extreme flexibility by externalizing risks into an unreadable geography. By trapping workers within an atomized, self-contained spatial vacuum, the production regime ensures that the algorithmic uncertainty of platform orders is ultimately absorbed by the workers' unprotected bodies. Embedded in this enclave, workers remain physically present for economic extraction, yet administratively and politically absent from the welfare state.

6. Conclusion

The picture of platform labour remains fundamentally incomplete as long as existing scholarship leaves a vast manufacturing sector operating in the shadow of digital acceleration. This study addresses this blind spot by examining how platformization in China's fast-fashion industry structurally distances garment workers from social insurance. While informality has long existed as the industry's structural response to the tension between fast-paced retail and labour-intensive manufacturing, platformization shifts the industry from buyer-driven to infomediary-driven. Algorithmic efficiency intensifies market dictation and severely strips suppliers of production autonomy, pushing the workforce from traditional, seasonal informality into extreme, hyper-volatile flexibilization. Our findings reveal that the resulting labour precarity is not incidental but industrially reproduced: even as the state relaxes the status-based barriers that historically excluded workers from social insurance, the platform production regime operates as a dynamic centrifugal force that accelerates labour marginalization.

Three interlocking mechanisms drive this outcome. Organizationally, the expanding daily-worker sector dissolves stable employment into fleeting spot-market transactions, stripping social insurance of its traditional rationale as a tool for stabilizing skilled workers. Economically, platform-driven traffic competition forces the industry into a low-price equilibrium, leaving workers with incomes too thin and volatile to sustain social insurance beyond a cash-in-hand survival rationality. Socio-spatially, the regime's dependence on urban villages for rapid turnover generates profound administrative illegibility, rendering the workforce untraceable to state regulators and allowing platform capital to escape welfare responsibilities physically. This extends traditional WPR theories, which frame exclusion as primarily status- or contract-based, by showing that welfare marginalization in the Global South is also fundamentally socio-spatial. Taken together, these triple decoupling mechanisms normalize a culture of collective non-participation in social insurance, leaving workers reliant entirely on individualized survival strategies within an increasingly volatile labour market.

We particularly emphasize the spatial dimension of this inequality. China's social insurance system is fundamentally a localized regime administered at the municipal level. This has historically generated two macro-level axes of spatial inequality, an inter-regional divide between coastal and inland provinces, and a rural-urban divide anchored in the *hukou* system. As urbanization has accelerated and migrants have concentrated in mega-cities, these two axes have converged into a new intra-city fracture. Highly specialized labour divisions segregate the working populations, with informal enclaves sheltering migrant workers from rural and inland provinces just streets away from the urban centre. Mega-cities now resemble a 'folded space' of social rights, in which informal and formal zones remain physically proximate yet institutionally distant.

This intra-city fold is not unique to e-commerce manufacturing. Algorithmic competition compresses per-unit labour returns across sectors, from piece-rate sewing to per-delivery payment, pushing a broad swath of platform-dependent workers into the same low-cost urban villages. Urban villages thus function as a shared spatial reservoir absorbing the labour-cost pressure generated by platform capitalism at large, of which our informal garment workers represent one particularly illustrative case.

7. Discussion

Theorizing these mechanisms allows us to advance the broader discourse on precarious work by refining Lee's (2023) concept of 'melting labor'. Whereas Lee maps the macroscopic shift from standard Fordist employment to fluid precarity under the digital economy, this study identifies the micro- and meso-level mechanisms through which workers are systematically 'melted out' of the social safety net.

Platform and government responses emerge in response to this melting process. On the one hand, platforms are assuming direct financial responsibility for workers' social rights. A notable example is Amazon's financial participation in Bangladesh's Employment Injury Scheme (EIS), which operates within the ready-made garment sector and requires participating brands to co-fund this insurance pool, serving as bridge financing until a national statutory system can be established.[1] Amazon further employs algorithmic audits, using AI-driven risk assessments and digital traceability, to enforce regulatory compliance. If a supplier delivers products far faster than its registered physical capacity allows, the audit system flags the anomaly as unauthorized subcontracting. It effectively surfaces hidden workshops and mandates labour obligations to the very bottom of the supply chain.

On the other hand, incorporating these informal workers into official trade unions offers a way to rebuild an organizational anchor for social insurance. Currently, through platform-based apps, the All-China Federation of Trade Unions (ACFTU) actively enrols platform workers, granting them collective bargaining power to negotiate fairer pay and explore flexible social insurance models. This initiative could plausibly extend to manufacturing workers embedded within platform-controlled supply chains. However, these financial, auditing and organizational interventions offer vital transitional relief at best. They remain policy patches that rely on a logic of reactive regulation, whereas a more enduring solution necessitates proactive trust-building within the welfare regime itself.

Crucially, the predicament of these marginalized garment workers exposes a deeper structural collision, that platform-driven 'melting labor' is fundamentally incompatible with the traditional East Asian welfare regime. By dissolving stable employment, fixed workplaces, financial margins and administrative legibility, platform capitalism destroys the very anchors on which this status-based regime requires to function. Therefore, preventing the systemic exclusion of the melting workforce requires a paradigm shift. It demands decisively dismantling status-based segregation in favour of a universal and portable social security system that protects workers irrespective of their employment type, spatial mobility, or institutional identity. Ultimately this shift is expected to reconstruct a social contract that citizens can actually trust.

The implications of this study reach far beyond the Asian context. Contemporary welfare-state scholarship typically contrasts retrenchment in the Global North with expansion in the Global South. However, our findings reveal that, in emerging economies, the weaving of social safety nets and their tearing apart are occurring simultaneously. While the modern welfare state fundamentally strives for de-localized and universal inclusion, this study serves as a stark reminder of the formidable power of localized and status-bound rigidities. Scholarship must remain committed to welfare-state building in the Global South, while never losing sight of the structural forces that are simultaneously undermining it.

Note

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