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## Impacts of Online Platforms' Growth on Regional Self-employed Businesses and Policy Approaches

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1. **[Research Background]** Business conditions in Korea's self-employment sector are significantly deteriorating. This decline is mainly attributable to the rapid growth of online platforms, coupled with economic factors such as sluggish domestic demand. While online platforms have brought significant benefits to consumers by facilitating seamless demand-supply connection and cutting down information costs, they are also believed to have widened the gap between self-employed individuals who can utilize such platforms and those who cannot. This paper analyzes the polarization of the self-employment sector led by the growth of online platforms and suggests policy directions to address the disparity.

2. **[Polarization in the Self-employment Sector]** To identify how online platforms have driven structural shifts in the self-employment sector, this paper analyzes the effects of the platforms primarily on retail and food service industries, which have higher proportions of self-employed businesses.

(1) **E-commerce platform** (retail industry): The effects of the rise of e-commerce platforms vary by region, business, and industry. Firstly, in terms of regional trends, the growth of non-store retailers (such as distance sellers) propelled by online shopping is concentrated in the Seoul metropolitan area, while the decline in traditional, in-store retailers in non-Seoul metropolitan areas has become more prevalent, thereby widening the regional disparity.

While growth was relatively favorable for those that operate both online and offline sales channels or diversified their product portfolio, as well as large businesses with resources and brand recognition, those without such advantages faced steeper declines in business conditions. (For example, when the share of online shopping within a region increased by 1

percentage point, the growth gap between self-employed businesses in the top and bottom 20 percent by sales grew by 5.1 percentage points in the Seoul metropolitan area and by 7.2 percentage points in non-Seoul metropolitan areas.)

Moreover, the growth of online retail platforms has increased the number of jobs in the courier service industry and demand for time-intensive services, such as leisure and sports activities, while negatively impacting the commercial real estate rental industry with higher vacancy rates of commercial buildings.

(2) **Food delivery platforms** (food service industry): The rise of online platforms has polarized the food service industry to the advantage of large restaurants—a trend that was more pronounced in non-Seoul metropolitan areas. (With each 10-percentage-point increase in the regional share of delivery platforms, the growth gap between top and bottom 20 percent of restaurants in terms of sales widened by 3.2 percentage points in the Seoul metropolitan area and 6.3 percentage points in non-Seoul metropolitan areas.) The performance of long-established or delivery-based restaurants has also diverged considerably from restaurants without these advantages.

3. **[Effects of Financial Support for Self-employed Businesses]** In light of deteriorating business conditions due to the COVID-19 pandemic, oversaturation of the self-employment sector, and the rise of online platforms, the government expanded its financial support for self-employed businesses. The analysis of recipient businesses' performance on an individual level shows that the financial support improves the sales by 8.8 percent on average and reduces the probability of business closure by 1.6 percentage points. At the regional level, the financial support is more effective in non-Seoul metropolitan areas that face more serious deterioration in business conditions.

However, the benefits of the financial support are concentrated in certain groups of businesses, such as those that are newly established, led by young entrepreneurs, and smaller in scale, while other groups experience little effect. Small-scale support (less than KRW 20 million) or long-term support also has negligible effects. The analysis also suggests that financial support for businesses with very low productivity and declining sales creates negative externalities, namely causing inefficient resource allocation and stunting the growth of other businesses.

Nevertheless, the share of financial support was actually found to have increased during the analysis period for the groups of self-employed businesses seeing relatively little benefit from the support and suffering from low productivity.

4. **[Policy Recommendations]** Given the improvements in consumer benefit and productivity stemming from online platforms, the rise of the platform economy will continue in conjunction with the digital transformation. As such, support for self-employed businesses should take a two-track approach: a safety net policy to mitigate the shock of failure for self-employed individuals who were pushed out of the competition and a growth-supportive policy to enhance capital accessibility and secure opportunities for growth for promising self-employed individuals. In specific:

(1) The focus of financial support must be on growth-supportive policies that help innovative self-employed individuals realize their potential. To this end, an adequate scale of support should be provided for selected recipients, prioritizing new, young-entrepreneur-led, and small-scale businesses. It is also important to strengthen preliminary screening and post-evaluation in the selection process to prevent excessive startups and moral hazard.

(2) The social safety net, including unemployment insurance, which helps outcompeted self-employed individuals bounce back from failure and start again, should be designed to prioritize the protection of individuals, not their businesses. To this end, it is necessary to expand eligibility and ease the requirements for claims to enhance the effectiveness of unemployment insurance.

(3) Non-Seoul metropolitan areas, which are being hit harder by the impact of online platforms, should direct their efforts primarily into establishing shopping hubs in hub cities, developing services specialized to each region, and improving online accessibility, along with enhancing the capabilities of local self-employment support institutions to design effective programs and select appropriate recipients.

- Disclaimer: The views expressed herein are those of the authors, and do not necessarily reflect the official views of the Bank of Korea. When reporting on or citing this paper, the authors' names should always be explicitly stated.
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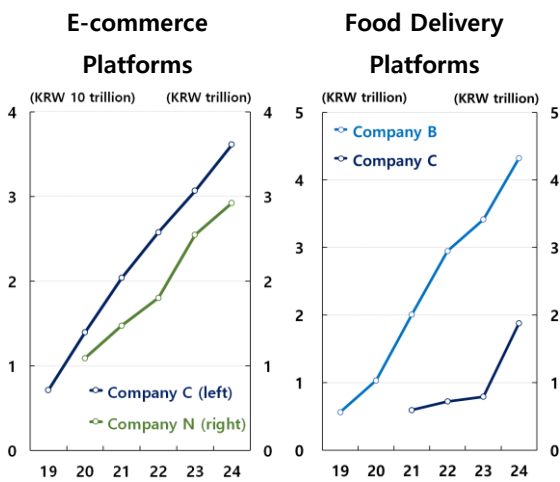
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# I . Research Background (Summary)

A platform in the traditional sense refers to a business model that creates value by connecting demand and supply and facilitating exchanges of products and information. However, the advent of online platforms on the Internet has led to an unprecedented expansion of such networks and significantly expedited the aforementioned matching process. The corresponding information cost was reduced dramatically through digitalization, thereby accelerating innovation in service industries. This resulted in enhanced productivity and market accessibility for service suppliers, as well as improved consumer welfare on account of added convenience and lower prices.

[Figure 1] Sales of Online Platforms<sup>1)</sup>



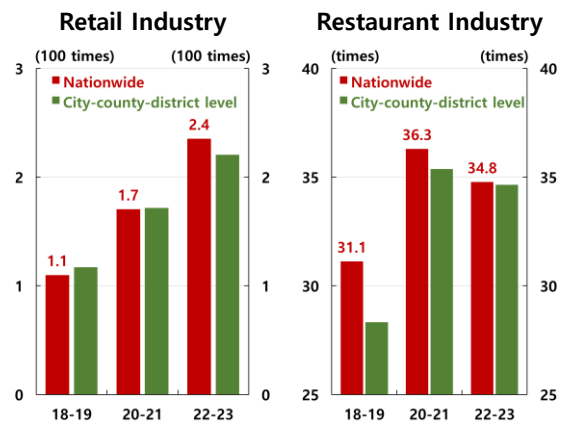
Note: 1) For Company N, the number represents the sales of its platform-related division.

Source: Company business reports, VALUESearch

However, like all other disruptive technologies that brought significant changes to the industrial structure, the rise of online platforms has likewise produced winners who find success

using the new technology and losers who fail to adapt to changes. As the advent of online platforms resolved the spatial constraints of services to a substantial degree, self-employed service businesses that had been relatively stable in their respective regions suddenly found themselves directly affected. Some of these businesses extended their reach to new customers online and grew as a result, while others failed to stay competitive and lost their customer base.

[Figure 2] Quintile Ratios<sup>1)</sup> of National and Regional<sup>2)</sup> Sales of Self-employed Businesses



Notes: 1) The ratio between the top 20% of sales and the bottom 20%

2) National average of regional quintile ratios on the city-county-district level

Source: Statistical Business Registers (KOSTAT), authors' calculations

This paper empirically analyzes the diverging impact of online platforms' growth on self-employed businesses by group and provides policy recommendations to tackle the polarization of self-employed businesses. To this end, this paper drew on the Census on Establishments and credit card data to analyze the impact of e-commerce and food delivery

platforms on the retail industry and food service industry, which have a high share of self-employed businesses, along with data from the Statistical Business Registers (Statistics Korea) to examine the effects of financial support.

The analysis shows that self-employed individuals and their employees in the retail industry of non-Seoul metropolitan areas experienced a sharp decrease in the number of jobs due to the growth of e-commerce platforms. The growth of non-store retailing (such as distance selling) caused by the transition from in-person shopping to online shopping was largely concentrated in the Seoul metropolitan area, while non-Seoul metropolitan areas only saw a marked decrease of traditional self-employed in-store retailers, which widened the gap between the two regions. In-store retailing also experienced a polarization of self-employed businesses: while growth was relatively favorable for those that operate both online and offline sales channels or diversified their product portfolio, as well as large businesses with resources and brand recognition, those without such advantages faced steeper declines in business conditions, further intensifying the polarization.

The growth of online platforms had diverging impacts on related industries as well. Jobs in the courier service industry grew significantly thanks to the increase in online consumption, while those in the real estate rental industry were negatively affected, seeing a surge in the vacancy rate of commercial buildings. The demand for time-intensive services, such as leisure and sports, also rose as an indirect effect of the time saved from shopping.

A similar pattern was also found in the growth of online food delivery platforms. As large restaurants took greater advantage of the expansion of delivery services, the growth gaps between large and small businesses grew wider, which was more pronounced in non-Seoul metropolitan areas. In addition, more experienced or delivery-based restaurants continued to grow, while newly established restaurants or restaurants with smaller shares of delivery orders fell behind in the competition, facing higher risks of business closure. This shows that the higher the popularity of delivery platforms within a region, the greater the decrease in the number of restaurants run by self-employed individuals. However, as food delivery platforms expanded the overall size of the food services market, the employment of temporary and daily workers by large, rapidly growing restaurants showed an increase.

Such structural shifts became intensified over the COVID-19 pandemic. Adding to the pressure for industrial restructuring over the large share of self-employed businesses in the Korean economy, the pandemic accelerated the deterioration of business conditions in Korea. In response, the government expanded its financial support for self-employed businesses. Empirical analysis found that the financial support was significantly effective in facilitating sales growth during most of the analysis period, except in 2020. It is estimated that the financial support prevented massive business closures in 2020 when the pandemic began, achieving the desired policy outcome to some extent.

However, at the business group level, the effects were concentrated among certain groups, such

as newly established, young-entrepreneur-led, and small-scale businesses. Small-scale support (less than KRW 20 million) or long-term support for the same businesses had negligible effects. In addition, it was found that financial support for businesses with low productivity and declining sales may create negative externalities, causing inefficient resource allocation and stunting the growth of other businesses. Nevertheless, the share of businesses receiving small-scale support actually grew during the analysis period, and a considerable increase was observed in the share of businesses among the recipients that are long-established, medium- to large-scale, led by middle-aged entrepreneurs, or low in productivity.

The growth of online platforms and the following reorganization of the industrial structure cannot be seen as completely negative from a comprehensive perspective on the economy, given that it will enhance consumer welfare and productivity, and is very likely to continue in the future. Thus, policies for supporting self-employed businesses should, going forward, take a two-track approach to provide a strong safety net for self-employed business owners who were pushed out of competition, in addition to growth-supportive policies to ensure a level playing field and growth opportunities for high-potential self-employed businesses.

Hence, this paper recommends the following policy responses. First, the focus of financial support for self-employed businesses should be on growth-supportive policies that help businesses with the capacity for innovation and growth to realize their potential. To this end, the

recipients of the financial support should be selected carefully, prioritizing newly established, young-entrepreneur-led, and small-scale businesses. Strengthening the selection process through preliminary screening and post-evaluation is also important in preventing excessive startups and moral hazard. Second, the safety net for self-employed individuals should prioritize the protection of individuals, not their businesses. To this end, the coverage and effectiveness of programs such as unemployment insurance should be enhanced.

Third, non-Seoul metropolitan areas, which have faced greater challenges from polarization, must secure their demand base through the establishment of shopping hubs in hub cities, regional specialization, and improvement of online accessibility, while also enhancing the capabilities of local self-employment support institutions to select appropriate recipients for such support. Fourth, a fair online platform ecosystem should be created by preventing the abuse of market-dominant positions and encouraging the use of platforms' big data to identify and support promising self-employed businesses at an early stage. Lastly, financial support for new entrepreneurs should be granted on a more competitive basis and a soft-landing system for business closure should be established to provide consulting services by a group of experts and debt restructuring prior to closure with the aim to mitigate the oversupply of self-employed businesses.

## II. The Impact of Online Platforms' Growth on Self-employed Local Businesses

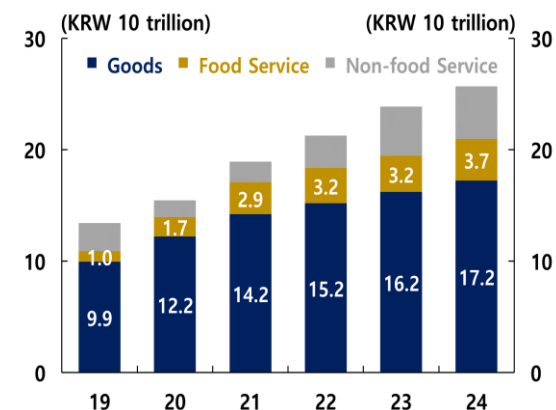
### 1. The Growth of Online Platforms

An online platform refers to a digital service that connects and facilitates interactions between two or more distinct but interconnected sets of users on the Internet (OECD, 2019). Initially introduced to the public in the 1990s, online platforms have since grown rapidly and led to innovation in a variety of industries. In doing so, far-reaching changes were brought about not only in the supply and consumption habits of goods and services, but also in the overall structure of the economy, including the industrial structure and the labor market.

The convergence of platforms and the Internet maximized the demand-supply connection and the efficiency of resource utilization, significantly contributing to enhancing the efficiency and productivity of the economy in general. This led to increases in market size and accessibility, decreases in the prices of goods and services, and expanded range of choices, greatly elevating the welfare of both suppliers and consumers (Kenney & Zysman, 2016).

On the other side of these benefits is the looming shadow of market dominance and polarization, stemming from the direct and indirect network effects<sup>1</sup> characteristic of online platforms. The extremely low marginal cost of securing additional users online enables explosive growth once the number of users passes a certain threshold. From this established user base, online platforms acquire big data and use it to enhance the quality of services and provide supplemental services, rendering it difficult for users to leave and use other platforms instead (i.e., lock-in effect). The first mover's advantage, as described above, gives platforms or suppliers a vested interest and consequently poses the threat of excluding potential competitors to cement a winner-takes-most structure in the market. Conversely, suppliers who lose their competitive edge and demand base may face a steep decline, further intensifying the polarization.

[Figure 3] Composition of Online Shopping Turnover

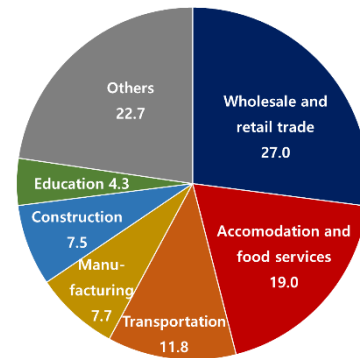


Source: KOSTAT

<sup>1</sup> Direct network effect refers to the increase in the quality of service when the number of users increases. Indirect network effect refers to a virtuous cycle of interactions between two groups of service users on the demand and supply sides, where the increase in the number of one group's users leads to the benefit of the other group.

The influence of online platforms is particularly notable in traditional services with a large share of self-employed businesses, such as the wholesale and retail industry and the food and accommodation industry.<sup>2</sup> Most (80.7 percent) of Korea’s online shopping turnover in 2024 (KRW 259.4 trillion) came from goods transactions and food deliveries. In particular, with the rise of e-commerce platforms and food delivery platforms,<sup>3</sup> some businesses increased their sales through the substantial alleviation of spatial constraints for in-person services, while others who failed to adapt to technological changes faced a downturn in business. In this context, this chapter analyzes the pattern of structural changes and polarization of self-employed businesses<sup>4</sup> following the growth of online platforms, centered on the retail industry and the food and accommodation industry.

**[Figure 4] Composition of Self-employed Individuals by Industry<sup>1)</sup>**



Note: 1) As of 2023, including unpaid family workers.

Source: KOSTAT

## 2. The Impact of E-commerce Platforms’ Growth

### (Theoretical Background)

The growth of e-commerce platforms has determined winners and losers in many industries. Online-based e-commerce platforms replaced the existing physical practice of in-store shopping with online shopping to a significant degree, driving the growth of non-store retailing<sup>5</sup> with a focus on online sales. In

<sup>2</sup> The wholesale and retail industry and the accommodation and food industry account for almost half (46.0 percent) of self-employed individuals by industry (Figure 4). In addition, the share of sole proprietors stands at 57.1 percent in the employment of the wholesale and retail industry and 82.0 percent in the food and accommodation industry (2023 Census on Establishments).

<sup>3</sup> Some of the most prominent e-commerce platforms in Korea include Coupang, Naver, and Interpark. For food delivery platforms, Baedal Minjok, Coupang Eats, and Yogiyo are named as some of the most prominent players in the market.

<sup>4</sup> In the following analysis, the concept of self-employed individual includes unpaid family workers. The definition of self-employed individuals is explained in “[Box 1] The Definition of Self-employed Individuals.”

<sup>5</sup> Non-store retailing is divided into distance selling, sales via stalls and markets of other goods, and other non-store retailing. Distance selling accounts for 90 percent of businesses, 84 percent of workers, and 94 percent of sales in the non-store retailing sector (2023 Service Industry Survey). Distance selling is also divided into (1) e-commerce retail brokerage that operates open marketplaces, (2) e-commerce retailing that sells various products via online networks, such as online shopping malls, and (3) other types of distance selling.

contrast, traditional self-employed retailers with physical stores<sup>6</sup> are at high risk of losing their competitive edge if they fail to adapt to the trends. However, the widening gap between non-store retailers and in-store retailers indicates that e-commerce platforms' impact on the retail industry may vary greatly by region (Chung et al., 2020) because, unlike in-store retailers that are dispersed across the nation, non-store retailers are concentrated in the Seoul metropolitan area, where quality IT workforce and infrastructures are located.<sup>7</sup>

Furthermore, the extent of online platform utilization may incur growth and employment gaps even among self-employed in-store retailers in the same region. Likewise, in the context of product type, in-store retailers selling products with high shares of online sales and those selling products with a substantial share of sales still taking place in-store will also exhibit contrasting growth trajectories. In addition, under the assumption that larger businesses are better poised to respond to technological changes, there is a considerable likelihood that the polarization between large and small businesses will only continue to deepen.

The spillover effects on the related industries will vary greatly. Transportation and warehousing are likely to grow in conjunction with e-commerce platforms,<sup>8</sup> while commercial real estate, such as commercial buildings, are expected to be affected adversely by the decreased need for in-person services and physical stores. On the other hand, the demand for time-intensive services, such as leisure, sports, and healthcare, is likely to grow as consumers save more time from shopping.

### (Analytic Methodology)

The impact of online platforms' growth on regional employment was empirically analyzed, centered on self-employed businesses. Various factors including business location were taken into account to examine the disparate impacts. Based on prior studies including Chun et al. (2023), this paper established a fixed effects panel model at the city-county-district (*j*) level as in Equation (1). The analysis period spans from 2016 to 2022.

$$\frac{Emp_{j,t}}{Pop_{j,t}} = \beta_0 + \beta_1 ES_{j,t-1} + \beta_2 D_j \times ES_{j,t-1} + X_{j,t-1}\gamma + \mu_j + \delta_t + \epsilon_{j,t} \dots (1)$$

<sup>6</sup> The share of online sales stood at 3.9 percent, representing a small share of the total sales of in-store retailers (2020 Economic Census). In the case of sole proprietors, the share of online sales represented only 2.0 percent of total sales, rendering their businesses particularly more susceptible to the rise of e-commerce platforms.

In-store retailers	Sole proprietors	Corporations, etc.	Total
Share of in-store retailers with an online sales channel (%)	5.8	10.4	6.3
Share of online sales (%)	2.0	5.5	3.9

<sup>7</sup> By sales, the share of non-store retailers was 85.6 percent in the Seoul metropolitan area (2023 Service Industry Survey).

<sup>8</sup> In 2020, transportation services represented 17.6 percent of the wholesale and retail industry's intermediate service inputs, the highest share among service industries.

( $Emp_{j,t}$ : Number of employed people,  $Pop_{j,t}$ : Population,  $ES_{j,t-1}$ : Share of online shopping,  $D_j$ : Non-Seoul metropolitan areas dummy,  $X_{j,t-1}$ : Control variables,  $\mu_j$ : Region fixed effects,  $\delta_t$ : Time fixed effects)

The main explanatory variable of interest—the spread of e-commerce platform use—was based on the share of online shopping ( $ES_{j,t-1}$ ). The share of online shopping was calculated as the percentage of online e-commerce purchases in the total credit card spending of the regional residents, based on the city-county-district level credit card data. The regional gap was identified through the interaction term between the share of online shopping and non-Seoul metropolitan areas dummy ( $D_j$ ), and the dependent variable was the number of employed people per 10,000 regional residents.<sup>9</sup> Region fixed effects ( $\mu_j$ ) and time fixed effects ( $\delta_t$ ) were also included to control for the influence of unobserved regional characteristics and national macroeconomic changes.<sup>10</sup>

If Equation (1) is estimated as specified, endogeneity between the regional growth of online shopping and the regional employment

may cause bias in the model. For example, unobserved factors, such as the social capital of each region and local government policies, may have affected both online shopping and regional employment. There is also the possibility of reverse causality where the increase in online shopping was caused by the decline of regional retailers. To mitigate such bias, we constructed a shift-share instrumental variable (IV) that reflects the differences in shopping patterns by age group and shift to online sales by product (see Box 2). In addition, all explanatory variables used the lagged value ( $t-1$ ).

## A. Overall Employment in the Retail Industry

The analysis shows that the growth of e-commerce reduced employment in the retail industry of non-Seoul metropolitan areas.<sup>11</sup> Specifically, when the share of online sales increased by 1 percentage point, employment in the retail industry of the Seoul metropolitan area did not change significantly, while 8.3 people out of 10,000 regional residents experienced job loss in non-Seoul metropolitan areas.<sup>12</sup>

<sup>9</sup> The microdata from the Census on Establishments by Statistics Korea was utilized to identify the number of employed people by industry at the city-county-district level.

<sup>10</sup> In reference to prior studies, the control variables included regional differences in property and income (log(property tax per capita) and the number of registered vehicle per capita), industrial structure (share of manufacturing industry, wholesale and retail industry, food and accommodation industry, and transportation and warehousing industry), employment structure (employment rate), and demographics (population increase rate, share of female population, and average number of household members).

<sup>11</sup> The coefficients of employment across all industries and all service industries were estimated to be negative but statistically insignificant. This paper's estimation is that a number of factors, aside from online shopping, affected the changes in the employment across all industries or all service industries.

<sup>12</sup> In the estimation equation for total employment in the retail industry, the estimated coefficient for the Seoul

**[Table 1] Online Shopping and Employment in the Retail Industry**

(Number of employed people per 10,000 residents)	Base model	IV estimation
Share of online shopping	-2.00 (2.24)	-2.91 (4.02)
Share of online shopping × non-Seoul metropolitan areas dummy	-4.79*** (1.35)	-5.42*** (2.09)
Control variables	○	○
Region fixed effects	○	○
Time fixed effects	○	○
Number of observations	1,518	1,518
within-R <sup>2</sup>	0.457	0.456

Notes: 1) Figures in parentheses are heteroskedasticity-robust standard errors.  
 2) \*, \*\*, and \*\*\* indicate significance at

the 10%, 5%, and 1% levels respectively.

Such a decrease in employment in the retail industry of non-Seoul metropolitan areas was concentrated in the self-employed business group for the most part. When total employment was divided into the self-employed business group (self-employed and employees of sole proprietors<sup>13</sup>) and the corporation group,<sup>14</sup> the corporation group saw a slight increase in employment, while the self-employed business group saw a significant decrease (down by 9.8 people).<sup>15</sup>

**[Figure 5] Changes in Total Employment in the Retail Industry of Non-Seoul Metropolitan Areas<sup>1)</sup>**



Note: 1) Changes associated with a 1%p increase in the share of online shopping

Source: Authors' calculations

metropolitan area ( $\hat{\beta}_1$ ) is statistically insignificant, but that of non-Seoul metropolitan areas ( $\hat{\beta}_1 + \hat{\beta}_2$ ) was statistically significant at the 5-percent level (p-value of 0.02).

<sup>13</sup> Employees of a sole proprietor refers to regular, temporary, daily workers and other types of workers employed by a sole proprietor.

<sup>14</sup> Businesses are divided into sole proprietors, corporations, non-corporate organizations, and central and local governments according to their organizational structure. As most of the businesses are corporations, with the exception of sole proprietors, the corporation group in the following will thus refer to the group excluding sole proprietors for the convenience of analysis.

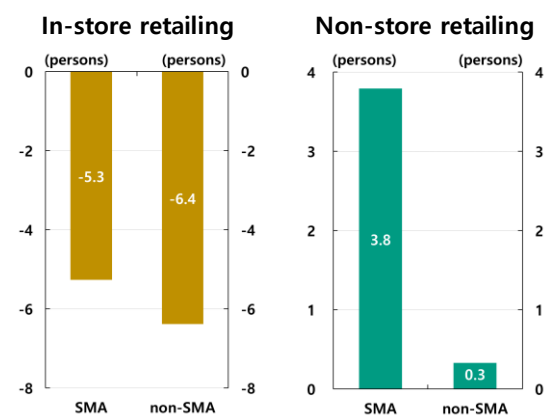
<sup>15</sup> The decrease in the number of self-employed retailers in non-Seoul metropolitan areas (down by 6.1) is equal to 2.9 percent of 212 self-employed retailers per 10,000 non-Seoul metropolitan area residents in 2023.

## B. Presence of Physical Stores and Regional Polarization

The diverging impacts on employment in the retail industry of the Seoul metropolitan area and non-Seoul metropolitan areas (i.e., regional polarization) are interpreted as the result of the concentration of non-store retailing's growth (including distance selling) in the Seoul metropolitan area following the growth of online shopping.

First of all, the number of self-employed retailers with physical stores decreased both in non-Seoul metropolitan areas (down by 6.4) and the Seoul metropolitan area (down by 5.3) due to the growth of online platforms, but non-Seoul metropolitan areas exhibited a slightly bigger decrease. This may be attributable to a lower online sales adoption rate by self-employed businesses in non-Seoul metropolitan areas (4.7 percent) compared with that in the Seoul metropolitan area (7.3 percent) (Figure 7).<sup>16</sup> However, the regional gap was much wider in non-store retailing. The number of self-employed non-store retailers in the Seoul metropolitan area increased by 3.8 individuals, while non-Seoul metropolitan areas saw an increase of only 0.3. This may be attributable to the Seoul metropolitan area's advantage in sales—including front- and back-end infrastructure such as large wholesale markets, fulfillment centers, and IT companies—not only for large e-commerce platform businesses but also for small- and medium-scale, self-employed distance-selling businesses.

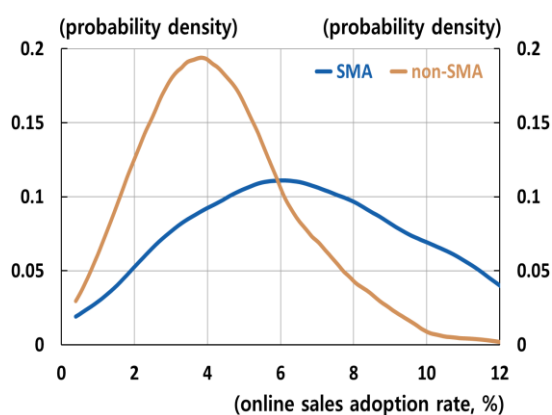
[Figure 6] Changes in the Number of Self-employed Individuals Depending on the Presence of Physical Stores<sup>1)</sup>



Note: 1) Changes associated with a 1%p increase in the share of online shopping

Source: Authors' calculations

[Figure 7] Distribution of Self-employed In-store Retailers' Online Sales Adoption Rate by Local Government Unit



Source: Microdata from the Economic Census (2020), authors' calculations

## C. Polarization of Self-employed In-store Retailers

This section illustrates that the growth of e-commerce platforms has led to the polarization

<sup>16</sup> The next section will analyze in detail whether the gap in the online sales adoption rate had an actual impact.

of regional self-employed in-store retailers as well. Relatively steady growth has been posted by businesses that use both online and offline sales channels, have diversified into products less susceptible to online transition, or are large in scale, whereas others have experienced a deterioration in performance.

### (Polarization Based on Online Sales Adoption)

Self-employed individuals in in-store retailing who also engage in online sales may be better positioned to adapt to the expansion of e-commerce platforms. This flexibility can help mitigate the contraction in offline sales or potentially create opportunities for growth. To verify this, a model was established by modifying Equation (1) to replace the non-Seoul metropolitan areas dummy with regional dummies that correspond to the top and bottom 10 percent in terms of online sales adoption among self-employed in-store retailers ( $H_j$  and  $L_j$ ).<sup>17</sup>

$$\frac{Emp_{j,t}}{Pop_{j,t}} = \beta_0 + \beta_1 ES_{j,t-1} + (\beta_2 L_j + \beta_3 H_j) ES_{j,t-1} + X_{j,t-1} \gamma + \mu_j + \delta_t + \epsilon_{j,t} \dots (2)$$

The analysis indicates that regions with higher rates of online sales adoption experienced a smaller decline of 2.2 people in the number of

self-employed individuals compared to regions with lower online sales adoption rates. This suggests that the adoption of online sales and the strengthened competitiveness of in-store retailers partly offset the negative impact of the expansion of e-commerce platforms.

[Figure 8] Changes in the Number of Self-employed Individuals in In-store Retailing by Online Sales Adoption Rate<sup>1)</sup>



Note: 1) Regions are classified into the top 10%, bottom 10%, and the middle group, based on the share of self-employed in-store retailers with online sales.

Source: Authors' calculations

### (Polarization by Product Category)

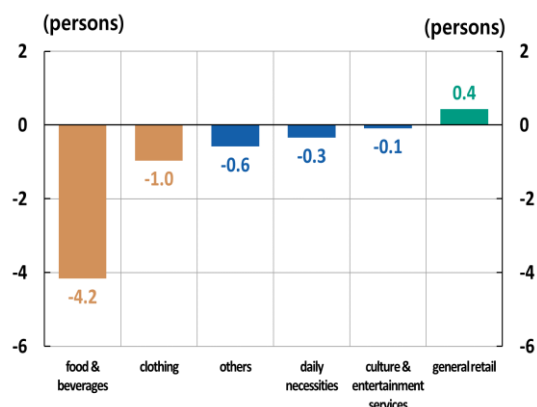
The impact of e-commerce platforms on self-employment in in-store retailing varies by product category<sup>18</sup> (Figure 9). The largest declines in the number of self-employed individuals were observed in food and beverage

<sup>17</sup> To mitigate endogeneity, the online sales adoption rate was calculated using data from the 2015 Economic Census, which precedes the analysis period (2016-2022).

<sup>18</sup> In-store retail businesses are classified into eight categories at the group level, based on the types of products: general retail businesses; retail sales of foods, beverages and tobacco in specialized stores; retail sales of household electric appliances and information and communications equipment; retail sales of textiles, clothing, footwear and leather goods (clothes); retail sales of other daily necessities; retail sales of cultural, entertainment and recreation goods; retail sales of fuel; retail sales in other specialized stores.

retail (down by 4.2 people) and clothing retail (down by 1.0 person), following the expansion of online shopping. However, general retail businesses, including convenience stores, did not experience any decline.

**[Figure 9] Changes in the Number of Self-employed Individuals in In-store Retailing by Product Category<sup>1)</sup>**



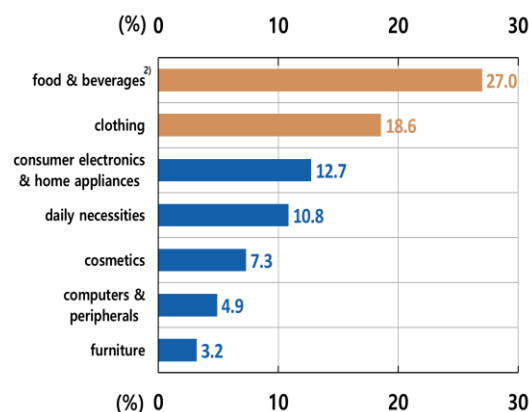
Note: 1) Changes associated with a 1%p increase in the share of online shopping

Source: Authors' calculations

This is attributed to the sales of food and beverage products (including agricultural, livestock, and fishery products) and clothing largely shifting to online sales (Figure 10). In particular, for food and beverage products, the expansion of an early morning fresh food delivery service<sup>19</sup> led to a growth rate of 22.5 percent on an annual average in online sales turnover over the past five years (2019-2024), which exceeds the average for other product categories (8.6 percent) by more than 2.5 times.

In contrast, general retail businesses are estimated to have offset the negative impact of the transition to online sales through their diversified product portfolios.<sup>20</sup>

**[Figure 10] Composition of Online Sales by Product Category<sup>1)</sup>**



Notes: 1) Excluding service goods, as of 2024

2) Including agricultural, livestock, and fishery products

Source: KOSTAT

### (Polarization by Business Size)

Amid the rapid transition to online shopping, businesses are likely to have found themselves with varying capacities to respond depending on their size. To examine this, the log value of the sales ratio between businesses in the top and bottom 20 percent multiplied by 100 was used as the dependent variable, and the effect of e-commerce platform expansion on the sales growth gap was analyzed.<sup>21</sup> The result shows that a 1-percentage-point increase in the share

<sup>19</sup> Company C launched an early morning fresh food delivery service in 2018, allowing orders placed before midnight to be delivered by 7 a.m. in the following morning.

<sup>20</sup> A representative example is convenience stores, which enhanced their competitiveness by introducing a variety of low-priced private brand (PB) products that are not available through online channels.

<sup>21</sup> Changes in sales were tracked for a fixed cohort of self-employed in-store businesses in the top and bottom 20 percent of regional sales, based on 2015 data, which precedes the analysis period. The sales data by

of online shopping widened the sales growth gap by 5.1 percentage points in the Seoul metropolitan area and by 7.2 percentage points in non-Seoul metropolitan areas. This suggests that polarization between large and small businesses has been more pronounced in non-Seoul metropolitan areas.

**[Table 2] Online Shopping and Sales Growth Rate Gap between Large and Small Self-employed In-store Retailers**

(Sales ratio on a logarithmic scale <sup>1)</sup> )	Default model	IV estimation
Share of online shopping	0.58 (0.95)	5.05** (2.49)
Share of online shopping × non-Seoul metropolitan areas dummy	0.68 (0.60)	2.12** (1.08)
Control variables	○	○
Region fixed effects	○	○
Time fixed effects	○	○
Number of observations	1,518	1,518
within-R <sup>2</sup>	0.269	0.255

Notes: 1) 100 x Log value of the sales ratio between the businesses in the top and bottom 20% cohorts as of 2015.

2) Figures in parentheses are

business was sourced from the microdata of KOSTAT's Statistical Business Registers.

<sup>22</sup> This may be attributed to a number of other factors affecting the industry (e.g., import and export logistics, demands from manufacturing businesses) in addition to online shopping.

heteroskedasticity-robust standard errors.

3) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

## D. Diverging Impacts on Related Industries

### (Transportation and Warehousing Industry)

For this analysis, the transportation and warehousing industry is divided into two sectors: courier services (parcel delivery services) and warehousing. A 1-percentage-point increase in the share of online shopping is associated with an increase in employment in courier services by 4.7 people per 10,000 residents in the Seoul metropolitan area and 6.6 people in non-Seoul metropolitan areas. The greater increase in non-Seoul metropolitan areas is attributed to lower population density, which creates higher demand for delivery service workers. While warehousing also showed a positive coefficient, the value was not statistically significant.<sup>22</sup>

**[Table 3] Online Shopping and Employment in the Transportation and Warehousing Industry**

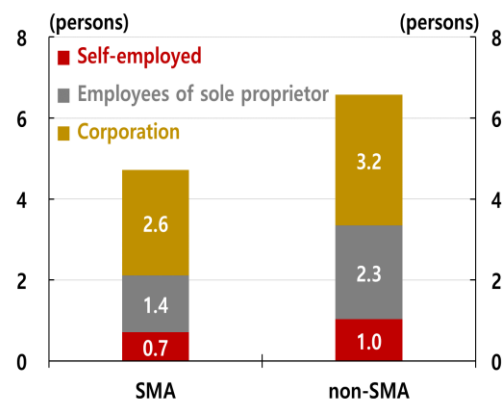
(Number of employed people per 10,000 residents)	(1) Courier Service		(2) Warehousing	
	Default model	IV estimation	Default model	IV estimation
Share of online shopping	0.59 (0.59)	4.72*** (1.30)	0.67 (0.43)	1.57 (1.60)
Share of online shopping × non-Seoul metropolitan areas dummy	0.51 (0.33)	1.86** (0.74)	0.19 (0.25)	0.54 (0.66)
Control variables	○	○	○	○
Region fixed effects	○	○	○	○
Time fixed effects	○	○	○	○
Number of observations	1,518	1,518	1,518	1,518
within-R <sup>2</sup>	0.458	0.368	0.096	0.089

Notes: 1) Figures in parentheses are heteroskedasticity-robust standard errors.  
 2) \*, \*\*, and \*\*\* indicate significance at the

10%, 5%, and 1% levels respectively.

Changes in employment in the courier service industry by employment status following the growth of e-commerce platforms show limited increases in the number of self-employed individuals in both the Seoul metropolitan area and non-Seoul metropolitan areas, while the number of employees for sole proprietors and corporations has grown significantly. It is notable in this instance that a considerable portion of this increase (1.4 people in the Seoul metropolitan area and 2.4 people in non-Seoul metropolitan areas) was classified as other types of workers. "Other types of workers" refers to individuals who are not paid a regular salary but are compensated based on their performance, such as per-task commissions. This likely reflects the prevalence of non-standard forms of employment, such as contract-based work, in the courier service industry.

**[Figure 11] Changes in Employment in the Courier Service Industry by Employment Status<sup>1)</sup>**



Note: 1) Changes associated with a 1%p increase in the share of online shopping

Source: Authors' calculations

## (Consumption of Time-intensive Services)

While online shopping may substitute offline sales in sectors including groceries, it does not fully replace all offline service businesses. Previous research corroborates this by reporting that time saved through online shopping instead leads to increased demand for time-intensive services (Relihan, 2022). Time-intensive services, such as gyms, skincare salons, and cafes, require consumers to be physically present and invest time in the experience, making them less susceptible to online substitution.

Equation (1) examines whether the expansion of online shopping increases spending on time-intensive services in Korea as well,<sup>23</sup> and the analysis shows that a 1-percentage-point increase in the share of online shopping raised annual spending on time-intensive services per capita by KRW 36,000 in the Seoul metropolitan area and by KRW 41,000 in non-Seoul metropolitan areas.<sup>24</sup> The regional gap was not statistically significant.

**[Table 4] Changes in Consumption of Time-intensive Services by Online Shopping Share**

(Consumption per capita, KRW 10,000)	Default model	IV estimation
Share of online shopping	1.50* (0.78)	3.60** (1.76)
Share of online shopping × non-Seoul metropolitan areas dummy	0.33 (0.75)	0.50 (0.68)
Control variables	○	○
Region fixed effects	○	○
Time fixed effects	○	○
Number of observations	1,518	1,518
within-R <sup>2</sup>	0.173	0.170

Notes: 1) Figures in parentheses are heteroskedasticity-robust standard errors.  
 2) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

## (Commercial Real Estate)

The expansion of online platforms has reduced the demand for physical stores, as it eliminates the spatial constraints of in-person services (Zhang et al., 2016). Recently, the vacancy rate of commercial buildings has generally increased

<sup>23</sup> Based on previous studies, this paper defines time-intensive services as cafes, personal care services (e.g., barber shops, skincare salons), physical activity-related services (e.g., gyms, swimming pools, indoor and outdoor stadiums), and operation of public performance facilities. Due to data limitations, spending on these services was measured using the sales of businesses providing the said services, based on KOSTAT's business census data and the microdata on Statistical Business Registers.

<sup>24</sup> Since the estimated coefficient may vary depending on how the scope of time-intensive services is defined, the direction of the effect is considered more important than its magnitude.

and this trend is more pronounced in non-Seoul metropolitan areas (Figure 12). To examine the impact of increased online shopping on the regional vacancy rate of small-scale commercial buildings, a pooled OLS analysis was conducted using data from 2021 and 2022—years with the most available data on vacancy rates. Control variables included real interest rates and GRDP growth rates, in addition to those used in the employment analysis.

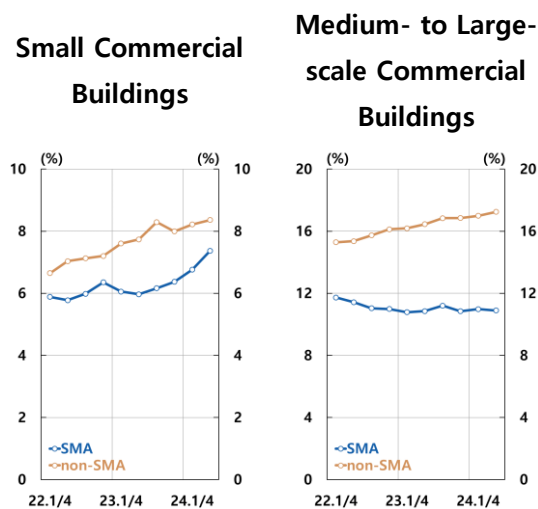
The analysis showed that a 1-percentage-point increase in the share of online shopping is associated with a 0.57-percentage-point rise in the vacancy rate of small-scale commercial buildings in the Seoul metropolitan area and a 0.69-percentage-point rise in non-Seoul metropolitan areas. The negative impact was more significant in non-Seoul metropolitan areas.

**[Table 5] Online Shopping and Vacancy Rate of Commercial Buildings**

(Vacancy rate, %)	Default model	IV estimation
Share of online shopping	0.20 (0.23)	0.57* (0.32)
Share of online shopping × non-Seoul metropolitan areas dummy	0.09* (0.06)	0.12** (0.06)
Control variables	○	○
Number of observations	206	206
R <sup>2</sup>	0.121	0.080

Notes: 1) Figures in parentheses are heteroskedasticity-robust standard errors.  
 2) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

**[Figure 12] Vacancy Rate of Commercial Buildings by Region<sup>1)</sup>**



Note: 1) Simple average of the vacancy rate across 17 metropolitan cities and provinces  
 Source: Korean Real Estate Board (REB)

### 3. Impact of Food Delivery Platforms' Growth

#### (Theoretical Background)

Food delivery platforms (hereafter "delivery platforms") may have expanded the dining-out market overall by improving consumer convenience and delivery efficiency (Azzoni et al., 2025). This is because, while e-commerce platforms tend to substitute traditional in-store retailing (i.e., in-person shopping), delivery platforms are rather complementary to dining-

out services.<sup>25</sup> The effect of increased food delivery manifests as (1) a substitute for home dining (i.e., cooking at home), leading to overall market expansion, and (2) a substitute for dining at restaurants, resulting in business stealing due to the competition among restaurants. Previous studies suggest that the substantial market expansion in the first case<sup>26</sup> has contributed to increased employment in restaurants, either through the extensive margin (growth in the number of restaurants) or the intensive margin (higher sales per restaurant).

Even if the overall size of the proverbial “pie” in the industry has grown, escalated competition and polarization within the industry may still have emerged due to technological changes. One reason is that the expansion of restaurant supply may have intensified competition, as the delivery platforms facilitated business model diversification and lowered entry barriers.<sup>27</sup> Another reason is that platforms reduced consumers’ search costs and broadened their options, while simultaneously exposing suppliers to a wider range of competitors than before. This may have widened the gap between restaurants, as well-capitalized or

established restaurants with regional footholds may further consolidate their positions through these platforms.<sup>28</sup>

However, unlike e-commerce platforms that caused the regional polarization in the retail industry, the impact of delivery platforms is unlikely to exhibit distinct regional disparities, such as concentrated growth in the Seoul metropolitan area. The reason is that restaurants are inherently local services with strong spatial constraints. Consumers generally try to avoid long wait times between food preparation and dining, which naturally limits the delivery range. As a result, instead of large platforms located in the Seoul metropolitan area replacing local restaurants and triggering regional imbalances, the industry is more likely to retain its current structure where a large number of local restaurants keep providing horizontally differentiated services (Kim & Lee, 2024).

### **(Analytic Methodology)**

In this chapter, the impact of the growth of delivery platforms on employment in regional

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<sup>25</sup> Restaurants primarily focus on food preparation, with delivery playing a subordinate role. Food delivery platforms enhance the efficiency of the process by handling the delivery alone, while leaving the food preparation to restaurants.

<sup>26</sup> About half of the total sales of food delivery platforms in the United States is attributed to the effects of market expansion (Azzoni et al., 2025; Collison, 2020).

<sup>27</sup> New businesses have emerged to be competitive without the need for dine-in spaces, relying solely on small kitchens. In addition, the diminishing importance of traditional competitive factors such as location and interior design has lowered entry barriers.

<sup>28</sup> These restaurants can easily attract new customers with their accumulated review data. In addition, they can capitalize on their financial resources to appear at the top of search results on the delivery apps, manage reviews, use multiple platforms, and offer discounts. However, small or newly established restaurants can also benefit from these platforms as a stepping stone for growth by gaining easier exposure to customers.

restaurants is empirically analyzed.<sup>29</sup> For the analysis, a panel fixed effects model at the city-county-district level was specified, as shown in Equation (3). The analysis covers the period from 2020 to 2022, considering the significant rise of delivery platforms since the outbreak of the pandemic and data limitations.

$$\frac{Emp_{j,t}}{Pop_{j,t}} = \beta_0 + \beta_1 DR_{j,t-1} + \beta_2 D_j \times DR_{j,t-1} + X_{j,t-1}\gamma + \mu_j + \delta_t + \epsilon_{j,t} \dots (3)$$

( $Emp_{j,t}$ : Number of employed people,  $Pop_{j,t}$ : Population,  $DR_{j,t-1}$ : Share of online food delivery service,  $D_j$ : Non-Seoul metropolitan areas dummy,  $X_{j,t-1}$ : Control variables<sup>30</sup>,  $\mu_j$ : Region fixed effects,  $\delta_t$ : Time fixed effects)

The main explanatory variable of interest is the share of online food delivery in the total sales of regional restaurants ( $DR_{j,t-1}$ ). This share is calculated based on BC Card data at the city-county-district level, using the proportion of the restaurant sales made through delivery apps in the total purchases made in regional restaurants. The rest of the model structure follows Equation (1). In addition, instrumental variables are constructed by leveraging the fact that dining-out and delivery platform usage rates differ by age group (see Box 2).

## A. Overall Employment in the Food Service Industry

The result of the empirical analysis indicates that the expansion of delivery platforms has led to an increase in overall employment in regional restaurants. A 10-percentage-point increase<sup>31</sup> in the share of online food delivery within a region is estimated to increase the number of employees by 14.1 per 10,000 people in the food service industry. However, no regional differences were found to be statistically significant, indicating there was no noticeable concentration in a specific region, as in the retail industry. This aligns with the prediction that local supply chains will be able to meet local demand regardless of the adoption of delivery platforms as restaurants remain primarily local services.

**[Table 6] Online Food Delivery and Employment in the Food Service Industry**

(Number of employed people per 10,000 residents)	Default model	IV estimation
Share of online food	0.73*** (0.21)	1.38*** (0.27)

<sup>29</sup> While previous studies have focused on the effects of adopting delivery services at individual restaurants (Lee & Chun, 2022; Lim & Im, 2023; Kim & Lee, 2024), this paper analyzes the impact of delivery services across regions.

<sup>30</sup> Following previous studies, control variables reflect regional differences in capital and income levels, industrial structures, employment structures, and demographics as specified in Equation (1). Instead of the average household size, the share of single-person households is used, and the log value of the number of regional visitors is added.

<sup>31</sup> While the share of online shopping during the analysis period increased by an annual average of 1.2 percentage points, the share of online food delivery services rose by an annual average of 10.2 percentage points over the same period. Accordingly, the impact of online food delivery is evaluated based on a 10-percentage-point increase.

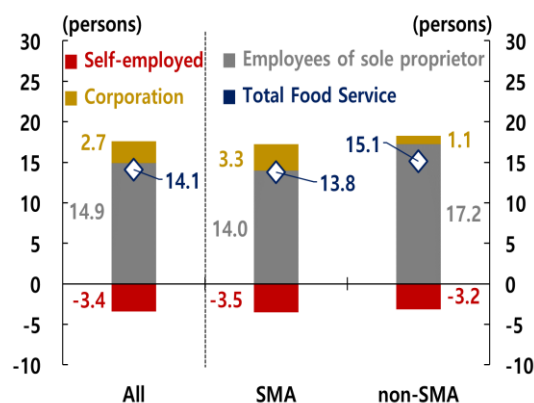
delivery services		
Share of online food delivery services × non-Seoul metropolitan areas dummy	0.25* (0.15)	0.14 (0.24)
Control variables	○	○
Region fixed effects	○	○
Time fixed effects	○	○
Number of observations	654	654
within-R <sup>2</sup>	0.662	0.647

Notes: 1) Figures in parentheses are heteroskedasticity-robust standard errors.  
2) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

In contrast, the number of self-employed individuals has declined with the growth of delivery platforms. A 10-percentage-point increase in the share of online delivery is estimated to reduce the number of self-employed individuals by 3.5 per 10,000 people in the Seoul metropolitan area and 3.2 in non-Seoul metropolitan areas.<sup>32</sup> The overall increase in employment as mentioned above, in spite of the decrease in self-employed individuals, results from a rise in employees of sole

proprietors<sup>33</sup> and corporate employment, which includes directly managed franchise branches. This implies that while less competitive businesses have exited the market, leading to a reduction in the number of self-employed individuals, the surviving businesses have expanded their employment in line with the growth of the dining-out industry, which indicates the ongoing rise of polarization within the sector.

[Figure 13] Changes in Restaurant Employment by Employment Status<sup>1)</sup>



Note: 1) Changes associated with a 10%p increase in the share of online food delivery services

Source: Authors' calculations

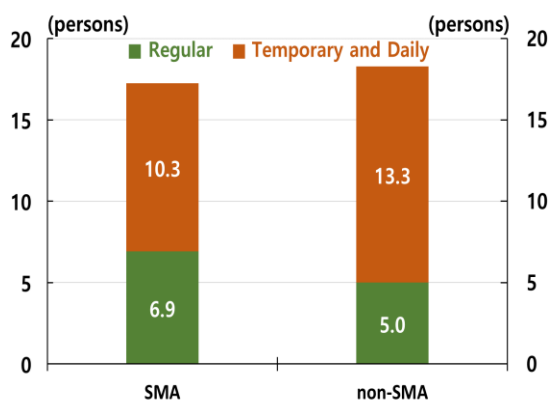
Meanwhile, two-thirds of the increase in wage and salary workers through the expansion of delivery platforms consisted of temporary and daily workers. This trend was more pronounced in non-Seoul metropolitan areas, where 73 percent of the increased wage and salary workers were temporary and daily workers—13 percentage points higher than the

<sup>32</sup> The decline of 3.4 self-employed individuals in the food service industry across Korea corresponds to 2.5 percent of the 134 self-employed individuals in the food service industry per 10,000 people in Korea as of 2023.

<sup>33</sup> Since restaurants have a high proportion of sole-proprietor businesses (83.7 percent in 2023), employment mainly increased among employees of these businesses.

corresponding share of 60 percent in the Seoul metropolitan area.

**[Figure 14] Changes in Wage and Salary Workers in the Food Service Industry<sup>1)</sup>**



Note: 1) Changes associated with a 10%p increase in the share of online food delivery services

Source: Authors' calculations

## B. Polarization among Self-employed Businesses in the Food Service Industry

As noted earlier, the expansion of the food service industry subsequent to the adoption of delivery platforms, coupled with intensified competition, has led to growing polarization among self-employed businesses. This section analyzes which types of self-employed businesses have been positively or negatively

affected by delivery platforms.

### (Polarization by Size)<sup>34</sup>

Regarding the business size, the results indicate that large-scale businesses grew more rapidly in line with the expansion of delivery platforms, and this trend was more pronounced in non-Seoul metropolitan areas. Specifically, a 10-percentage-point increase in the share of online food delivery widened the sales growth gap between the top and bottom 20 percent of businesses within a region by 3.2 percentage points in the Seoul metropolitan area and by 6.3 percentage points in non-Seoul metropolitan areas.<sup>35</sup> The greater polarization among self-employed businesses in non-Seoul metropolitan areas is likely because small-scale businesses are less adaptable to technological changes and face higher relative costs when using platforms.

**[Table 7] Online Food Delivery and Growth Gap between Large- and Small-scale Restaurants**

(Sales ratio on a logarithmic scale <sup>1)</sup> )	Default model	IV estimation
Share of	0.24** (0.24)	0.32* (0.18)

<sup>34</sup> This section applied the same methodology as that used in the earlier analysis of self-employed in-store retailers, but with two differences: the explanatory and control variables were replaced by those in Equation (3), and the cohorts of the top and bottom self-employed businesses by regional sales were selected based on the data from 2019, prior to the full-scale expansion of delivery platforms.

<sup>35</sup> Some previous studies (Kim & Lee, 2024) reported that small-scale restaurants achieved higher sales growth rates than large-scale ones when using delivery apps. However, the said study analyzed the impact of delivery app adoption at the individual business level, whereas this study examines the effect of platform expansion across all restaurants within a region, including those that do not use delivery apps. (Only 7.1 percent of restaurants with sales below KRW 50 million use delivery apps, much lower than the total average of 31.7 percent).

online food delivery services		
Share of online food delivery services × non-Seoul metropolitan areas dummy	0.21** (0.21)	0.31** (0.13)
Control variables	o	o
Region fixed effects	o	o
Time fixed effects	o	o
Number of observations	654	654
within-R <sup>2</sup>	0.691	0.689

- Notes: 1) 100 x Log value of the sales ratio between the businesses in the top and bottom 20% cohorts as of 2019.  
2) Figures in parentheses are heteroskedasticity robust standard errors.  
3) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

### (Polarization by Business Age)

The analysis examines whether delivery platforms are more advantageous to newly established self-employed businesses or to established businesses with a longer history. “New businesses” are defined as those in

operation for 1-2 years, while “established businesses” are those operating for (1) at least 3 years or (2) at least 7 years. The result<sup>36</sup> suggests that the growth of delivery platforms is negatively associated with the sales growth among new self-employed businesses. A 10-percentage-point increase in the share of online food delivery reduced the sales growth of new businesses by approximately 2.7 percentage points relative to established businesses.<sup>37</sup> This indicates that platform visibility and comparison mechanisms, such as order counts and reviews, may have reinforced the positions of established local businesses.

**[Table 8] Online Food Delivery and Growth Rate Gap between Established and New Businesses**

(Sales ratio on a logarithmic scale <sup>1)</sup> )	Compared to businesses with 3+ years of experience	Compared to businesses with 7+ years of experience
Share of online food delivery services	-0.27** (0.14)	-0.27** (0.13)
Share of online food delivery services × non-Seoul metropolitan areas dummy	0.07 (0.08)	-0.04 (0.10)

<sup>36</sup> Since business age is an element that changes over time, instead of fixing the cohort to 2019, this study calculates the average sales by business age each year. The dependent variables, based on the definition of established businesses, are  $\log(S_{i,1,2t,i\#}/S_{i,3+1,i\#}) \times 100$  and  $\log(S_{i,1,2t,i\#}/S_{i,7+1,i\#}) \times 100$  ( $S_{i,t}$ :  $t$  denotes the year,  $j$  denotes the region, and  $i$  denotes the average sales by business age).

<sup>37</sup> The result remained similar when defining established businesses as those with more than 3 years or 7 years of business age, while no statistically significant differences were observed across regions.

Control variables	o	o
Region fixed effects	o	o
Time fixed effects	o	o
Number of observations	654	654
within-R <sup>2</sup>	0.107	0.215

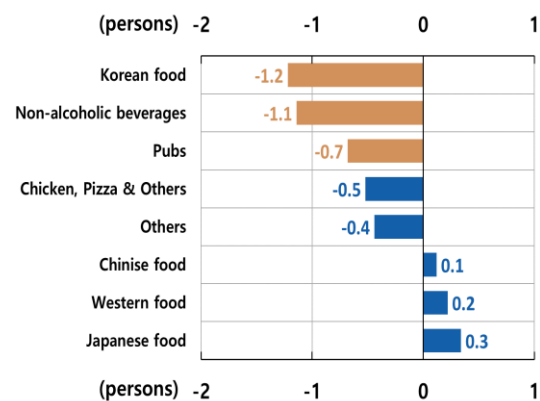
- Notes: 1) 100 x Log value of average sales ratio of 1-2-year-old businesses to the ones aged more than 3 years (or 7 years).  
2) Figures in parentheses are heteroskedasticity-robust standard errors.  
3) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

### (Polarization by Cuisine Type)

Different types of food vary widely in terms of the ease of delivery and importance of a dine-in space. Accordingly, the impact of delivery platforms on self-employed businesses is expected to differ depending on the specific restaurant type. When decomposing changes in the number of self-employed individuals by type of cuisine, restaurants serving Korean food, non-alcoholic beverages (such as coffee), and pubs all showed a decline in number as the share of online food delivery increased, while those serving Japanese, Western, and Chinese food recorded increases. Although multiple factors contributed to this divergence, differences in delivery app usage rates across categories appear to have played a substantial role. The average delivery app usage data from the past five years demonstrates that categories of restaurants that experienced declines in the number of self-employed individuals, such as pubs (7.8 percent),

Korean food (19.4 percent), and non-alcoholic beverages (26.4 percent), had relatively low shares of online delivery orders, while category that experienced increases, such as Western food (41.0 percent), Chinese food (41.6 percent), and Japanese food (44.9 percent), had relatively high shares (Restaurant Management Status Survey).

[Figure 15] Changes in the Number of Self-employed Individuals by Restaurant Category<sup>1)</sup>



Note: 1) Changes associated with a 10%p increase in the share of online food delivery services

Source: Authors' calculations

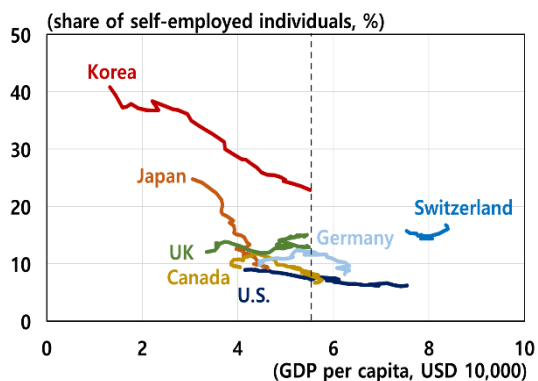
## III. Analysis of the Effects of Financial Support in Response to Structural Change

### 1. Polarization of Self-employed Businesses and Financial Support

The polarization of self-employed businesses driven by online platforms has increased the

number of closures by those unable to remain competitive. Furthermore, the share of self-employed businesses in Korea stood at 22.9 percent in 2024, which is substantially higher than other major economies. This persistent oversupply has further intensified the pressure for restructuring. Even after taking into account Per-capita income levels, the proportion of self-employed individuals in Korea has remained higher than in other countries for decades (Figure 16). As a result, the oversupply situation has yet to be resolved. The number of retail businesses and accommodation and food service businesses per 1,000 people stands at 19.5 and 16.6, respectively – levels that remain well above those observed in other major countries.

**[Figure 16] Share of Self-Employed Individuals<sup>1)</sup> and GDP per Capita<sup>2)</sup> in Major Economies**

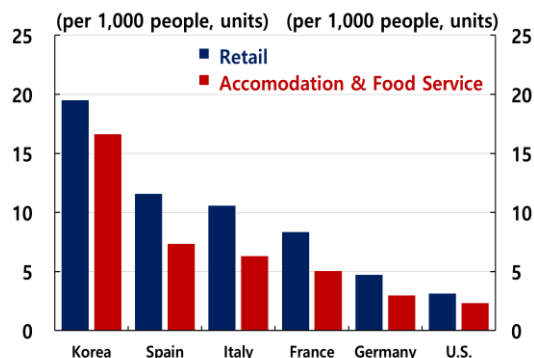


Notes: 1) Number of self-employed individuals as a share of total employment (including unpaid family workers)

2) Based on PPP, as of 2021

Source: OECD, ONS, IMF

**[Figure 17] Number of Businesses per 1,000 People in Major Economies<sup>1)</sup> (2022)**

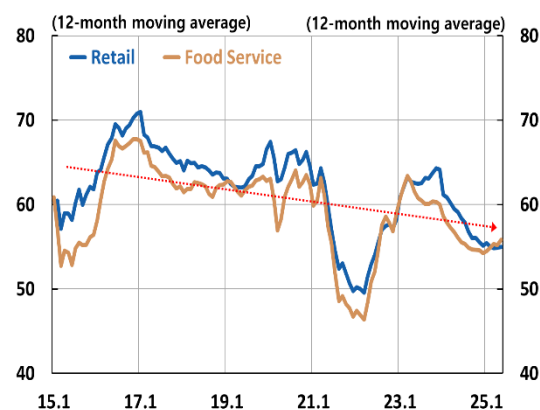


Note: 1) U.S. figures based on establishments; Euro area figures based on local units.

Source: KOSTAT, Eurostat, U.S. Census Bureau, OECD

Even before the full-scale proliferation of online platforms, the self-employment sector in Korea was already oversaturated, resulting in low profitability. Now, with the added impact of the rapid shifts in the industrial structure triggered by the expansion of platforms, a large number of self-employed businesses have been left in a marginal state, standing at a crossroads between continued operation and closing.<sup>38</sup> In fact, the Business Sentiment Index (BSI) for small business owners has shown a downward trend over the past decade (Figure 18).

**[Figure 18] BSI for Small Business Owners**

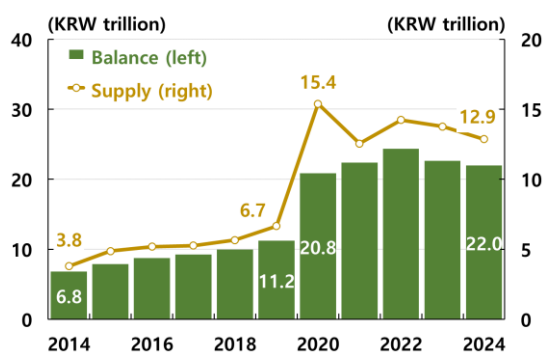


Source: Ministry of SMEs and Startups

<sup>38</sup> In 2024, the number of business closure filings (individuals and corporations combined) reached a record high of 1.009 million, with retail and food service industries accounting for 44.9 percent of the total (National Tax Service).

In response to the worsening business conditions faced by the self-employed, the government has enhanced financial support by extending credit guarantees and loans. For example, the volume of re-guaranteed loans for small business owners through the Korea Federation of Credit Guarantee Foundations (KOREG) nearly doubled in the wake of the COVID-19 pandemic. Financial support for small businesses in the wholesale and retail trade and food service<sup>39</sup> has also increased significantly compared to pre-pandemic levels.

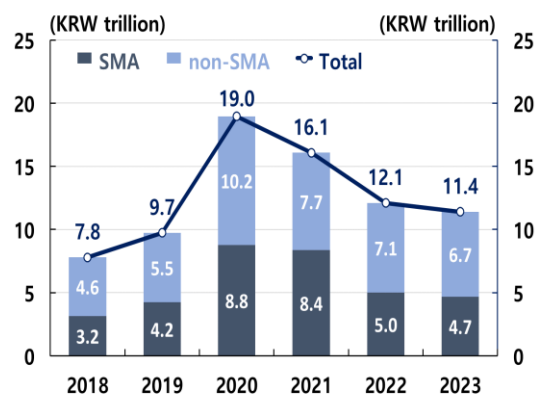
**[Figure 19] Amount of Re-guarantee Loans through the KOREG<sup>1)</sup>**



Note: 1) Based on year-end balance and annual supply amount of loans to small business owners.

Source: KOREG

**[Figure 20] Amount of Financial Support for Self-employed Businesses in Wholesale/Retail and Food Service**



Source: Statistical Business Registers, authors' calculations

The rationale for providing financial support to the self-employed lies in the fact that a significant share of them face credit rationing<sup>40</sup> and borrowing constraints, which limit their access to loans from commercial financial institutions due to factors such as information asymmetry and insufficient collateral. This leads to a market failure where investment falls short of the socially desirable level (Banerjee & Duflo, 2014). Correcting this imbalance and enabling each businesses to fulfill their growth potential can benefit the overall economy.

However, the effective realization of these positive effects is predicated upon the efficient provision of financial support (Kersten et al., 2017). Efficiency in this regard can be considered from two perspectives. First, financial assistance to self-employed businesses should facilitate additional investment and growth, rather than merely substituting for

<sup>39</sup> This includes credit guarantees, direct loans, and secondary subsidies from support institutions for the self-employed, such as local credit guarantee foundations and the Small Enterprise and Market Service.

<sup>40</sup> From the perspective of financial institutions, lending to the self-employed carries high default risk, coupled with a lack of information for assessing their management capabilities, and the difficulty of monitoring the use of loan funds. Furthermore, in the event of bankruptcy, higher costs are incurred for post-default resolution, such as asset liquidation (Arraiz et al., 2014).

existing investment<sup>41</sup> or crowding out private financing (Cerqua & Pellegrini, 2014). A substantial substitution effect creates a corresponding opportunity cost, which is why it is important to aim for additionality. Second, financial support should be directed toward enhancing the overall productivity of the economy. If loan funds flow to highly unproductive businesses rather than to those with strong competitiveness and growth potential, the misallocation of resources could undermine both economic growth and productivity (Caballero et al., 2008; Gopinath et al., 2017).

From this perspective, this chapter analyzes the effects of past financial support provided to self-employed businesses, with the aim of providing a basis for policy directions to improve the efficiency of the assistance schemes.

## 2. Analysis of the Effects of Financial Support for Self-employed Businesses

The analysis of the policy effects of financial support for self-employed businesses<sup>42</sup> uses microdata from the Statistical Business

Registers (KOSTAT), which provide a census of all businesses in Korea. The Statistical Business Registers comprise an individual establishment-level panel dataset that contains information on sales, the number of employees, and owner for each business, linked to data on policy support. The analysis covers the period from 2018 to 2023, the years for which policy support information is available, and is restricted to self-employed businesses in the wholesale/retail and food service sectors.<sup>43</sup>

To estimate the policy effects of financial support, this paper employs a Difference-in-Differences (DiD) model, as shown in Equation (4) (see Box 3).

$$Outcome_{i,t+1} = \beta_0 + \beta_1 Treat_i + \beta_2 Treat_i \times D_i + X_{i,t-1}\gamma + \mu_j + \delta_t + \epsilon_i \dots (4)$$

(*Outcome<sub>i,t+1</sub>*:  $\Delta\text{Log}(\text{sales})$  and  $\Delta$  Employment/business closure status, *Treat<sub>i</sub>*: Financial support dummy, *D<sub>i</sub>*: Characteristics dummy, *X<sub>i,t-1</sub>*: Control variables,  $\mu_j$ : Region fixed effects,  $\delta_t$ : Program-year fixed effects)

The treatment group consists of firms that received initial financial support in a given program year (t) between 2019 and 2022. As policy targets are not randomly selected, there may be selection bias, such as businesses with higher growth potential being more likely to

<sup>41</sup> Financial support may simply accelerate investments that the supported firm would have undertaken anyway (intertemporal substitution), or it may merely replace investments that would otherwise have been made by other firms, had they received the support (cross-sectional substitution).

<sup>42</sup> The analysis focuses on financial support among various support programs for the self-employed because it accounts for the majority of these policies by amount (over 90 percent) (Statistical Business Registers, 2023). Other forms of support include employment assistance, management consulting, and expansion of export channels.

<sup>43</sup> In this analysis, the term “self-employed” refers to individual businesses and their owners. Within the wholesale and retail trade sector, businesses engaged in automotive and parts sales were excluded from the sample.

receive financial support. Accordingly, in this paper, the control group (firms not receiving financial support) was selected using propensity score matching (PSM) to identify firms most similar in characteristics to those in the treatment group.<sup>44</sup> The dependent variable is business performance at time t+1, compared to the period before the support (t-1), taking into account the delayed effect of the policy. Therefore, the estimated coefficient represents the effect one year after receiving the support. Additionally, the heterogeneous policy effects of factors such as business location and firm characteristics were identified by including the interaction of the financial support dummy ( $Treat_i$ ) and the characteristics dummy ( $D_i$ ).

### A. Overall Effects on Self-employed Businesses in the Wholesale/Retail Trade and Food Service

First, this paper examined the effects of financial support on all recipient self-employed businesses, dividing the analysis into two periods: the unique environment of the year 2020 in light of COVID-19 response and the period excluding 2020. The analysis for the latter period showed that financial assistance significantly improved business performance of

self-employed businesses. Establishments that received financial support saw an 8.8-percent increase in sales and a 1.2-percent rise in employment,<sup>45</sup> and a 1.6-percentage-point decline in their probability of closure one year later, compared to when they did not receive support. However, in 2020, the effects of financial support on sales and employment growth were negligible,<sup>46</sup> with a substantial drop only observed in the probability of closure (down by 2.8 percentage points). Given that the primary goal of support for the self-employed during the pandemic was to prevent mass bankruptcies and closures rather than to increase sales, these results are consistent with expectations.<sup>47</sup>

[Table 9] Effects of Financial Support for Self-employed Businesses

Dependent variable	$\Delta$ Log(sales)	Business closure status <sup>1)</sup>	$\Delta$ Employment
<b>(Excluding Program Year 2020)</b>			
Policy support dummy	0.088*** (0.002)	-0.016*** (0.001)	0.009*** (0.003)
<b>(Program Year 2020)</b>			
Policy support dummy	0.008*** (0.003)	-0.028*** (0.001)	-0.013*** (0.004)

<sup>44</sup> Businesses that received support in their founding year were excluded from the analysis because no pre-support information was available for matching.

<sup>45</sup> This is calculated by dividing the employment increase of 0.009 people by the average number of employees prior to support.

<sup>46</sup> In general, when financial support leads to expanded investment, employment also increases. However, if labor-saving investments occur, employment may actually decrease. Typical examples include investments in automation such as kiosks and automatic cooking equipment. Around 2020, there may have been a rapid increase in labor-saving investments, as evidenced by a threefold rise in the share of restaurants adopting kiosks (from 1.5 percent in 2019 to 4.5 percent in 2021, according to the Survey on the Management Status of the Restaurant Business).

<sup>47</sup> Considering these special circumstances, the regression analysis below focuses on the period excluding 2020.

Control variables	○	○	○
Region fixed effects	○	○	○
Program-year fixed effects	○	○	○
Number of observations	636,830	750,097	636,830
(Pseudo) R <sup>2</sup>	0.182	0.064	0.167

- Notes: 1) Estimated coefficients represent the Average Marginal Effects (AME).  
2) Figures in parentheses are heteroskedasticity-robust standard errors clustered at the individual business level.  
3) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.  
4) Number of observations and R<sup>2</sup> are based on estimations excluding the 2020 program year.

## B. Effects Based on Business Characteristics

### (Effects by Region)

An analysis of the effects of financial support on the self-employed, which divided business locations into the Seoul metropolitan area and non-Seoul metropolitan areas to examine disparities in the effects, found that self-employed businesses in non-Seoul metropolitan areas experienced greater improvements in both sales (up by 0.9

percentage points) and employment (up by 0.018 people, or 2.8 percentage points) than their counterparts to a statistically significant degree.<sup>48</sup> This may be attributable to the relatively more severe borrowing constraints faced by self-employed businesses in non-Seoul metropolitan areas. According to a prior study that indexed regional financial accessibility (financial inclusion index), financial access for borrowers in non-Seoul metropolitan areas is at a significantly lower level compared to the Seoul metropolitan area (Jung et al., 2023).

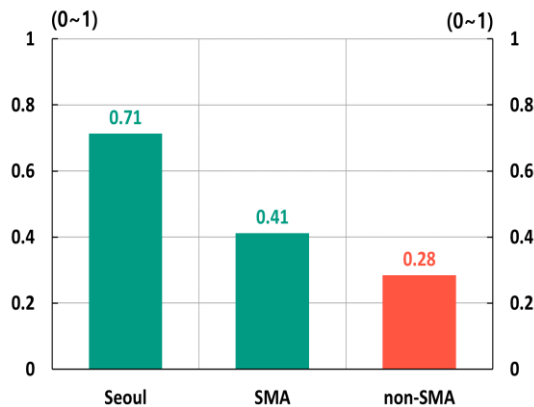
**[Table 10] Effects of Financial Support for Self-employed Businesses by Region**

Dependent variable	△ Log(sales)	Business closure status <sup>1)</sup>	△ Employment
Policy support dummy	0.083*** (0.004)	-0.017*** (0.001)	-0.002 (0.005)
Policy support dummy × Non-Seoul metropolitan areas dummy	0.009** (0.005)	0.001 (0.002)	0.018*** (0.007)

- Notes: 1) Estimated coefficients represent the Average Marginal Effects (AME).  
2) Figures in parentheses are heteroskedasticity-robust standard errors clustered at the individual business level.  
3) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

<sup>48</sup> There was no difference in the change in closure probability between the Seoul metropolitan area and non-Seoul metropolitan areas.

**[Figure 21] Financial Inclusion Index by Region<sup>1)</sup> (2021)**



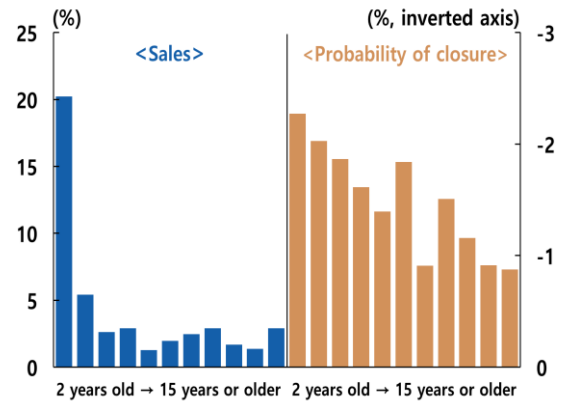
Note: 1) Composite index calculated from the number of branches for financial institutions, lending and deposits, and the proportion of loans to vulnerable households and firms.

Source: Jung et al. (2023)

### (Effects by Business Age)

The largest support effects were observed for early-stage businesses (2–3 years old). In particular, an increase in sales was concentrated solely in the early stage (up by 20.2 percent), while the effects significantly weakened in other business age groups. This is likely because early-stage businesses face the most severe borrowing constraints as they lack company-level information for financial institutions to evaluate or collateral.

**[Figure 22] Effects of Financial Support for Self-employed Businesses by Business Age<sup>1)</sup>**



Note: 1) Based on business age in the year the support was received. The age groups of 9-10 years, 11-12 years, 13-14 years, and 15 years or older each are combined.

Source: Authors' calculations

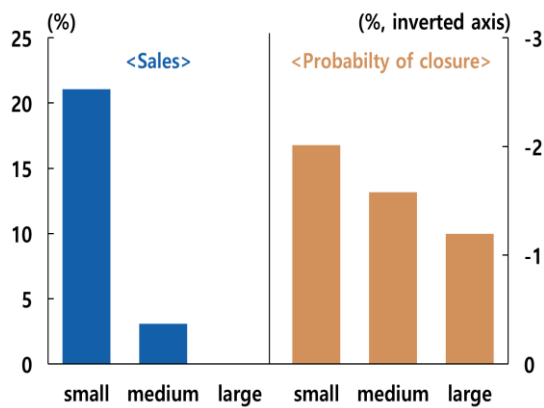
### (Effects by Business Size)

Next, the analysis examined whether there were differences in the effects of financial support between large-scale and small-scale self-employed businesses based on their sales volume.<sup>49</sup> The estimation results showed that the impact of support decreased rapidly as business size increased. In particular, a significant difference was observed, especially in sales growth: large-scale businesses showed no increase in sales from the financial support, showing only a reduction in the probability of closure. This may be because large businesses have relatively abundant internal cash flow and better access to private financing, so policy funds may have merely substituted for private financing without achieving additionality.

**[Figure 23] Effects of Financial Support for Self-employed Businesses by Business Size**

<sup>49</sup> In this paper, business size was divided into three categories based on sales revenue:

Wholesale/Retail: Below KRW 70 million, KRW 70 million to KRW 300 million, and over KRW 300 million  
 Food service: Below KRW 60 million, KRW 60 million to KRW 170 million, and over KRW 170 million

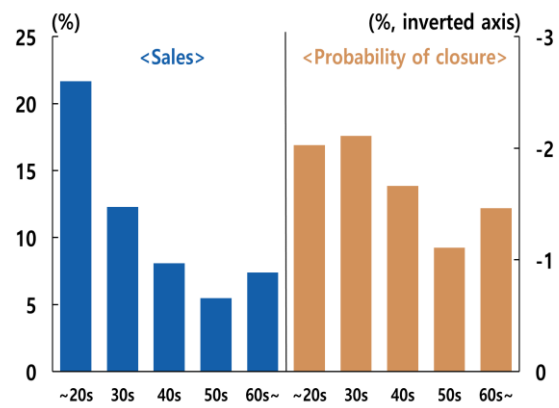


Source: Authors' calculations

### (Effects by Business Owner Age)

Considering that the characteristics of the business owner can have a significant impact on the performance of a self-employed business (sole proprietor) (Howell, 2017), this paper analyzed the heterogeneous effects of financial support based on the owner's age. The results showed that the effect on sales increase was greatest among younger owners in their 20s and 30s (up by 21.7 percent for those in their 20s, and up by 12.3 percent for those in their 30s). The effect diminished with age, being smallest among those aged 50 and older.

[Figure 24] Effects of Financial Support for Self-employed Businesses by Owner Age

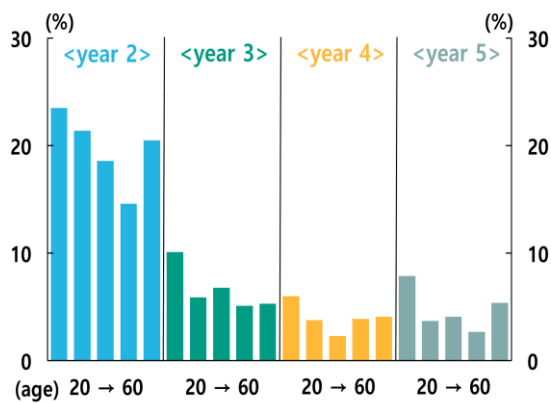


Source: Authors' calculations

However, given the strong correlation between owner age and business age,<sup>50</sup> a question may be raised as to whether the above results are driven by the former or the latter. Accordingly, this paper identified the effects of financial support by focusing the analysis solely on businesses that were five years old or younger, incorporating the effect of interactions between the business age and owner age. The analysis showed that even within the same business age group, younger owners exhibited greater effects of support, indicating the robust influence of age.

[Figure 25] Effects of Financial Support for Self-employed Businesses by Owner, Age, and Business Age

<sup>50</sup> For example, most business owners in their 20s operate early-stage businesses, while it is rare for them to run a business 10 years or older.



Source: Authors' calculations

### C. Effects Based on Characteristics of Financial Support

#### (Effects by Support Amount)

In the analysis of effects by the support amount, small-scale financial support of less than KRW 20 million was found to have negligible effect on improving business performance. The analysis shows that such small-scale support did not increase sales and had only a minor effect on preventing business closures (down by 0.4 percentage points). In contrast, support of KRW 20 million or more was found to substantially boost sales (up by 14.4 percent) and reduce closures (down by 2.1 percentage points).

**[Table 11] Effects of Financial Support for Self-employed Businesses by Support Amount**

Dependent variable	△Log(sales)	Business closure status <sup>1)</sup>
Policy support dummy × Dummy for support under KRW 20 million	-0.001 (0.003)	-0.004*** (0.001)
Policy support dummy × Dummy for support under KRW 20 million	0.144*** (0.003)	-0.021*** (0.001)

Notes: 1) Estimated coefficients represent the Average Marginal Effects (AME).

2) Figures in parentheses are heteroskedasticity-robust standard errors clustered at the individual business level.

3) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

#### (Effects by Support Duration)

In that case, does a longer support period, likewise to larger support amounts, yield better outcomes than a shorter one? To analyze the heterogeneous effects depending on the support duration, this paper compared the performance of businesses in the 2019 program-year cohort that received support ending after two years (control group) with those receiving continuous support for four years (treatment group).<sup>51</sup> The results showed

<sup>51</sup> To identify the policy effect based on differences in support duration, this paper redefined and then matched the treatment and control groups for businesses that first received support in the 2019 program year, as shown in the table below. Since the difference between the two groups (treatment) occurred in 2021 when support for the control group ended, the observation characteristics and control variables used for matching were based on data from 2020, one year prior. Additionally, the dependent variable in the DiD model (Equation (4)) is the performance outcome (sales on a logarithmic scale and closure status) in 2023, compared

that the additional improvement in business performance from longer-term support was not statistically significant. This suggests that prolonged support to the same firm does not necessarily enhance policy effect.

**[Table 12] Additional Effects of Long-Term Support**

Dependent variable	$\Delta \text{Log}(\text{sales})$	Business closure status <sup>1)</sup>
Continuous support dummy	0.010 (0.015)	0.002 (0.006)
Control variables	o	o
Region fixed effects	o	o
Number of observations	13,064	15,210
(Pseudo) R <sup>2</sup>	0.077	0.045

- Notes: 1) Estimated coefficients represent the Average Marginal Effects (AME).  
 2) Figures in parentheses are heteroskedasticity-robust standard errors clustered at the individual business level.  
 3) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

### 3. Externalities of Supporting Low-productivity Self-employed Businesses

When a business with viability and growth potential that nonetheless faces borrowing constraints receives financial assistance, it can utilize the funds to achieve better performance and ultimately contribute to overall economic growth and productivity improvement. However, providing support to businesses with lower productivity and poorer management performance than their competitors may help alleviate their immediate operational difficulties and keep them afloat, but it is likely to bring about significant negative side effects for the economy as a whole.

These side effects arise because if a business that has lost its competitiveness remains in operation excessively longer than is socially appropriate through financial support, it will begin to impose negative externalities on healthy businesses (Lee, 2018; Blattner et al., 2023; Acharya et al., 2024). To elaborate what the externalities entail: first, when low-productivity firms continue to retain labor and other resources, they cause congestion in the factor input market, which in turn increases production costs for viable businesses; second, excess supply leads to price-cutting competition, which reduces the profitability of the entire industry; and third, the opportunity for more productive firms to receive assistance is diminished, thereby hindering the market entry and growth of more productive businesses.<sup>52</sup>

to 2020.

	'18	'19	'20	'21	'22	'23
Treatment group	X	Financial support (four years)				X
Control Group	X	Financial Support (two years)		X	X	X

<sup>52</sup> From this perspective, some claim that in the United States, government credit guarantees or loans to small-

One might ask whether financial support should not, by definition, help those in need. However, assistance should be directed to the individual experiencing hardship, and must be clearly distinguished from propping up the struggling business operated by that individual. While welfare policies targeting self-employed individuals (people) are certainly necessary, using financial support for businesses as if it were a welfare program poses significant risks. In particular, it may hinder the process of creative destruction that boosts overall economic productivity by allowing less productive firms to exit and more productive ones to enter. Therefore, in providing support to the self-employed, it is crucial to consider such spillover effects.

In the following section, this paper first examines the impact of financial support for low-productivity self-employed businesses on their own business performance. Then, additional analysis examines whether such support generates spillover effects on other self-employed businesses in the same region. A low-productivity self-employed business was defined as one that had experienced negative sales growth over the past three years and whose labor productivity (based on sales per employee) falls within the bottom 25 percent of its industry.

### (Effects of Supporting Low-productivity Self-employed Businesses)

First, financial support for low-productivity self-employed businesses was found to increase their sales and lower their probability of closure, showing no statistically significant difference from viable self-employed businesses.

**[Table 13] Effects of Financial Support on Low-productivity Self-employed Businesses**

Dependent variable	$\Delta \text{Log}(\text{sales})$	Business closure status <sup>1)</sup>
Policy support dummy	0.086*** (0.002)	-0.016*** (0.001)
Policy support dummy × Low-productivity dummy	0.010 (0.010)	-0.002 (0.003)

Notes: 1) Estimated coefficients represent the Average Marginal Effects (AME).

2) Figures in parentheses are heteroskedasticity-robust standard errors clustered at the individual business level.

3) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

### (Externalities of Supporting Low-productivity Self-employed Businesses)

Next, to analyze the impact of supporting low-productivity self-employed businesses on other self-employed businesses in the same region, this paper applied the model of Caballero et al. (2008) to perform the following estimation. First, low-productivity businesses were divided into two groups based on whether they

and medium-sized businesses (including self-employed businesses) had no significant impact on local economies or even had negative effects (Lee, 2018; Higgins et al., 2021).

received financial support: supported low-productivity businesses and unsupported low-productivity businesses. Then, using Equation (5), we estimated the effect ( $\hat{\beta}_2$ ) of each group's share in the region on other businesses and compared the magnitude of their respective coefficients.

$$Y_{i,j,r,t} = \beta_0 + \beta_1 O_{i,j,t} + \beta_2 O_{i,j,t} \times R_{i,j,t} + X_{i,j,r,t} \gamma + \mu_r + \delta_{j,t} + \epsilon_{i,j,r,t} \dots (5)$$

( $Y_{i,j,r,t}$ : Log(sales) of self-employed business in industry  $r$  and region  $j$ ,  $O_{i,j,t}$ : Other businesses dummy,  $R_{i,j,t}$ : Share of low-productivity supported (or unsupported) businesses in region  $j$ ,  $X_{i,j,r,t}$ : Control variables<sup>53</sup>,  $\mu_r$ : Industry fixed effects,  $\delta_{j,t}$ : Year-by-region fixed effects)

The empirical analysis results indicate that a 1-percentage-point increase in the share of low-productivity self-employed businesses receiving financial support is estimated to result in a 1.7-percent decline in sales for other businesses in the same region. This decline is larger than the 1.3-percentage-point decrease that occurs when the proportion of low-productivity businesses not receiving financial support rises. These findings suggest that financial support for low-productivity self-employed businesses has a negative externality on the local economy.

**[Table 14] Externalities of Financial Support to Low-productivity Self-employed Businesses**

(Sales ratio on a	Low-	Low-
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logarithmic scale)	productivity + Support	productivity + No Support
Share of supported low-productivity businesses x Other businesses dummy	-0.017*** (0.002)	
Share of unsupported low-productivity businesses x Other businesses dummy		-0.013*** (0.000)
Control variables	o	o
Industry fixed effects	o	o
Year x region fixed Effects	o	o
Number of Observations	5,482,426	5,482,426
R <sup>2</sup>	0.391	0.572

Notes: 1) Figures in parentheses are heteroskedasticity-robust standard errors clustered at the individual business level.  
2) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels respectively.

## 4. Comprehensive Assessment

The key findings of the analysis of the effects of financial support for self-employed businesses in wholesale/retail and food service

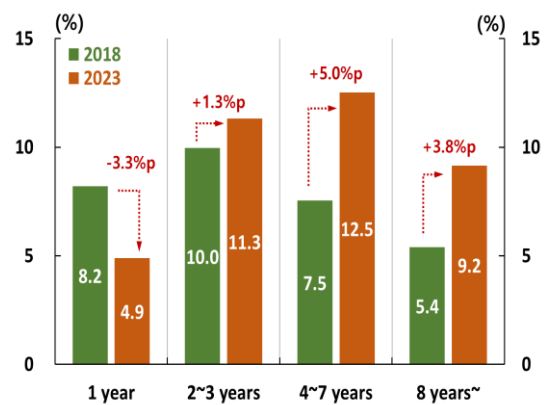
<sup>53</sup> The following were included as control variables: business age, the owner's age and gender, multi-business ownership status, and the number of employees.

are as follows: First, financial support, on average, contributed to improving the business performance of self-employed firms. Second, the effects were concentrated among firms facing severe borrowing constraints, specifically newly established, young-entrepreneur-led, and small-scale businesses. For other firms, the impact on sales growth was negligible, with the only effect being the reduced probability of closure. Third, by region, the effects were slightly stronger in non-Seoul metropolitan areas compared to the Seoul metropolitan area. Fourth, small-scale support of less than KRW 20 million showed no significant effect on sales growth. Fifth, prolonged financial support to the same firms did not yield greater policy effects than short-term support. Sixth, while financial support to businesses with low productivity and a sustained sales decline helped improve their performance, it also posed risks of inefficient resource allocation and negative externalities that could hinder the growth of other firms.

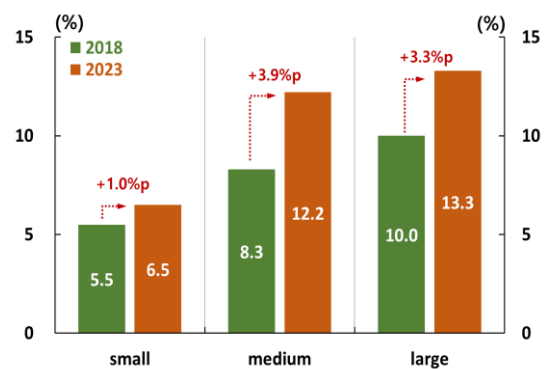
Nevertheless, recent trends in financial support show an expansion of assistance for groups for which the effectiveness of support was found to be limited, as well as for low-productivity businesses.

**[Figure 26] Share of Financial Support Recipients by Business Characteristics<sup>1)</sup>**

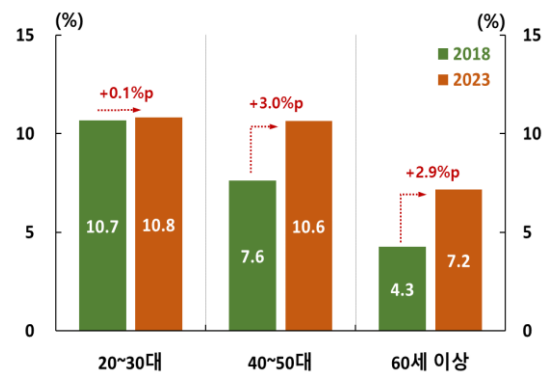
**Business Age**



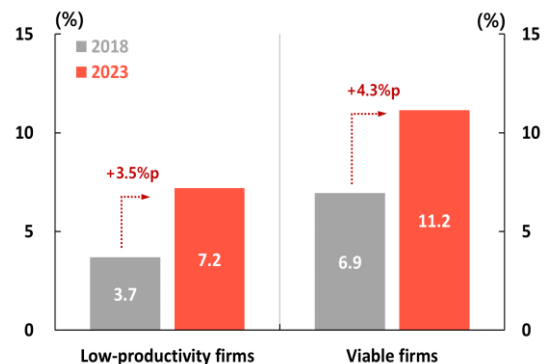
**Business Size**



**Owner Age**



**Low Productivity Status**



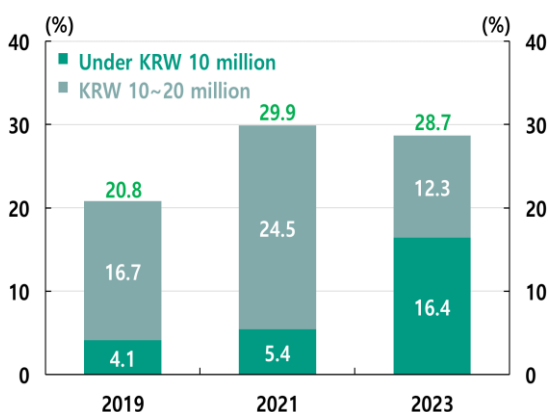
Note: 1) Based on wholesale/retail trade and

food service

Source: Statistical Business Registers, authors' calculations

Figure 26 shows that, compared to 2018, the share of recipient businesses in 2023 rose significantly among firms with more than four years of operation rather than those in early-stage, medium- to large-scale businesses rather than small-scale ones, and owners aged 40 and older rather than those in their 20s and 30s. During the same period, the share of low-productivity firms receiving financial support also increased. Additionally, the proportion of small-scale support under KRW 20 million increased from 20.8 percent in 2019 to 28.7 percent in 2023 (up by 7.9 percentage points),<sup>54</sup> with this trend more pronounced in non-Seoul metropolitan areas (Figure 28). While these shifts may reflect specific policy objectives, they also suggest possible shortcomings in the screening process.

**[Figure 27] Share of Small-scale Support under KRW 20 million<sup>1)</sup>**



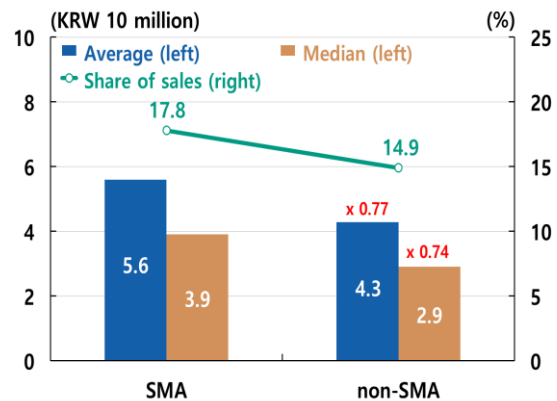
<sup>54</sup> Along with this trend, the average support amount per business also declined by 12.1 percent, from KRW 54 million in 2019 to KRW 47 million in 2023.

<sup>55</sup> An estimation of the impact of the scale of financial support for self-employed business on the local economy showed that when financial support exceeds a certain threshold relative to the size of the local economy,

Note: 1) Based on wholesale/retail trade and food service

Source: Statistical Business Registers, authors' calculations

**[Figure 28] Support Amount per Business by Region<sup>1)</sup>**



Note: 1) Based on wholesale/retail trade and food service, as of 2023

Source: Statistical Business Registers, authors' calculations

Despite the benefits of financial support for individual self-employed businesses, it cannot be concluded that larger amounts of support are necessarily better for the economy as a whole.<sup>55</sup> To maximize cost-effectiveness with limited resources, it is imperative to select businesses with high growth potential and provide them with a sufficient scale of support. Furthermore, the overprotection of businesses that have already lost their competitiveness in the market could hinder the market's natural adjustment mechanisms and productivity enhancement. Therefore, the focus should be more on protecting people rather than the businesses themselves.

## IV. Policy Response

### Directions

Online platforms have markedly improved economic efficiency, productivity, and consumer benefits, but they have also led to increased polarization in the self-employed sector, largely due to disparate adaptability to technological change. While online platforms have expanded market opportunities by easing spatial constraints, they have simultaneously intensified competition and enabled market encroachment. In the case of Korea, considerable oversupply of self-employment businesses has long created pressure for industrial restructuring. Against this backdrop, the growing polarization driven by the rise of online platforms is likely to have accelerated the proliferation of distressed self-employed businesses at a crossroads between continued operation and closing.

However, the online transition is an irreversible trend driven by technological progress. Attempts to avoid the resulting structural change in the self-employment sector could increase the burden not only on self-employed businesses but also on the broader economy in the long run. Accordingly, future policy support for self-employed businesses should focus on ensuring fair opportunities for high-potential entrepreneurs who can leverage new technologies and emerge as winners, while at

the same time reinforcing the social safety net to help those who fall behind recover without suffering excessive losses. Encouraging innovative self-employed businesses to scale up into larger enterprises that create quality jobs can also serve to expand opportunities for former self-employed individuals who have exited the market to transition into wage employment rather than re-entering another venture. To this end, a two-track approach should be adopted distinguishing between growth-oriented policies that empower capable entrepreneurs and safety net policies aimed that mitigate the consequences of failure. Ultimately, the structure of the self-employment ecosystem should be improved toward balancing the entrepreneurial spirit based on innovative ideas with the assurance of a basic standard of living.

### 1. Financial Support for the Growth Potential of Self-Employed Businesses

In general, financial support is provided on the premise that profits are expected to exceed the opportunity cost. As such, financial support is inherently more closely associated with growth-oriented policy than with welfare policy which aims at survival and protection. In exceptional circumstances of economic crisis such as a pandemic, financial support prioritizing survival over growth may be considered, but such measures should

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the total effect is estimated to decrease (see Box 4). This suggests that excessively large financial support could lead to more pronounced adverse effects, such as the crowding out of private financing.

nonetheless remain supplementary and temporary.

Accordingly, financial support for self-employed businesses should focus on growth-supportive policies that help innovative self-employed individuals realize their potential. The effective promotion of growth in self-employment business through financial support requires the provision of funding to a sufficient scale on a phased basis, using methods such as milestone-based disbursement,<sup>56</sup> to selected businesses rather than distributing small amounts to a large number of businesses.

Achieving this requires first establishing a fair selection process and the institutional capacity, by introducing competitive mechanisms in financial support and ensuring objective evaluation by expert groups. Therefore, strengthening the expertise of support institutions is of critical importance. It is necessary not only to cultivate in-house specialists within these institutions, but also to use information and know-how from the business and financial sectors.

In conjunction with this, foundational data for the selection process, such as business profiles and support histories, should be managed in an integrated manner. At present, limited data-sharing among relevant institutions significantly hinders objective evaluation and post-assessment. There is an

urgent need to establish a comprehensive information-sharing system for self-employment businesses, while ensuring basic safeguards for personal data protection.

Among newly established, young-entrepreneur-led, and small-scale businesses, it is more effective to focus support on those that face difficulties in securing financing, despite having promising ideas. However, if startup subsidies excessively lower the cost of entry, they may lead to an oversupply of new and necessity-driven self-employed individuals (Shane, 2009; Herreño & Ocampo, 2023). Therefore, special care must be taken to prevent indiscriminate support. In this regard, strengthening selection capabilities is key.

## 2. Safety Net for Self-employed Individuals

In response to the intensified competition driven by online platforms, the social safety net needs to be strengthened for self-employed individuals exiting the market. In this context, the aim of the safety net is not to preserve the businesses themselves, but to protect the people running the businesses. Therefore, separately from financial support that seeks to promote selective growth by easing borrowing constraints, the safety net should be strengthened as part of universal welfare.

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<sup>56</sup> For example, by strengthening the incentives for corporate transition, it is possible to promote job creation through business expansion and corporatization.

Currently in Korea, the risks associated with self-employment failure fall largely on individuals.<sup>57</sup> If decisions are left entirely to individual judgment, there may be insufficient preparation for business closure, given that people tend to hold optimistic expectations about their own success. The experience of certain advanced countries offers apt policy insights, as these countries have encouraged self-employed individuals to actively participate in unemployment insurance, similar to wage earners, while substantially reducing premium burdens through government support.<sup>58</sup> Expanding financial resources through such measures and easing the eligibility criteria for receiving benefits could help establish an effective safety net.<sup>59</sup>

Separately, we also need to design a crisis response system in preparation for a sharp economic downturn. During the early 2020s, financial support was significantly expanded in response to the COVID-19 pandemic. While these measures helped manage the urgent liquidity crisis faced by self-employed individuals and prevented widespread bankruptcies, the resulting debt may have weakened the financial soundness of many

self-employed individuals (Adelino et al., 2025). Accordingly, in cases of involuntary business suspension for public interest purposes, it would be more appropriate to establish a response system centered on loss compensation rather than on lending.

### **3. Region-specific Policies Tailored to Local Self-employed Individuals**

The fact that the polarization of the self-employment sector driven by online platforms is more pronounced in non-Seoul metropolitan areas reflects the fact that local self-employed businesses face a significant disadvantage in terms of the business environment. In the face of weakening local demand base due to population outflows and stagnant economic growth (Chung et al., 2023, 2024), small-scale local self-employed businesses that often lack adequate information and networks adapt less effectively to technological and environmental changes. In addition, the lack of quality wage jobs in non-Seoul

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<sup>57</sup> As of May 2025, the employment insurance coverage rate for self-employed individuals is only around 1.0 percent (Korea Employment Information Service, Economically Active Population Survey).

<sup>58</sup> In France, employment insurance is mandatory for self-employed individuals, and the government pays the insurance premiums (Park, 2023).

<sup>59</sup> The employment insurance scheme for self-employed individuals in Korea is currently optional and the coverage rate remains low because, despite the burden of higher premiums compared to wage workers, they are at a disadvantage in terms of the scope of benefits and the duration of unemployment benefits. Moreover, the eligibility requirements for receiving unemployment benefits are considerably stringent because of the need to demonstrate persistent deficits or a decline in sales (Anti-Corruption and Civil Rights Commission, 2023).

metropolitan areas (Table 15) puts local self-employed individuals in a difficult position.<sup>60</sup>

**[Table 15] Job Mobility among the Self-employed<sup>1)</sup>**

Period	Self-employment → Self-employment				Self-employment → Wage employment			
	Seoul metropolitan area		Non-Seoul metropolitan areas		Seoul metropolitan area		Non-Seoul metropolitan areas	
2020–2021	62.8	66.6	15.6	11.4				
2022–2023	62.1	69.9	22.0	9.0				

Note: 1) Self-employed individuals who transferred to another job

Sources: Korean Labor and Income Panel Study, authors' calculations

To expand demand for local self-employed businesses, it is necessary not only to enhance online accessibility, which remains lower in non-Seoul metropolitan areas, but also to specialize each region in experiential and time-intensive services with high growth potential. Online platforms save consumers time spent on shopping and strengthen networks with local service providers, thereby serving as a channel to expand demand in

areas such as leisure/sports, travel, healthcare/wellness, and dining. As such, there is a need to attract external demand by developing specialized services that reflect each region's distinct characteristics and identity.

Next, it is necessary to provide consumption experiences that are difficult to replace with online channels by securing economies of scale and agglomeration for local retail businesses. Even if online platforms account for a large share of shopping in a region, they cannot fully replace offline shopping. Accordingly, it is important to establish shopping hubs, such as large-scale shopping infrastructure within hub cities, in order to mitigate the outflow of consumption.<sup>61</sup>

Lastly, it is necessary to strengthen the capacity of support institutions in non-Seoul metropolitan areas. As these areas have relatively limited access to finance and greater borrowing constraints, it may be more effective to establish a tailored system that takes into account regional characteristics, rather than providing uniform nationwide support. To this end, a high level of expertise in system design and the selection of support recipients is a prerequisite. This will require tireless efforts to enhance the planning, screening, and evaluation capacity of local self-employment support institutions.

<sup>60</sup> Among self-employed individuals who changed jobs, the proportion that transitioned to wage employment was only 9 percent in non-Seoul metropolitan areas (2022 to 2023), compared to 22.0 percent in the Seoul metropolitan area.

<sup>61</sup> Outbound consumption by local residents to the Seoul metropolitan area slowed relatively significantly after the opening of a large-scale multiplex shopping mall in non-Seoul metropolitan areas.

## 4. Establishing a Fair Ecosystem for Online Platforms

Even if polarization driven by online platforms is inevitable to an extent, it is necessary to actively prevent small businesses from being damaged by unfair trade practices of monopolistic platforms. To this end, social consensus on fair trade rules should be promoted on a case-by-case basis in response to the various trading formats of different platforms.

In addition, the vast data and analytical capabilities of platforms should serve as a foundation not only for the platforms themselves but also for fair competition and growth among self-employed businesses. Finding hidden gems and enhancing their productivity are core functions of online platforms. Platforms can enable even newly established and small-scale self-employed businesses to access the global market at low cost, as long as they are competitive. However, the mere existence of a platform does not automatically guarantee such a role. It is also important for platforms to fulfill their social responsibilities by enhancing the fairness and transparency of algorithms and improving the stability of services and the protection of information. Such efforts will help enhance the competitiveness of the platforms in the long run.

subsidizing relevant costs in the case of a business closure and instead actively support measures such as consulting to diagnose the

In a similar vein, it is necessary to promote systems for self-employed businesses, which provide a significant amount of information to platforms, to actively use the platforms' big data. Efforts are required to pursue an ecosystem that creates shared value by supporting the data-driven exploration of new markets and the development of business models through platform users' improved access to data.

## 5. Improving the Market Entry and Exit Structure for Self-employed Businesses to Mitigate Oversupply

It is difficult to artificially prevent the structural phenomenon of "winner takes most" in the online world. Instead, the policy focus should be on mitigating the impact on self-employed individuals that are outcompeted in the process and facilitating their soft landing.

However, if the decision to close a business is left entirely to the individual, there is a high possibility that it will be done in haste, only after reaching the final breaking point, given the owner's desire to sustain the business somehow. To ensure a soft landing in such cases, it is necessary to go beyond

need for closure in advance and pre-emptive debt restructuring. In advanced countries such as the United States and Japan,<sup>62</sup> there

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<sup>62</sup> In the United States, restructuring experts from the private organization Turnaround Management

are systems in place that allows expert groups from the local community to participate in making an objective decision on whether to close a business when the deterioration of business conditions such as arrears or losses persists beyond a certain period. The introduction of such a system should be actively considered. In addition, to prevent business closures from leading to repeated startups and failures, there is a need to actively consider incentives for transitioning to wage employment, along with government support measures such as debt restructuring.

On the other hand, efforts are also needed to prevent an excessive number of new business startups. With population aging, a considerable number of retirees may enter self-employment in the future, and young entrepreneurs may also start their own businesses due to the stagnation in youth employment and labor market mismatches. Against this backdrop, in order to encourage the prudent creation of new businesses, it is necessary to further develop measures such as introducing competition-based approaches in support for business creation, and providing training for new business preparation along with commercial district information.

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Association (TMA) intervene in at-risk companies to formulate both regenerative and exit strategies and to provide restructuring support. In Japan, the Small and Medium Enterprise Revitalization Council provides closure support for small-sized business operators through business improvement, debt restructuring, and early liquidation consultations based on collaboration with experts (Kim, 2022).

## [Box 1] Definition of a Self-employed Individual

The definition of a self-employed individual varies slightly depending on relevant laws and statistics. The most commonly used concept, as defined in the Economically Active Population Survey, is that a self-employed individual is a person who independently operates a business under their own responsibility, including unregistered business owners. In this paper, we used the Census on Establishments as company-level statistics for research at the city-county-district level. Accordingly, self-employed individuals operating unregistered establishments (such as street vendors and freelancers) were excluded from the analysis. Furthermore, although the term “self-employed individual” refers to an individual business owner, the distinction between the owner and the establishment is often blurred considering the characteristics of self-employed business. To avoid terminological confusion, this paper uses the terms “sole proprietor” and “self-employed individual (business)” interchangeably.

### Key Terms and Definitions Related to Self-employed Individuals

Term	Definition	Source
Self-employed individual	A person who owns and directly operates an individual business establishment under their own responsibility	Census on Establishments
	A person who either (1) employs at least one paid worker, or (2) under their own responsibility, independently engages in a professional activity or operates a business either alone or together with unpaid family workers (including unregistered operators)	Economically Active Population Survey
Sole proprietor	A business independently operated by an individual rather than a corporation or organization (including those jointly managed by two or more people without a corporate entity)	Census on Establishments
Small business owners	Among small enterprises (based on sales), those with fewer than five full-time employees (or fewer than ten in mining, manufacturing, construction, and transportation industries)	Framework Act on Micro Enterprises

The term “small business owners” is frequently used in the context of policy support. A small business owner refers to the operator of a business whose sales and number of full-time employees are below a certain level, which can include corporations. By contrast, even if an individual is self-employed, they are not considered a small business owner if their sales are large and they employ a significant number of employees.

### Comparison between Self-employed Individuals and Small Business Owners

Corporations	Individuals	Unregistered
Small business owners: 4.12 million (2022) * Survey on the Actual Conditions of Small Business Owners		
Corporations (0.5 million)	Individuals (3.62 million)	
Self-employed individuals: 5.66 million (May 2025) * Economically Active Population Survey (including unregistered operators such as farmers, fishers, and street vendors)		

## [Box 2] Construction of the Shift-Share Instrumental Variable

If the explanatory variables in this paper such as the share of online shopping and food delivery are correlated with local characteristics, a simple OLS estimation may be susceptible to bias due to endogeneity. To address the issue, it is necessary to apply an instrumental variable approach that identifies causal effects by using only the exogenous variation of the explanatory variables. The shift-share instrumental variable is constructed by multiplying (1) the predetermined shock exposure level (share) of each region at the base period by (2) the exogenous total change rate (shift). In the equation below, these correspond to  $z_{j,k}$  and  $g_{k,t}$ , respectively. The total change rate ( $g_{k,t}$ ) is applied uniformly across all regions at the national level and considered unrelated to the characteristics of individual regions. In addition, this paper, referring to Chun et al. (2023), decomposes  $z_{j,k}$  into a product of a regional factor ( $a_{i,j}$ ,  $a_{j,k}$ ) and a national factor ( $c_{i,k}$ ,  $c_k$ ), so that the extent to which each region is exposed to the shock is not related to the characteristics of the region. Specifically, the instrumental variable for online shopping is constructed using the regional age distribution and the national product-specific consumption share for the corresponding age group, while the instrumental variable for online food delivery is constructed using the regional population by age group and the national average dining-out expenditure for the corresponding age group.

### 1. Instrumental Variable for the Share of Online Shopping

$$IV_{j,t}^{ES} = \sum_k z_{j,k} g_{k,t} \quad (\text{given, } z_{j,k} \approx \sum_k a_{i,j} c_{i,k})$$

- $IV_{j,t}^{ES}$ : Instrumental variable for the share of online shopping in region ( $j$ ) in  $t$  year
- $g_{k,t}$ : Share of online shopping in year ( $t$ ) for buying product ( $k$ ) (estimated from the Online Shopping Trend Survey and the Service Industry Trend Survey)
- $z_{j,k}$ : Share of consumption of product ( $k$ ) in region ( $j$ ) (as of 2016)
- $a_{i,j}$ : Share of age group ( $i$ ) in region ( $j$ ) (as of 2016, based on resident registration population data)
- $c_{i,k}$ : Share of consumption of product ( $k$ ) for individual age ( $i$ ) (as of 2016, estimated from Household Income and Expenditure Survey)
- Product ( $k$ ): Electronics, books, clothing, hobbies, cosmetics, food and beverages, and furniture
- Age ( $i$ ): Aged under 30, aged 30 to 39, aged 40 to 49, aged 50 to 59, aged 60 and over

## 2. Instrumental Variable for the Share of Online Food Delivery

$$IV_{j,t}^{DR} = \sum_k z_{j,k} g_{k,t} \quad (\text{given, } z_{j,k} \approx \frac{a_{j,k} c_k}{\sum_k a_{j,k} c_k})$$

$IV_{j,t}^{DR}$ : Instrumental variable for the share of expenditure on food delivery to dining-out expenditure in region ( $j$ ) in year ( $t$ )

Share of using food delivery apps for age group ( $k$ ) in year ( $t$ ) (payment amount on delivery apps as a proportion of payment amount at restaurants, based on BC Card)

$g_{k,t}$ :

$z_{j,k}$ : Share of dining-out expenditure for age group ( $k$ ) in region ( $j$ ) (as of 2020)

$a_{j,k}$ : Population of age group ( $k$ ) in region ( $j$ ) (as of 2020, based on resident registration population)

$c_k$ : Average dining-out expenditure for age group ( $k$ ) (nationwide as of 2020, based on BC Card)

Age ( $k$ ): Aged under 20, aged 30 to 39, aged 40 to 49, aged 50 to 59, aged 60 and over

### **[Box 3] Estimation Model for the Effects of Financial Support for Self-employed Businesses**

In Chapter 3, to analyze the effects of financial support for self-employed businesses, this paper estimated the policy effects with a Difference-in-Differences (DiD) model after identifying a control group of non-recipients whose observable characteristics are similar to those of the recipient group through Propensity Score Matching (PSM) (Oh et al., 2020, etc.).

#### **(Selection of a Control Group through PSM)**

Since policy support is not randomly assigned, there may be selection bias between the businesses that received support (treatment group) and those that did not (potential control group). For example, if businesses with a stronger inclination for growth are more likely to apply for and be selected for a support program, a comparison solely based on whether the company received support or not would conflate the pre-existing differences between the two groups with the influence of financial support in estimating the policy effects. To mitigate this selection bias, the observable characteristics that could affect the likelihood of receiving financial support should be homogeneous between the two groups prior to the policy's implementation.

PSM is a methodology for systematically constructing such a control group. This paper estimated each establishment's propensity score using characteristics from the year before receiving financial support, and performed nearest-neighbor matching within the same sub-classification of industry. The variables included in the propensity score estimation are log(sales), number of employees, business age, owner characteristics (age and gender), multi-business ownership status, and business location. After matching, this paper checked for the covariate balance using the Standardized Mean Difference (SMD) and found that balance was achieved, as all variables satisfied  $|SMD| < 0.1$ .

#### **(DiD Estimation with Different Support Timing)**

Although DiD estimation was performed using the matched sample, initial support timing for business establishments in the treatment group varied from 2019 to 2022. In a setting with staggered adoption of the treatment, Goodman-Bacon (2021) and other studies have pointed out that applying a Two-Way Fixed Effects (TWFE) model without adjustment may lead to biased policy effects.

Accordingly, referring to Cengiz et al. (2019) and other previous studies, this paper adopts a stacked DiD design, which stacks the matched samples by business year (sub-experiment) cohorts. The estimation also employs heteroskedasticity-robust standard errors clustered at the individual business level.

## **[Box 4] Estimation of the Effects of Financial Support for Self-employed Businesses on All Local Self-employed Businesses<sup>63</sup>**

### **(Model Overview)**

To estimate the effects of financial support for self-employed businesses on all local self-employed businesses, this paper estimated a dose–response function using data at the city–county–district level, referring to Becker et al. (2012). The dose–response function allows the estimation of the expected value of the dependent variable (growth rate of total local sales (t+1)) with respect to the level of the treatment variable (total amount of financial support (t) relative to total local sales (t–1)). It also enables the identification of the level at which the effect is maximized. In this context, the intensity of financial support for the self-employed by region, as the treatment variable, may be subject to selection bias. Accordingly, this paper applied the Generalized Propensity Score Matching (GPSM) method, which is used in settings with a continuous treatment variable, to control for heterogeneous characteristics across groups and analyze the data.

### **(Estimation Results)**

**[GPS Estimation Results]** The determinants for the ratio of total financial support to total sales were specified as log(sales per business), log(employment in the wholesale and retail industry), log(employment in the food service industry), the proportion of businesses with less than three years of operation, the business closure rate, and the new business creation rate, and were estimated using the Ordinary Least Squares (OLS) method. The results were generally significant.

**[Dose-Response Function Estimation Results]** The estimation results indicate that, as the scale of financial support increases relative to the size of the regional economy, the marginal effect diminishes, and once it exceeds a certain threshold level, the total effect declines (marginal effect < 0). This suggests that if the total volume of financial support grows excessively, negative spillover effects such as market congestion and the crowding-out of private finance may become more pronounced, which is a factor that must be taken into account.

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<sup>63</sup> For a more detailed explanation of the estimation of the dose–response function using the GPSM method, refer to “[Box 4] Regional Public Investment Effect Estimation Model” in Chung et al. (2024).

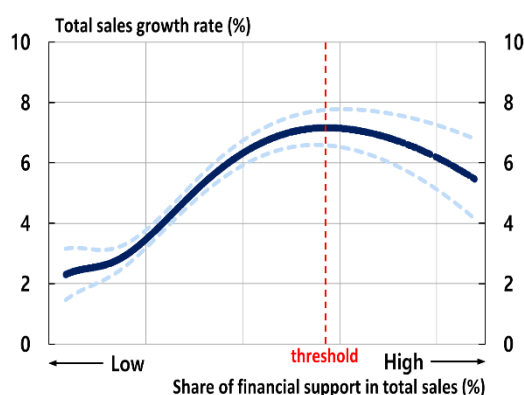
**Analysis of Factors Affecting the Intensity of Financial Support for Self-employed Businesses by Region<sup>1)</sup>**

Log(sales per business)	-1.20*	Share of businesses with less than three years of operation	-0.01**
Log(sales per business) <sup>2</sup>	0.07	Business closure rate	0.08
Log(number of wholesale and retail industry businesses)	-0.22***	New business creation rate	0.09**
Log(number of food service industry businesses)	0.04*	Population density	-3.36*
Log(employment in wholesale and retail industry)	0.23***	Share of young business owners	0.00
Log(employment in food service industry)	0.04*	Share of elderly business owners	-0.01*
Time fixed effects		○	
Region fixed effects		○	
Number of observations		1,181	

Notes: 1) The dependent variable is log(total financial support / total sales).

2) \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

**Dose-Response Function<sup>1)</sup>**



Note: 1) The dotted lines represent  $\pm 1$  standard deviation confidence interval.

Sources: Statistical Business Registers, KOSTAT, authors' calculation

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