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CONTENTS

The Effects of Corporate Taxation on Firm Growth

Byung Mok Jeon*

I. Background

In the modern economy, business activities are a core factor in a country's economic growth and employment. Enterprises produce goods and services for which they employ workers. Enterprises are financed with capital provided by shareholders and distribute earnings as dividends. Corporate tax and other tax burdens lower the return on investment (ROI), which affects the decisions of investors. A lower ROI is likely to limit the scope of possible investment alternatives, thereby negatively affecting business activities. An increased tax burden discourages enterprises from pursuing investment activities with profit potential, which inhibits the growth of businesses and the overall economy.

Firms make employment decisions primarily based on market demand for their products. Under a given demand for production, employment decisions are affected by the labor-capital combination that minimizes costs. Under this structure, changes in tax burdens directly affect employment through investment activities and indirectly affect employment through changes in the labor-capital combination.

In this study, we analyzed the effects of corporate taxation on firm activities using firm-level data rarely covered in previous studies to investigate how corporate taxation affects investment and employment. The effect on investment served as a proxy variable for firm

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growth. We also analyzed how taxation affects employment, which is important as a policy goal. In particular, we analyzed both the direct effect of taxation on employment and its indirect effect through investment. We also analyzed the determinants of research and development (R&D) costs, which greatly affect firm productivity, to gauge the possibility of inducing innovation through tax policies.

II. Previous Literature

Previous studies on the relationship between taxes and business activities have focused mostly on how taxes affect investment. Investment activities are directly correlated with firm growth, and taxation affects ROI. Yet the effect of taxation on employment has been covered by few research studies.

According to the literature, corporate taxation has had a mostly negative impact on investment. However, in some cases, the negative impact was not statistically significant. This negative effect can be found using country panel data analysis, such as Vartia (2008), Djankov et al. (2010), and Arnold et al. (2011). Negative effects were also found in individual country analysis, such as that in Ljungvist and Smolyansky (2016) and Zwick and Mahon (2017). Ljungqvist and Smolyansky (2016) identified a negative effect of corporate taxation in United States data, but only during a recession.

Of the many studies conducted on the Korean economy, the majority have found a negative effect of corporate taxation on investment, such as H. Kim (2004), Chun and Song (2012), H. Kim (2013), and Hwang and Lee (2014). However, W. Kim (2005) and D. Kim (2015) failed to draw statistically significant conclusions from the Korean data they analyzed.

Fewer researchers have tackled the effect of corporate taxation on employment, and their findings are similar to those who studied its effect on investment. Kim (2013) and Hwang and Lee (2014) found that corporate taxation had a significant effect on employment. Kim (2004) failed to find this effect but found that corporate taxation had a significant effect on investment.

The previous studies that analyzed empirical data in Korea were clearly limited in terms of their use of micro-level data. Most of them relied on financial data provided by the Korea Information Service (KIS-value), which only includes firms above a certain size[1] subject to

1 These data include listed and listed-to-be corporations that satisfy one of the following conditions: ① asset

external audit requirements. As a result, the data only reflect relatively large firms. To address this issue and produce more balanced findings, in this study we analyzed data provided by Korea Enterprise Data (KED).

III. Data and Analysis Model

1. Data

In this study, we analyzed the effect of corporate taxation on decision-making at individual firms. To this end, we relied on KED data,[2] which cover a wide range of firms. KED is a firm tasked with providing credit rating information about various firms. The firms included in the data range from (Small and Medium Enterprises) (SMEs) to sole proprietors and large companies. Compared to data about firms subject to external audit requirements, KED data allow researchers to arrive at more balanced findings.

The data analyzed in this study consist of 2,096,000 enterprises spanning 2010–2016. Most are enterprise-level financial data, and the availability of variables depends on the amount of missing data. To facilitate our analysis, we removed the outliers of key variables; the values of key variables presented below represent the values after removing the top and bottom one percent.

The average investment ratio as measured by the ratio of changes in tangible assets against total assets was around 2.03 percent, and the average effective corporate tax rate[3] was 14.12 percent. The average return on assets (ROA) was 8.27 percent, and the average number of years in business was 8.7.

size is larger than 12 billion KRW, ② both asset and debt sizes are larger than 7 billion KRW, and ③ both asset and employment sizes are larger than 7 billion KRW and 300 persons, respectively.

2 We would like to thank researcher Woo Hyun Jang at the Korea Institute of Public Finance for compiling and processing the data for the present study.

3 For non-corporations, we analyzed the average effective income tax rate.

Table 1_Descriptive Statistics of Key Variables

Variable name	Observations	Average	Std. Dev.	Min	Max
Investment ratio (%)[1]	1,403,015	2.03	11.55	-45.79	67.85
Payroll (KRW 1,000)[2]	817,287	682,205	1,116,041	21,240	10,100,000
Sales administration payroll (KRW 1,000)	1,714,801	282,669	539,107	3,519	5,421,508
Manufacturing payroll (KRW 1,000)	968,309	375,705	702,884	3,700	6,734,424
Sales (KRW 1,000)	2,075,046	4,061,251	9,069,327	0	102,000,000
Total assets (KRW 1,000)	2,054,432	3,789,357	10,500,000	14,729	129,000,000
Effective tax rate (%)	959,829	14.12	16.27	-30.47	162.70
ROA (%)[3]	2,053,469	8.27	18.78	-109.29	100.00
Years in business[4]	2,008,194	8.69	7.31	0	38
Enterprise type (corporation=1)	2,096,354	0.702	0.457	0	1

Note: 1. The values of all variables other than the enterprise type represent values after removing the top and bottom 1 percent outliers.
1) Investment ratio: (tangible assets (t)- tangible assets (t-1))/ total assets (t) × 100
2) Represents companies that pay selling, general, and administrative expenses (SG&A) and manufacturing payrolls
3) Net profit / total assets x 100
4) Years in business: reference year–year of foundation
Source: KED database

The data show that enterprises with larger assets report higher effective tax rates. Considering the largely positive correlation between assets and net profits, the progressive structure of nominal tax rates results in the higher effective tax rates reported by enterprises with larger assets. A look into the changes in effective tax rates over time shows that the rates remained relatively stable except for a slight decrease in 2011.

Table 2_Changes in Effective Tax Rate by Asset Size

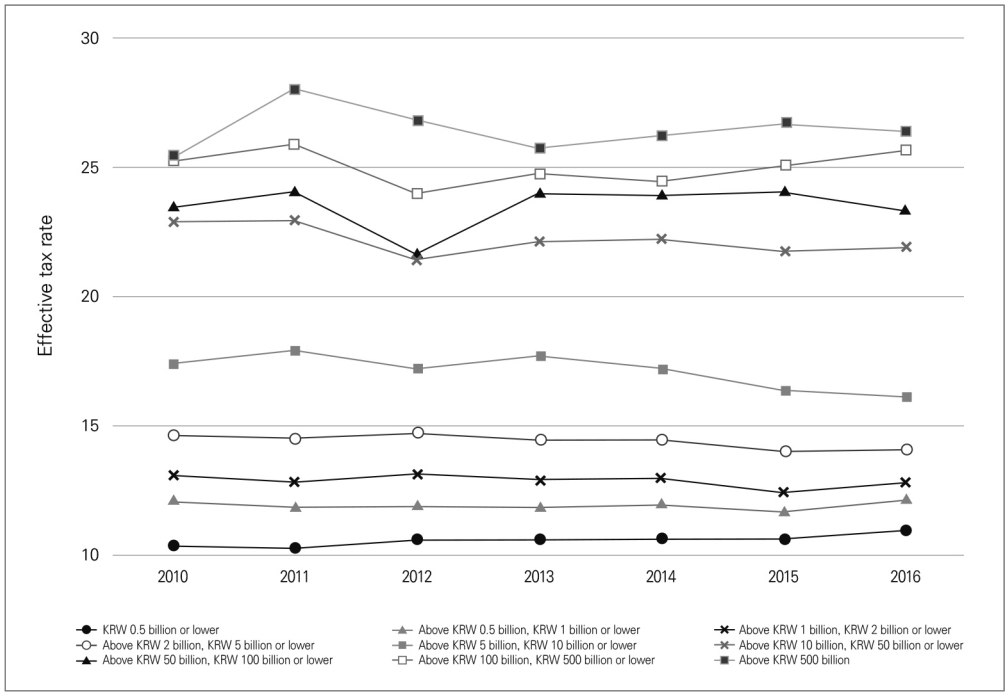
(Unit: %)

Year	Assets ≤KRW 0.5 billion	0.5 billion <Assets ≤KRW 1 billion	1 billion <Assets ≤KRW 2 billion	2 billion <Assets ≤KRW 5 billion	5 billion <Assets ≤KRW 10 billion	10 billion <Assets ≤KRW 50 billion	50 billion <Assets ≤KRW 100 billion	100 billion <Assets ≤KRW 500 billion	Above KRW 500 billion
2010	10.31	12.05	13.01	14.60	17.41	22.86	23.41	25.26	25.32
2011	10.22	11.81	12.83	14.50	17.93	22.94	24.01	25.85	28.02
2012	10.57	11.91	13.12	14.65	17.19	21.46	21.60	23.94	26.80
2013	10.61	11.81	12.93	14.45	17.70	22.14	23.99	24.72	25.67
2014	10.65	11.92	12.91	14.45	17.21	22.23	23.91	24.43	26.14
2015	10.61	11.64	12.40	13.96	16.37	21.75	24.02	25.00	26.59
2016	10.95	12.13	12.75	14.05	16.09	21.90	23.34	25.59	26.36
Average	10.56	11.88	12.84	14.36	17.09	22.13	23.48	24.98	26.42

Source: KED database

Figure 1_Changes in Effective Tax Rate by Asset Size

(Unit: %)



Source: KED database

The ROA (net profit/assets), which represents enterprise profitability, decreased as total assets increased. The negative correlation continued over time. However, the ROA gap between enterprises with different asset sizes has narrowed in recent years. Smaller enterprises, which previously recorded higher levels of profitability, reported decreased or stagnant ROAs, and medium and large enterprises, which previously recorded lower levels of profitability, reported an increase in ROA after a period of decline. To be specific, enterprises with assets exceeding KRW 10 billion reported higher ROAs in 2016 than in 2010. This finding shows that the recent economic recovery was mostly driven by enterprises with total assets exceeding KRW 10 billion. The narrowed ROA gap may also be due to the mitigation of market segregation between enterprises with different asset sizes. An increasing number of medium and large enterprises have entered the previously SME-dominant industries such as the service industry, which has lowered the ROAs of smaller enterprises while increasing the ROAs of medium and larger enterprises.

Table 3_Changes in ROA by Asset Size

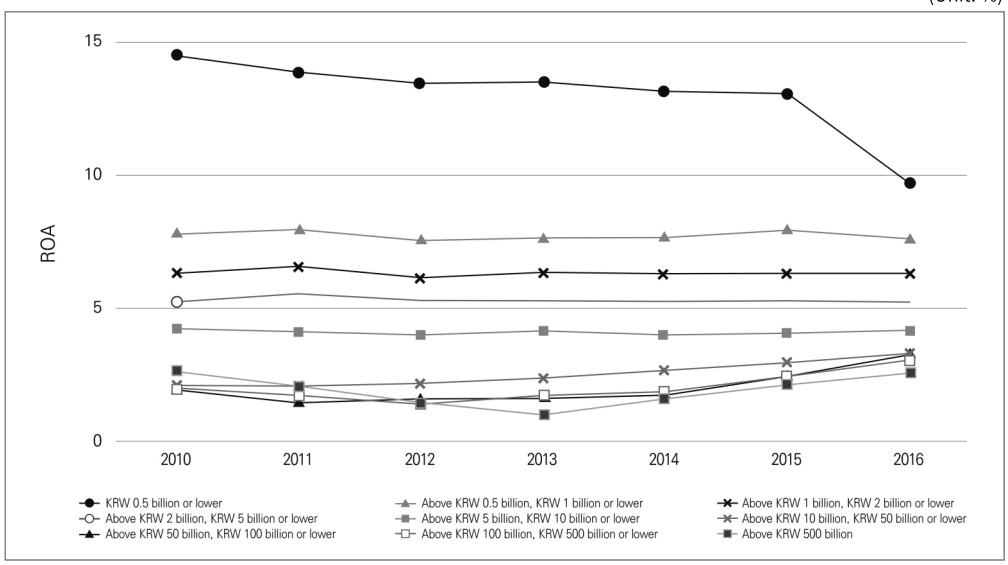
(Unit: %)

Year	Assets ≤KRW 0.5 billion	0.5 billion <Assets ≤KRW 1 billion	1 billion <Assets ≤KRW 2 billion	2 billion <Assets ≤KRW 5 billion	5 billion <Assets ≤KRW 10 billion	10 billion <Assets ≤KRW 50 billion	50 billion <Assets ≤KRW 100 billion	100 billion <Assets ≤KRW 500 billion	Above KRW 500 billion
2010	14.50	7.76	6.32	5.29	4.25	2.20	2.04	1.99	2.57
2011	13.88	7.99	6.58	5.52	4.12	2.01	1.49	1.75	2.07
2012	13.46	7.57	6.17	5.28	4.01	2.22	1.65	1.40	1.40
2013	13.47	7.66	6.39	5.28	4.16	2.41	1.61	1.73	0.99
2014	13.19	7.65	6.30	5.22	4.01	2.70	1.81	1.93	1.66
2015	13.08	7.94	6.39	5.29	4.07	2.98	2.53	2.42	2.16
2016	9.71	7.55	6.37	5.21	4.15	3.35	3.27	3.11	2.58
Average	13.23	7.73	6.36	5.29	4.11	2.60	2.09	2.06	1.92

Source: KED database

Figure 2_Changes in ROA by Asset Size

(Unit: %)

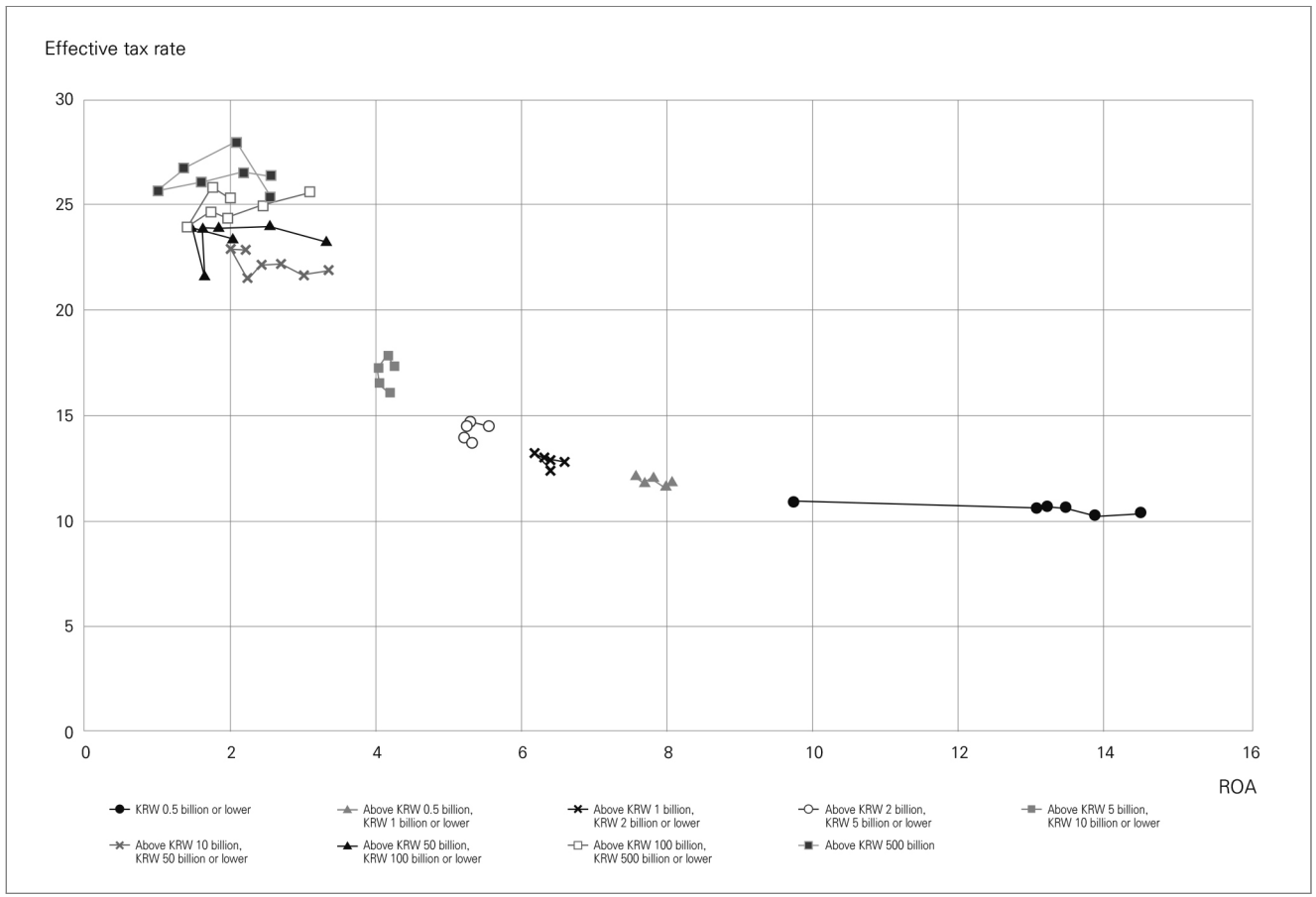


Source: KED database

The ROAs of enterprises with different asset sizes were negatively correlated with their effective tax rates. Enterprises with fewer assets, which are subject to lower effective tax rates, reported higher ROAs, whereas enterprises with larger assets, to which higher effective tax rates apply, reported lower ROAs. The correlation was clearer among enterprises with few assets than enterprises with large assets.

Figure 3_Correlation between Effective Tax Rate and ROA by Asset Size

(Unit: %)



Source: KED database

Enterprises respond to a change in business environments in various ways, one of which is to adjust their production capacity by adjusting the size of investments. Korean enterprises adjust their investment ratios (increase in tangible assets/total assets) in response to changes in business environments.

In the 2010s, the highest investment ratio was reported by enterprises with assets between KRW 5 billion and 10 billion. Despite the recent decline, they still reported an average investment ratio of around 3 percent, whereas smaller enterprises with assets of KRW 0.5 billion or lower reported the lowest investment ratios in the 2010s. Their average investment ratio in 2016 was only 0.57 percent. Such a low investment ratio may have been caused by a decline in profitability, as represented by their decreased ROAs. One of the noteworthy changes in recent years has been the decline in investment ratios among larger enterprises. Among enterprises with assets between KRW 100 billion and 500 billion, the average investment ratio dropped from 2.7 percent in 2011 to 1.2 percent in 2016. Enterprises with assets of KRW 500 billion or higher also reported a steady decline in ROAs with the average ratio reaching 1.4 percent in 2016. ROAs among larger enterprises decreased despite the increase in profitability. This finding seems related to stagnant economic growth in the 2010s, the resulting decline in employment, and other economic indicators.

Table 4_Changes in Investment Ratio by Asset Size

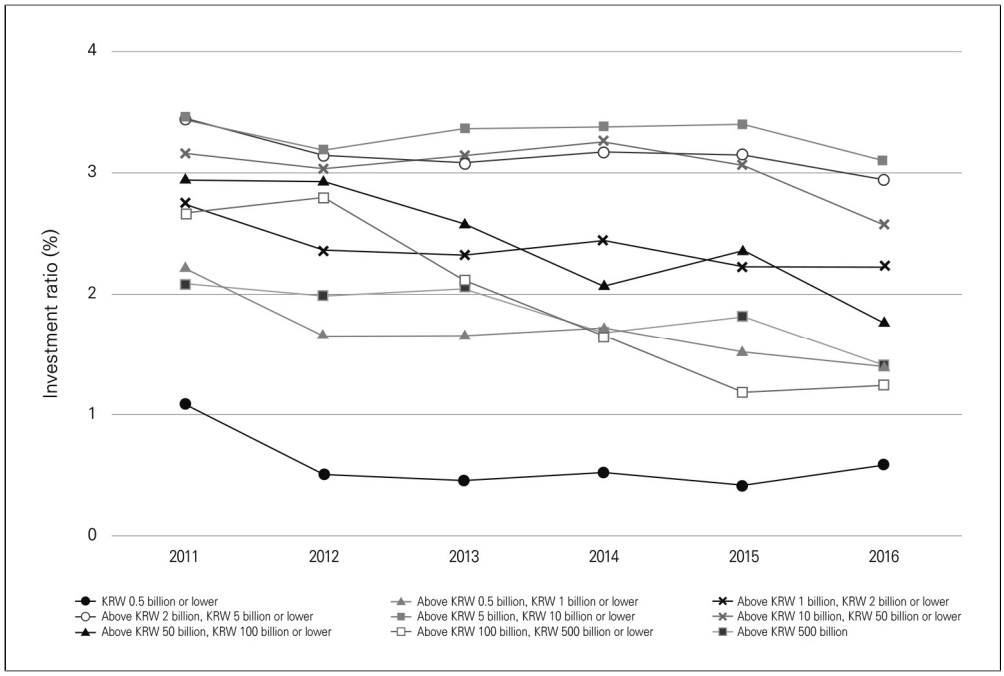
(Unit: %)

Year	Assets ≤KRW 0.5 billion	0.5 billion <Assets ≤KRW 1 billion	1 billion <Assets ≤KRW 2 billion	2 billion <Assets ≤KRW 5 billion	5 billion <Assets ≤KRW 10 billion	10 billion <Assets ≤KRW 50 billion	50 billion <Assets ≤KRW 100 billion	100 billion <Assets ≤KRW 500 billion	Above KRW 500 billion
2011	1.08	2.21	2.74	3.44	3.43	3.16	2.94	2.66	2.08
2012	0.50	1.65	2.36	3.15	3.18	3.02	2.93	2.78	1.99
2013	0.45	1.65	2.31	3.08	3.35	3.12	2.58	2.11	2.04
2014	0.51	1.72	2.43	3.17	3.37	3.26	2.06	1.66	1.69
2015	0.41	1.52	2.23	3.14	3.39	3.06	2.35	1.18	1.81
2016	0.57	1.40	2.22	2.94	3.09	2.57	1.76	1.24	1.41
Average	0.57	1.69	2.37	3.15	3.30	3.02	2.41	1.91	1.83

Source: KED database

Figure 4_Changes in Investment Ratio by Asset Size

(Unit: %)

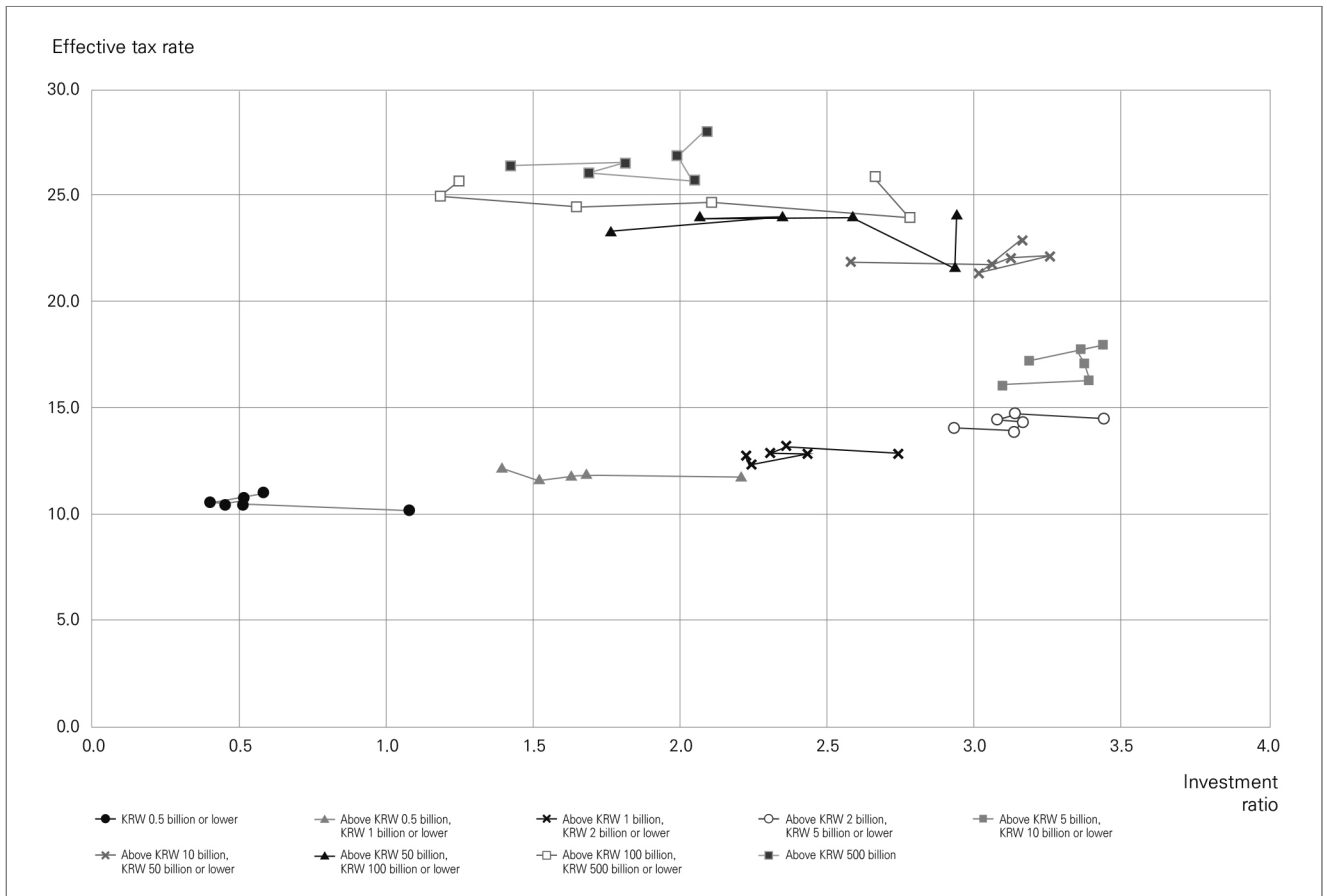


Source: KED database

We observed no clear correlation between the effective tax rate and investment ratio. Among enterprises subject to a 20 percent or lower effective tax rate, the effective tax rate was positively correlated with the investment ratio. In the above-20 percent group, the two variables were negatively correlated. Further analysis is needed to understand this correlation.

Figure 5_Correlation between Effective Tax Rate and Investment Ratio by Asset Size

(Unit: %)



Source: KED database

We also analyzed changes in the sales growth rate that may represent enterprise growth. The recent growth rate significantly decreased after 2011, with only enterprises with assets of KRW 1 billion or lower showing signs of recovery. Enterprises with larger assets reported sales growth rates below their 2011 growth rates. In particular, the sales growth rate of enterprises with KRW 500 billion or greater in assets decreased from 15.5 percent in 2011 to 2.3 percent in 2013. The growth rate increased somewhat in the following years, but was only 6.1 percent in 2016.

Table 5_Changes in Sales Growth Rate by Asset Size

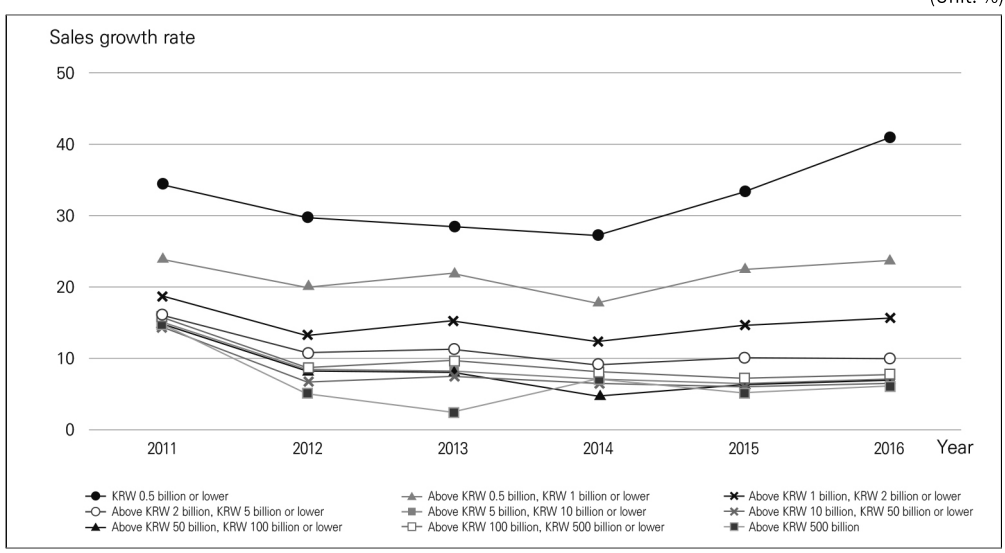
(Unit: %)

Year	Assets ≤KRW 0.5 billion	0.5 billion <Assets ≤KRW 1 billion	1 billion <Assets ≤KRW 2 billion	2 billion <Assets ≤KRW 5 billion	5 billion <Assets ≤KRW 10 billion	10 billion <Assets ≤KRW 50 billion	50 billion <Assets ≤KRW 100 billion	100 billion <Assets ≤KRW 500 billion	Above KRW 500 billion
2011	34.37	23.75	18.72	16.19	14.70	14.20	15.10	15.88	15.49
2012	29.77	19.85	13.21	10.69	8.01	6.83	8.61	8.75	5.01
2013	28.49	22.01	15.23	11.22	8.21	7.42	7.96	9.69	2.43
2014	27.18	17.75	12.40	9.21	7.04	6.40	4.83	8.05	6.93
2015	33.27	22.50	14.57	9.99	7.39	6.10	6.60	7.06	5.09
2016	40.69	23.82	15.64	10.00	6.98	6.39	7.48	7.90	6.12
Average	31.62	21.45	14.83	11.04	8.53	7.64	8.25	9.45	6.78

Source: KED database

Figure 6_Changes in Sales Growth Rate by Asset Size

(Unit: %)



Source: KED database

We analyzed the total payroll–sales ratio as a proxy variable for employment. The analysis provided insight into the relationship between labor-capital composition and corporate taxation. The ratio of payroll (labor cost) to sales decreased in enterprises with larger assets. As of 2016, the payroll–sales ratio of enterprises with KRW 0.5 billion or fewer in assets was 30.2 percent, whereas enterprises with assets between KRW 5 billion and 10 billion reported an average ratio of 17.0 percent. For enterprises with assets exceeding KRW 500 billion, the average payroll–sales ratio was only 8.0 percent. It seems that enterprises with larger assets tend to be engaged in more capital-intensive industries or forming a more capital-intensive structure within each industry. In the 2010s, the payroll– (labor cost) sales ratio increased across all asset sizes, which indicates that enterprises started distributing more income to their workers. Meanwhile, the payroll–sales ratios among enterprises with KRW 500 billion or higher assets fluctuated, which may reflect the relatively small size of the sample, changes in overseas investment, and other factors.

Table 6_Changes in Payroll-Sales Ratio by Asset Size

(Unit: no. of enterprises, %)

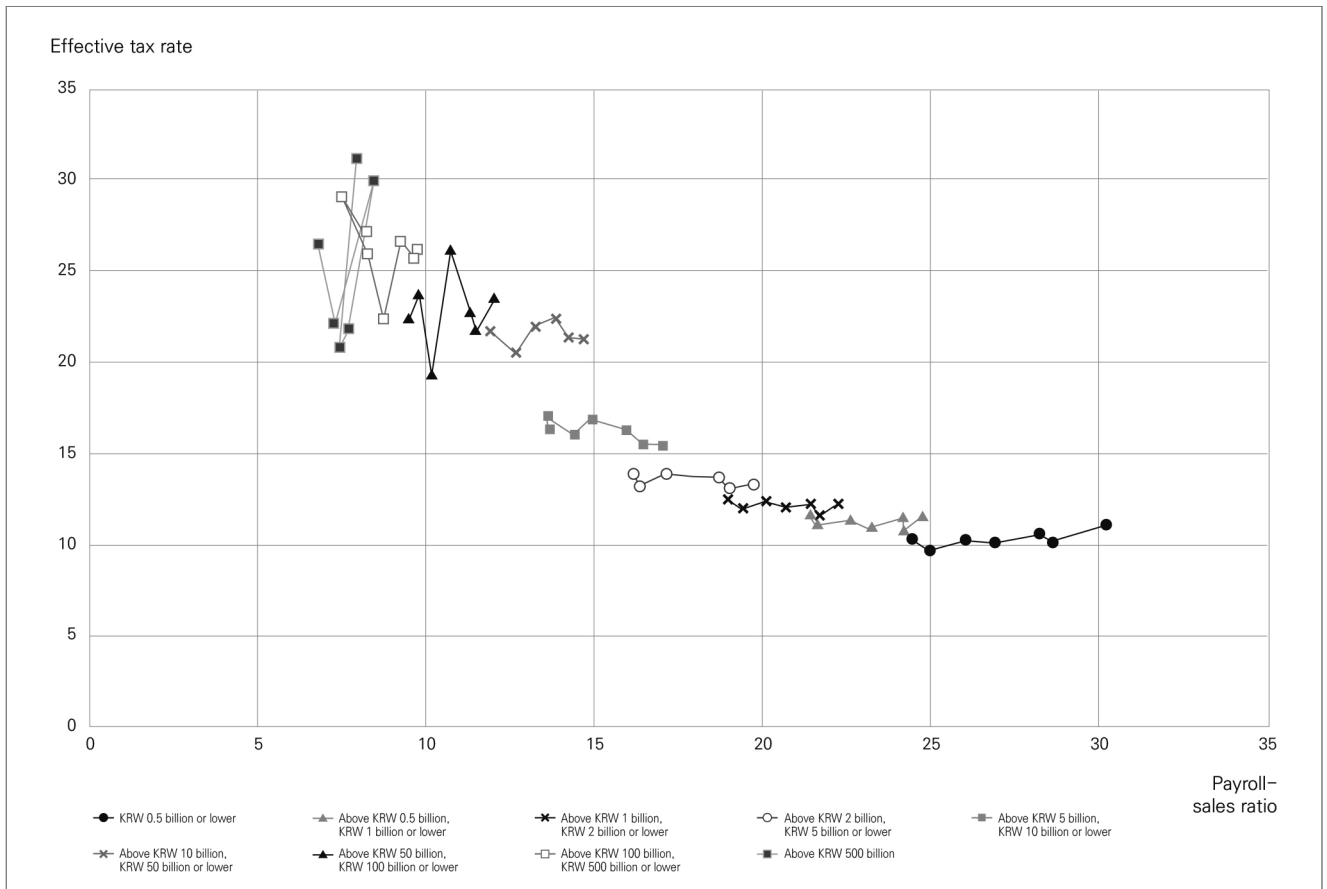
Year	Assets ≤KRW 0.5 billion	0.5 billion <Assets ≤KRW 1 billion	1 billion <Assets ≤KRW 2 billion	2 billion <Assets ≤KRW 5 billion	5 billion <Assets ≤KRW 10 billion	10 billion <Assets ≤KRW 50 billion	50 billion <Assets ≤KRW 100 billion	100 billion <Assets ≤KRW 500 billion	Above KRW 500 billion
2010	24.42	21.42	18.97	16.22	13.65	11.54	9.56	8.13	6.80
2011	24.96	21.57	19.37	16.34	13.59	11.91	9.84	7.54	7.36
2012	26.07	22.64	20.10	17.10	14.43	12.70	10.20	8.28	8.49
2013	26.93	23.10	20.69	17.96	14.89	13.24	10.75	8.74	8.05
2014	28.28	24.21	21.46	18.68	15.96	13.83	11.37	9.27	7.64
2015	28.62	24.16	21.68	19.05	16.46	14.28	11.51	9.68	7.46
2016	30.18	24.78	22.18	19.78	16.95	14.71	12.04	9.69	7.95
Average	27.11	23.19	20.69	17.98	15.25	13.39	10.86	8.81	7.66
Effective tax rate									
2010	10.41	11.66	12.50	13.81	16.50	21.92	22.38	27.10	26.65
2011	9.80	11.13	11.96	13.23	16.93	21.76	23.75	29.03	21.90
2012	10.27	11.39	12.41	13.86	16.06	20.52	19.35	25.91	29.91
2013	10.12	11.00	12.11	13.73	16.91	21.98	26.01	22.30	25.57
2014	10.58	11.46	12.25	13.75	16.27	22.47	22.60	26.64	21.67
2015	10.25	10.83	11.58	13.07	15.55	21.32	21.71	25.92	20.80
2016	11.07	11.63	12.17	13.36	15.49	21.31	23.34	26.22	30.90

Source: KED database

The payroll-sales ratio and effective tax rate are negatively correlated. In other words, a higher effective tax rate lowers the use of human capital. Among enterprises with KRW 5 billion or lower in assets, remunerations for workers increased without significant changes in the effective tax rates. Various factors including changes in the labor market have increased labor costs, yet enterprises with larger assets have reported relatively small changes in labor costs. Despite changes in effective tax rates, changes in labor costs have been limited.

Figure 7_Correlation between Payroll-Sales Ratio and Effective Tax Rate by Asset Size

(Unit: %)



Source: KED database

Payroll consists of the manufacturing payroll, which makes up part of the manufacturing cost, and the sales administration payroll. The former goes into production activities, and the latter goes into post-production sales activities. If changes in tax policies affect employment, it is important to know which sector is more sensitive.

The ratio of manufacturing payroll–sales varies depending on the asset size of an enterprise. A larger enterprise tends to report a lower ratio of manufacturing payroll. Over time, across all enterprise sizes, the percentage of manufacturing payroll increases. Enterprises with assets exceeding KRW 500 billion reported fluctuations in the manufacturing payroll–sales ratio in the 2010s.

Amid the increase in labor cost, the ratio of manufacturing payroll–total payroll declined, except for enterprises with assets between KRW 50 billion and 100 billion. The findings indicate that despite the increased ratio of labor cost, the growth of manufacturing payroll has been relatively stagnant.

Manufacturing payroll ratio and effective tax rates were also negatively correlated, with the relationship weakening among enterprises with large assets. Such a negative correlation is rarely observed among enterprises with assets exceeding KRW 500 billion. This seems to stem from the better position of larger enterprises to dampen the impact of tax burdens through various means, including market power and access to overseas markets.

Table 7_Changes in Manufacturing Payroll-Sales Ratio by Asset Size

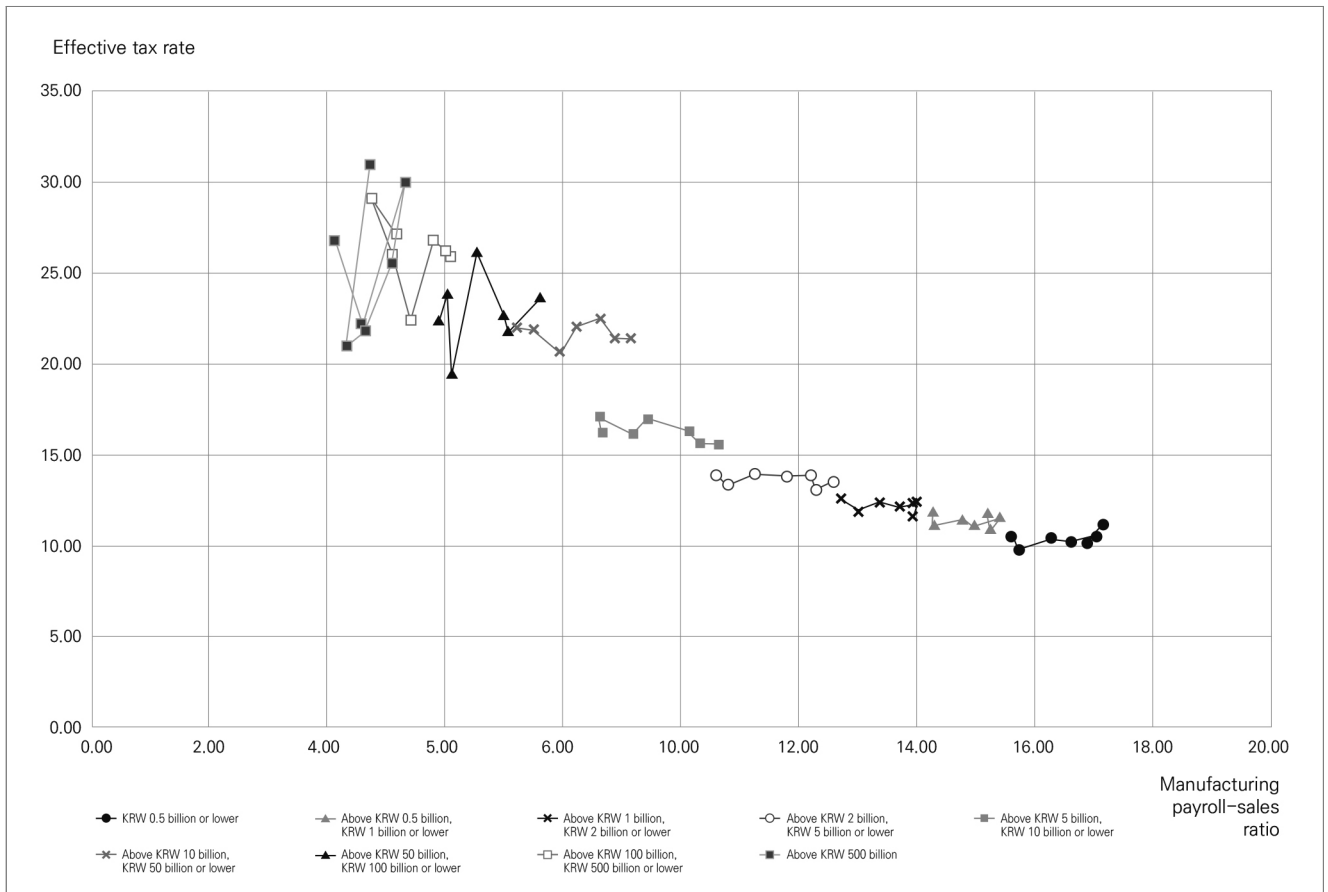
(Unit: %)

Year	Assets ≤KRW 0.5 billion	0.5 billion <Assets ≤KRW 1 billion	1 billion <Assets ≤KRW 2 billion	2 billion <Assets ≤KRW 5 billion	5 billion <Assets ≤KRW 10 billion	10 billion <Assets ≤KRW 50 billion	50 billion <Assets ≤KRW 100 billion	100 billion <Assets ≤KRW 500 billion	Above KRW 500 billion
2010	15.65	14.27	12.75	10.62	8.65	7.23	5.94	5.17	4.17
2011	15.72	14.27	13.03	10.77	8.63	7.48	6.04	4.76	4.63
2012	16.28	14.83	13.39	11.27	9.19	7.97	6.13	5.11	5.31
2013	16.62	14.97	13.72	11.84	9.42	8.24	6.57	5.45	5.11
2014	17.05	15.42	14.04	12.20	10.11	8.63	7.00	5.83	4.64
2015	16.92	15.27	13.97	12.31	10.33	8.91	7.08	6.08	4.34
2016	17.15	15.19	13.97	12.56	10.64	9.16	7.59	6.00	4.75
Average	16.52	14.92	13.58	11.72	9.64	8.36	6.69	5.52	4.69
Ratio to total payroll (manufacturing payroll / total payroll)									
2010	64.09	66.62	67.21	65.47	63.37	62.65	62.13	63.59	61.32
2011	62.98	66.16	67.27	65.91	63.50	62.80	61.38	63.13	62.91
2012	62.45	65.50	66.62	65.91	63.69	62.76	60.10	61.71	62.54
2013	61.72	64.81	66.31	65.92	63.26	62.24	61.12	62.36	63.48
2014	60.29	63.69	65.42	65.31	63.35	62.40	61.57	62.89	60.73
2015	59.12	63.20	64.44	64.62	62.76	62.39	61.51	62.81	58.18
2016	56.83	61.30	62.98	63.50	62.77	62.27	63.04	61.92	59.75

Source: KED database

Figure 8_Correlation between Manufacturing Payroll-Sales Ratio and Effective Tax Rate by Asset Size

(Unit: %)



Source: KED database

We also examined the change in the SAP (Sales Administration Payroll (SAP)–sales ratio, which increased across all asset sizes. In 2010, the SAP-sales ratio ranged from 2.6~8.8 percent. In 2016, the range was from 3.2~13.0 percent. This finding indicates that firms were more actively engaged in SAP activities, which may have been motivated by increasing competition in the market. In addition, firms with larger assets reported lower SAP-sales ratios. In 2016, SAP–sales ratio of firms with KRW 0.5 billion or lower assets was around 13.0 percent, whereas the same ratio of firms with assets exceeding KRW 500 billion was only 3.2 percent. The gap between different asset size groups widened over time.

In addition, the percentage of SAP against total payroll recorded an overall increase. The ratio increased from 32.8~38.7 percent in 2010 to 36.5~43.2 percent in 2016. This change implies that in the 2010s, firms focused more on sales administration activities than on manufacturing. This shift may have been caused by the relocation of production sites to countries with lower wages and increased imports.

When analyzed by asset size, the sales administration payroll–total payroll ratio shows a U-shaped graph. In other words, firms with KRW 0.5 billion or lower assets and firms with assets exceeding KRW 500 billion reported higher SAP–total payroll ratios than other firms with moderate assets. Smaller firms may have had difficulties accessing markets due to their low brand recognition, and larger firms may have faced elevated competition in the global market.

Table 8_Changes in Sales Administration Payroll-Sales Ratio by Asset Size

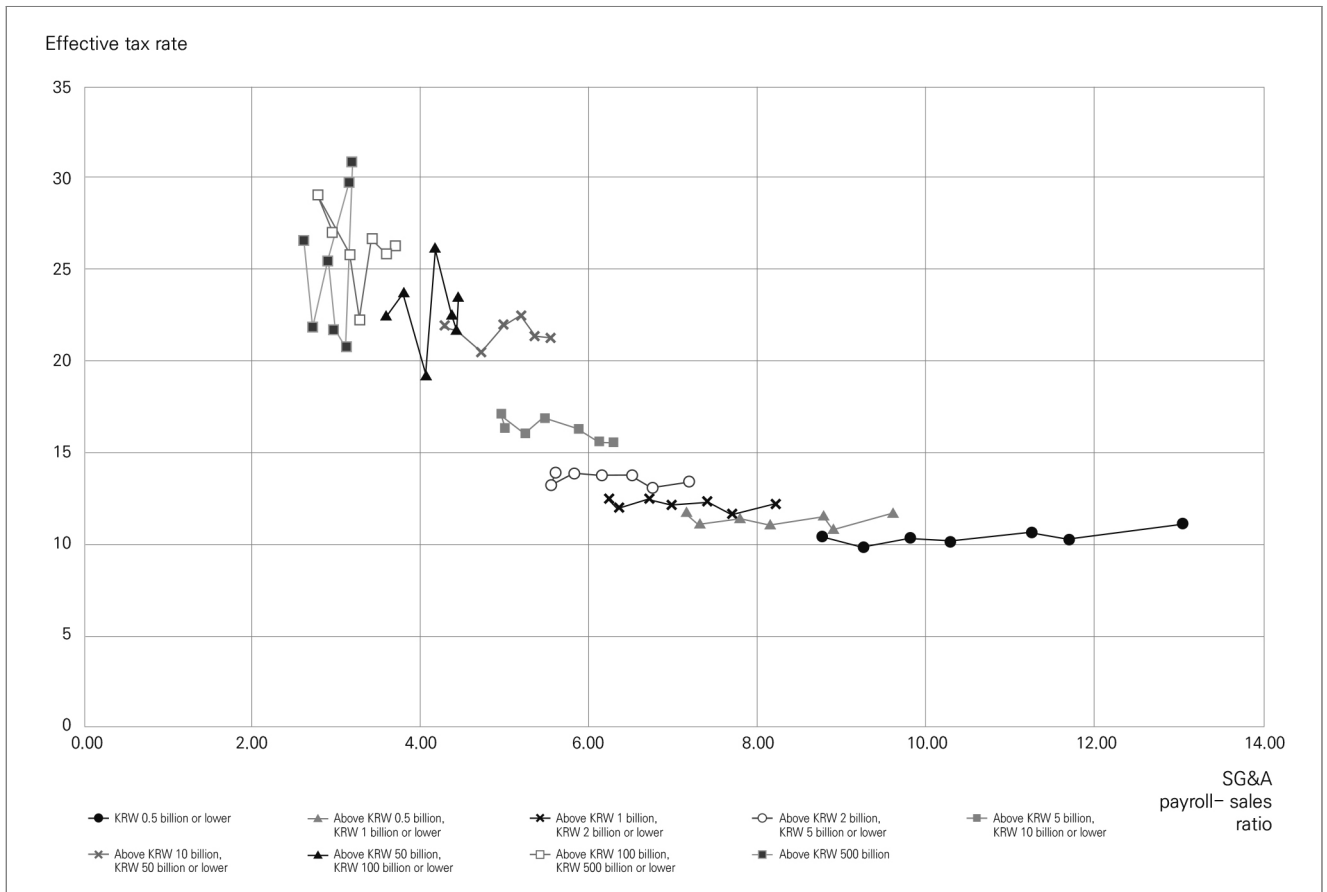
(Unit: %)

Year	Assets ≤KRW 0.5 billion	0.5 billion <Assets ≤KRW 1 billion	1 billion <Assets ≤KRW 2 billion	2 billion <Assets ≤KRW 5 billion	5 billion <Assets ≤KRW 10 billion	10 billion <Assets ≤KRW 50 billion	50 billion <Assets ≤KRW 100 billion	100 billion <Assets ≤KRW 500 billion	Above KRW 500 billion
2010	8.77	7.15	6.22	5.60	4.99	4.30	3.61	2.97	2.63
2011	9.24	7.30	6.34	5.56	4.97	4.43	3.80	2.79	2.73
2012	9.79	7.81	6.71	5.83	5.24	4.73	4.07	3.17	3.18
2013	10.31	8.13	6.97	6.12	5.47	5.00	4.18	3.29	2.93
2014	11.23	8.78	7.42	6.48	5.85	5.20	4.37	3.43	3.00
2015	11.69	8.89	7.71	6.74	6.13	5.38	4.43	3.60	3.12
2016	13.03	9.59	8.21	7.21	6.30	5.55	4.45	3.69	3.21
Average	10.59	8.26	7.11	6.26	5.61	5.03	4.17	3.30	2.97
Ratio to total payroll (sales administration payroll / total payroll)									
2010	35.91	33.38	32.79	34.53	36.56	37.26	37.76	36.53	38.68
2011	37.02	33.84	32.73	34.03	36.57	37.20	38.62	37.00	37.09
2012	37.55	34.50	33.38	34.09	36.31	37.24	39.90	38.29	37.46
2013	38.28	35.19	33.69	34.08	36.74	37.76	38.88	37.64	36.40
2014	39.71	36.27	34.58	34.69	36.65	37.60	38.43	37.00	39.27
2015	40.85	36.80	35.56	35.38	37.24	37.68	38.49	37.19	41.82
2016	43.17	38.70	37.02	36.45	37.17	37.73	36.96	38.08	40.38

Source: KED database

Figure 9_Correlation between Sales Administration Payroll-Sales Ratio and Effective Tax Rate by Asset Size

(Unit: %)



Source: KED database

2. Analysis Model

We used the panel analysis model to analyze the effect of corporate taxation on investment, employment, and other business activities. Panel analysis allowed us to analyze business decisions over time, which widened the scope of information available for analysis.

To be specific, we used the dynamic panel model to address the past dependence issue widely shared by economic variables. We used the estimation method proposed by Arellano and Bond (1991)[4] to mitigate the endogeneity bias and inconsistency of the existing least-squares dummy variables (LSDV) model.

First, we analyzed the effect of corporate taxation on the investment ratio to examine its effect on investment activities. Changes in corporate taxation change firms' return on new investment, which in turn directly affects their investment decisions. The analysis model was defined as follows:

$$I_{i,t}/A_{i,t} = \beta_0 + BX^1 + \Gamma X^2 + \mu_t + \epsilon_{i,t}$$

The dependent variable is the investment ratio defined as the ratio of investment to assets ($I_{i,t}/A_{i,t}$), where investment represents changes in tangible assets ($I_{i,t} = TA_{i,t} - TA_{i,t-1}$). The independent variables consist of economic variables (X^1) and taxation variables (X^2). Economic variables (X^1) include investment ratio and sales at t-1. Corporate taxation variables (X^2) include effective tax rate (corporate tax cost / net profit). Finally, a year dummy variable (μ_t) is included.

Second, we analyzed the effect of corporate taxation on firm growth. Analysis of firm growth may yield different results depending on the way firm growth is defined. Firm growth can be measured using different variables. The most widely used variables are employment (or payroll) and sales, which we used in this study too. While many researchers have studied firm growth, not many of them have analyzed data that include non-listed companies and sole proprietors. This study is distinguished from the previous studies in that it examines the effect of corporate taxation[5] by analyzing a wider scope of firm data.

As for the variable for employment, we analyzed the firms' total payrolls. Many previous studies analyzed the number of employees. However, the number of employees greatly varies

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4 Arellano and Bond, "Some tests of specification for panel data: Monte Carlo evidence and application to employment equations,"*Review of Economic Studies* 58, 1991, pp. 277~298.

5 "Enterprise taxation," to be more precise, as the studied enterprises include sole proprietors.

depending on the year when the data were collected and the type of employment. Furthermore, the reliability of the data may be questioned because they are derived from the financial documents of the firms. The most reliable data in financial documents are, by nature, financial data. In light of the information above, we examined the effect of corporate taxation on employment by analyzing total payroll as the explanatory variable. Total payroll indicates the amount of labor cost borne by each firm. It accurately represents the enterprises' demand for labor. However, relying on total payroll has its own drawbacks because it cannot consider the effect of taxation on the number of jobs, which has become a serious social issue in recent years.

$$\ln(Wage_{i,t}) = \beta_0 + BX^1 + \Gamma X^2 + \mu_t + \epsilon_{i,t}$$

Here, $\ln(Wage_{i,t})$ represents the total payroll, and the economic variables (X^1) consist of the t-1 values of the dependent variables: total payroll, investment ratio, and R&D expense ($\ln(\text{R\&D expense}_{i,t-1})$). Employment is closely related to firm growth and R&D expenditure. A faster-growing firm spends more on employment and labor costs. R&D expenditure is an indicator related to a firm's growth potential, as the cumulative outcomes of a firm's R&D efforts directly affect its growth. The labor cost for research staff comprises a significant portion of the expenditure. In addition, we included investment ratio[6] as a separate variable to isolate the effect of corporate taxation on employment derived by investment. By separating the changes in employment caused by changes in investment, we sought to analyze the direct effect of corporate taxation on employment.

The following paragraphs analyze enterprise growth as measured by sales.

$$\ln(Sales_{i,t}) = \beta_0 + BX^1 + \Gamma X^2 + \mu_t + \epsilon_{i,t}$$

Here the economic variables (X^1) consist of the t-1 values of the dependent variables: total assets and R&D expense ($\ln(\text{R\&D expense}_{i,t-1})$).

6 We used the investment ratio as an explanatory variable to compare the corporate taxation → investment ratio → total payroll path with the corporate taxation → R&D expense → total payroll path. However, further research is needed regarding the significance of using the investment ratio as an explanatory variable. We also calculated the elasticity of the payroll against investment to interpret the findings of the estimation. However, we did not identify any differences in the findings.

IV. Results

First, an increase in the effective tax rate significantly decreased each firm's investment ratio. The investment ratio at t-1 had a positive effect on the current year's investment ratio, albeit to a small extent. The effect of the debt ratio of firms, which we expected to be deeply related to their financing expense, did not produce a significant result. This may have been caused by our choice of the analysis period (2010~2016), which overlapped with an economic recession in which the opportunity cost was not significant, or by the debt ratio's not accurately reflecting each firm's financing expense because of worldwide low interest rates.

As for variables representing firm characteristics, firms' years in business and asset sizes had a negative effect on the investment ratio. This finding seems to come from the close correlation between the first two variables and the asset size effect, which drives down the investment ratio. The effect of sales was also highly correlated with firm size. In addition, the ROA of each firm was found to have a significantly positive impact, which implies that more profitable firms invest more in tangible assets. In short, firms that perform better in the market expand their tangible assets faster than other firms to increase their profits.

The finding indicates that to expand investment, it is important to consider corporate taxation and provide support for the business activities of highly profitable companies. Specifically, both the short-term and long-term elasticity of the investment ratio against the effective tax rate were estimated to be between -0.02 and -0.03.[7, 8] Considering that the investment ratio represents changes in total assets, the elasticity did not seem small.

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7 Short-term elasticity was defined as the estimated coefficient of estimation coefficient × (average effective tax rate / average investment ratio). Long-term elasticity was calculated by dividing the short-term elasticity by (1 - estimated coefficient for investment ratio at t-1).

8 The coefficient for the investment ratio at t-1 was low at 0.06~0.07, which explains the similarity between the short-term and long-term elasticity.

Table 9_Effect on Investment Ratio

Variable	Dependent variable: Investment ratio[1]				
	1	2	3	4	5
Investment ratio$_{t-1}$	0.0690*** (0.00240)	0.0683*** (0.00240)	0.0586*** (0.00229)	0.0679*** (0.00239)	0.0690*** (0.00240)
ln (sales$_{t-1}$)	-0.138** (0.0599)	-0.112* (0.0604)	2.230*** (0.0614)	-0.434*** (0.0608)	-0.138** (0.0599)
Debt ratio$_{t-1}$	0.0000000619 (0.000000184)	0.0000000634 (0.000000183)	0.0000000432 (0.000000177)	0.0000000656 (0.000000183)	0.0000000618 (0.000000184)
Effective tax rate$_{t-1}$	-0.00434*** (0.00144)	-0.00449*** (0.00144)	0.00136 (0.00139)	-0.00286** (0.00144)	-0.00410 (0.00572)
ln (years in business)[2]	- -	-0.872*** (0.192)	- -	- -	- -
ln (assets$_{t-1}$)	- -	- -	-12.69*** (0.0940)	- -	- -
RoA$_{t-1}$	- -	- -	- -	0.0426*** (0.00165)	- -
Corporation dummy x effective tax rate$_{t-1}$	- -	- -	- -	- -	-0.000256 (0.00591)
Constant	4.305*** (0.893)	5.589*** (0.923)	150.7*** (1.335)	8.260*** (0.904)	4.226*** (0.895)
Year dummy	Yes	Yes	Yes	Yes	Yes
Observations	300,453	299,558	300,453	300,453	300,453
Analyzed enterprises	125,717	125,348	125,717	125,717	125,717

Note: 1. Figures in ( ) represent standard errors. ***, **, and * are significance levels of 1 percent, 5 percent, and 10 percent, respectively.
1) (tangible assets at t - tangible assets at t-1) / total assets
2) Years in business: reference year - year of foundation

We analyzed both the direct and indirect effects of the tax burden on total payroll. The effective tax rate variable was included in the estimation equation for total payroll to measure its direct effect on total payroll. The indirect effect was measured through the change in investment ratio. Specifically, a change in the effective tax rate causes changes in investment, which in turn causes changes in total payroll.

Corporate taxation had a statistically significant indirect effect on the total payroll through the change in investment ratio. In other words, an increase in the effective tax rate reduces investment, which has a negative effect on the total payroll after a certain time-lag. Such a decrease in the total payroll is expected to negatively affect employment. The long-term and short-term investment ratio elasticity of the total payroll was 0.001 and 0.003~0.004, respectively.[9,10] If we multiply the tax elasticity of the investment ratio by the investment ratio

elasticity of the total payroll, which represents the indirect effect of taxation on the total payroll, it will be from -0.0000~-0.0001.[11] Although statistically significant, the effect is small.

We found the direct effect of corporate taxation on the total payroll to be mostly negative, albeit at a low significance. This finding shows that the effect of corporate taxation mostly originated from an indirect effect through investment activities.

Theoretically, an increase in corporate taxation lowers the after-tax return on capital, which induces firms to substitute capital with labor, while the output effect reduces the demand for labor. The direct effect estimated in this study is close to a substitution effect, and the indirect effect is close to an output effect. The findings show that firms' labor demand responds to corporate taxation through the output effect rather than substitution effect.

R&D activities and ROAs were found to have a positive effect on the total payroll. A firm with stronger R&D activities and higher profitability spent more on its payroll. The short-term and long-term elasticity of the R&D expenditure to the total payroll were 0.007 and 0.014, respectively, which indicates that the R&D expenditure may serve as a critical factor for firm growth. The R&D expenditure contributes to increasing profit by improving production processes, developing new products, and acquiring patents. Therefore, the R&D expenditure may have a three-year or longer-term effect, which we did not consider in the model. Comparing the relative contribution to firm growth between the plant and equipment investment and R&D investment, if the tax elasticity of the R&D expenditure is high enough, then the R&D expenditure may contribute more to firm growth than the plant and equipment investment. According to the OECD (2018a), the long-term and short-term tax elasticity of the R&D expenditure are -0.13 and -0.8, respectively. The long-term tax elasticity of firm growth through R&D investment is -0.01, which indicates that R&D expenditure could be a better channel for firm growth.[12]

However, a firm's number of years in business negatively affected total payroll, and the asset size of an enterprise did not have a significant effect. These findings indicate that the payroll expenditure of a firm aligns with profitability more than with asset size.

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9 Short-term elasticity: estimated coefficient (-0.0007) × average investment ratio (2.03%)

10 When we replaced the investment ratio with the invested amount as the explanatory variable for the regression model, the short-term investment elasticity of the total payroll was estimated at 0.0008-0.001, which is similar to the short-term investment ratio elasticity.

11 Tax elasticity of the investment ratio (between -0.02 and -0.03) × Investment ratio elasticity of the total payroll (between 0.001 and 0.004)

12 For more meaningful findings, we needed to estimate the tax elasticity of R&D expenditure in Korea.

Table 10_Effect on Total Employment (Payroll)

Variable	ln (payroll)[1]				
	1	2	3	4	5
ln ($payroll_{t-1}$)[1]	0.543*** (0.0245)	0.631*** (0.0350)	0.535*** (0.0331)	0.541*** (0.0245)	0.543*** (0.0245)
Investment $ratio_{t-1}$	0.000732*** (0.0000899)	0.000729*** (0.0000934)	0.000689*** (0.000110)	0.000748*** (0.00009)	0.000732*** (0.0000899)
ln (R&D $expenses_{t-1}$)	0.00677*** (0.00128)	0.00690*** (0.00133)	0.00667*** (0.00128)	0.00668*** (0.00128)	0.00679*** (0.00128)
Effective tax $rate_{t-1}$	-0.0000139 (0.0000867)	-0.000027 (0.0000901)	-0.0000149 (0.0000864)	0.00000504 (0.0000868)	-0.000434 (0.000472)
ln (years in business)[2]	- -	-0.120*** (0.0206)	- -	- -	- -
ln ($assets_{t-1}$)	- -	- -	0.00902 (0.0126)	- -	- -
RoA_{t-1}	- -	- -	- -	0.000498*** (0.000185)	- -
Corporations × effective tax $rate_{t-1}$	- -	- -	- -	- -	0.000434 (0.000481)
Constant	6.087*** (0.324)	5.165*** (0.433)	6.097*** (0.297)	6.098*** (0.324)	6.084*** (0.324)
Year dummy	yes	yes	yes	yes	yes
Observations	39,664	39,537	39,664	39,664	39,664
Analyzed enterprises	19,158	19,094	19,158	19,158	19,158

Note: 1. Figures in ( ) represent standard errors. ***, **, and * are significance levels of 1 percent, 5 percent, and 10 percent, respectively.
1) Total payroll = SG&A payroll + manufacturing payroll, based on data about enterprises with both SG&A and manufacturing payrolls
2) Years in business: reference year - year of foundation

We analyzed the effect of corporate taxation in two parts: production labor cost and sales administration labor cost. The findings showed that the effective tax rate had a negative effect on the production payroll. However, the effect was not statistically significant. The direct effect on the sales administration payroll did not show a consistent direction. However, the indirect effect on the production payroll was twice as high as the indirect effect on the sales administration payroll. The coefficient of the investment ratio at t-1 was 0.0008~0.0009 for the production payroll, which was twice as high as that of the sales administration payroll at 0.0004~0.0005. The finding indicates that an increase in corporate taxation may greatly reduce the production payroll by decreasing investment.

Such a difference may also be found in the analysis of change in the share of the sales administration payroll in the total payroll. While a change in the effective corporate tax rate did not directly affect the structure of the payroll, it changed the payroll structure through changes in investment. In other words, an increase/decrease in the investment ratio reduced/raised the share of the sales administration payroll in the total payroll. To summarize, changes in corporate taxation resulted in a relatively rapid change in the production payroll. In addition, larger firms and more profitable firms reported a higher share of the SG&A payroll. We could not find any significant difference in response to corporate taxation between corporations and sole proprietors.[13]

Table 11_Effect on Manufacturing Employment (Production Payroll)

Variable	ln (Production payroll)				
	1	2	3	4	5
ln (Prod. payroll$_{t-1}$)[1)]	0.383*** (0.0208)	0.396*** (0.0227)	0.373*** (0.0236)	0.383*** (0.0208)	0.384*** (0.0207)
Investment ratio$_{t-1}$	0.000893*** (0.000143)	0.000886*** (0.000144)	0.000762*** (0.000158)	0.000893*** (0.000143)	0.000892*** (0.000143)
ln (R&D expenses$_{t-1}$)	0.00476** (0.00204)	0.00486** (0.00206)	0.00448** (0.00204)	0.00476** (0.00204)	0.00477** (0.00204)
Effective tax rate$_{t-1}$	-0.0000712 (0.000136)	-0.0000867 (0.000137)	-0.0000757 (0.000136)	-0.0000715 (0.000137)	-0.000475 (0.000749)
ln (years in business)[1)]	- -	-0.0448* (0.0233)	- -	- -	- -
ln (assets$_{t-1}$)	- -	- -	0.0274** (0.0137)	- -	- -
ROA$_{t-1}$	- -	- -	- -	-0.00000294 (0.000292)	- -
Corporations × effective tax rate$_{t-1}$	- -	- -	- -	- -	0.000417 (0.000762)
Constant	7.819*** (0.261)	7.806*** (0.271)	7.597*** (0.231)	7.875*** (0.263)	7.871*** (0.263)
Year dummy	Yes	Yes	Yes	Yes	Yes
Observations	39,763	39,636	39,763	39,763	39,763
Analyzed enterprises	19,162	19,098	19,162	19,162	19,162

Note: 1. Figures in ( ) represent standard errors. ***, **, and * are significance levels of 1 percent, 5 percent, and 10 percent, respectively.
1) Years in business: reference year - year of foundation

13 For sole proprietors, we analyzed income tax burden.

Table 12_Effect on Sales Administration Employment (Sales Administration Payroll) (1)

Variable	ln (sales administration payroll)				
	1	2	3	4	5
ln (SA payroll$_{t-1}$)[1)]	0.697*** (0.0203)	0.775*** (0.0257)	0.696*** (0.0230)	0.695*** (0.0203)	0.697*** (0.0203)
Investment ratio$_{t-1}$	0.000447*** (0.000126)	0.000418*** (0.000131)	0.000411*** (0.000137)	0.000499*** (0.000126)	0.000446*** (0.000126)
ln (R&D expenses$_{t-1}$)	0.00902*** (0.00179)	0.00966*** (0.00186)	0.00892*** (0.00180)	0.00871*** (0.00179)	0.00904*** (0.00179)
Effective tax rate$_{t-1}$	0.00000303 (0.000123)	-0.00000842 (0.000127)	0.00000277 (0.000123)	0.0000645 (0.000123)	-0.000657 (0.000658)
ln (years in business)[1)]	- -	-0.209*** (0.0241)	- -	- -	- -
ln (assets$_{t-1}$)	- -	- -	0.00782 (0.0117)	- -	- -
RoA$_{t-1}$	- -	- -	- -	0.00159*** (0.000260)	- -
Corporations × effective tax rate$_{t-1}$	- -	- -	- -	- -	0.000683 (0.000669)
Constant	3.711*** (0.249)	3.182*** (0.289)	3.607*** (0.227)	3.723*** (0.248)	3.746*** (0.251)
Year dummy	Yes	Yes	Yes	Yes	Yes
Observations	38,941	38,813	38,941	38,941	38,941
Analyzed enterprises	18,898	18,832	18,898	18,898	18,898

Note: 1. Figures in ( ) represent standard errors. ***, **, and * are significance levels of 1 percent, 5 percent, and 10 percent, respectively.
1) Years in business: reference year - year of foundation.

Table 13_Effect on Sales Administration Employment (Sales Administration Payroll) (2)

Variable	SA payroll / total payroll				
	1	2	3	4	5
(SA payroll / total payroll)$_{t-1}$	0.486*** (0.0156)	0.483*** (0.0156)	0.487*** (0.0156)	0.485*** (0.0155)	0.486*** (0.0156)
Investment ratio$_{t-1}$	-0.00907** (0.00369)	-0.00889** (0.00369)	-0.0155*** (0.00390)	-0.00806** (0.00369)	-0.00908** (0.00369)
ln (R&D expenses$_{t-1}$)	0.0571 (0.0519)	0.0498 (0.0519)	0.0394 (0.0521)	0.0516 (0.0518)	0.0574 (0.0519)
Effective tax rate$_{t-1}$	0.00374 (0.00341)	0.00400 (0.00341)	0.00356 (0.00341)	0.00483 (0.00341)	-0.00352 (0.0194)
ln (years in business)[1)]	- -	0.436 (0.545)	- -	- -	- -
ln (assets$_{t-1}$)	- -	- -	1.383*** (0.273)	- -	- -
ROA$_{t-1}$	- -	- -	- -	0.0321*** (0.00736)	- -
Corporations × effective tax rate$_{t-1}$	- -	- -	- -	- -	0.00748 (0.0197)
Constant	20.71*** (0.895)	20.20*** (1.436)	-0.0974 (4.225)	20.78*** (0.900)	20.71*** (0.895)
Year dummy	yes	Yes	yes	yes	yes
Observations	40,679	40,555	40,679	40,679	40,679
Analyzed enterprises	19,480	19,416	19,480	19,480	19,480

Note: 1. Figures in ( ) represent standard errors. ***, **, and * are significance levels of 1 percent, 5 percent, and 10 percent, respectively.
1) Years in business: reference year - year of foundation

The analysis of the determinants of firm growth, which we measured with sales, did not include the effective corporate tax rate variable. The reason for the exclusion was the lack of economic relation between the two variables: corporate taxation and sales. A firm's sales depend on the market competitiveness of its products. Therefore, we included the variables that affect product competitiveness: investment size, assets, and R&D expenses.

The findings showed a strong serial correlation of firm sales, but few other economic variables had a significant effect on sales. The investment ratio at t-1 was found to positively affect sales by increasing production capacity. However, years in business and assets had a negative effect on sales. In other words, older and larger firms experienced relatively low sales growth because of market maturity, the market share effect, weakening of innovation inertia, and so on. R&D expenditure and ROA were also found to limit sales growth. Enterprises with higher R&D

expenditure and higher returns were less motivated to increase their sales. These firms seemed to focus more on other goals such as profitability.

Table 14_Effect on Firm Growth (Sales)

Variable	ln (sales)			
	1	2	3	4
ln ($sales_{t-1}$)	0.469*** (0.0112)	0.468*** (0.0144)	0.522*** (0.0149)	0.530*** (0.0124)
Investment $ratio_{t-1}$	0.0000903** (0.0000358)	0.0000757** (0.0000355)	0.000214*** (0.0000374)	0.0000611* (0.0000363)
ln ($R\&D\ expenses_{t-1}$)	-0.0144*** (0.00132)	-0.0127*** (0.00133)	-0.0139*** (0.00135)	-0.0155*** (0.00135)
ln (years in business)[1)]	- -	-0.00106 (0.0157)	- -	- -
ln ($assets_{t-1}$)	- -	- -	-0.117*** (0.00903)	- -
RoA_{t-1}	- -	- -	- -	-0.00370*** (0.0000999)
Constant	8.166*** (0.163)	8.160*** (0.189)	9.084*** (0.133)	7.277*** (0.181)
Year dummy	Yes	Yes	Yes	Yes
Observations	107,362	106,111	107,362	107,362
Analyzed enterprises	44,817	44,252	44,817	44,817

Note: 1. Figures in ( ) represent standard errors. ***, **, and * are significance levels of 1 percent, 5 percent, and 10 percent, respectively.
1) Years in business: reference year—year of foundation

R&D expenditure had a highly significant effect on firm growth. In addition, productivity was highlighted as one of the main growth engines for the future. For these reasons, we also analyzed the effect of taxation on R&D expenditure. The findings of our dynamic panel model analysis showed that the effect of the effective corporate tax rate on R&D expenditure was not statistically significant, and we were not able to identify the direct effect of the effective corporate tax rate on R&D expenditure. However, this finding only represents the effect of general taxation and does not disprove the efficacy of tax incentives directly targeted to R&D expenditure.

The factors that had a significantly positive effect on R&D expenditure were firm size and profitability. Larger and more profitable companies were found to spend more on R&D activities, which implies that star firms tend to be more aggressive in R&D spending, as they

can expect to survive long enough to benefit from the long-term effects of their R&D efforts. Meanwhile, sales at t-1 had a negative effect on R&D expenditure. This finding suggests that the corporate tax rate change may not be a good choice to boost R&D expenditure. Tax incentives closely targeted to R&D may be a better tool for inducing responses from large and profitable firms.

Table 15_Effect on R&D Expenses

Variable[1)]	Dependent variable: ln (R&D expenses)	
	1	2
ln (R&D expenses)	0.276*** (0.00891)	0.279*** (0.00882)
Effective tax rate$_{t-1}$	0.000378 (0.000243)	0.000416* (0.000243)
ln (sales$_{t-1}$)	-0.0599*** (0.0133)	-0.0516*** (0.0129)
ln (assets$_{t-1}$)	0.0745*** (0.0183)	- -
RoA$_{t-1}$	- -	0.000994** (0.000414)
Constant	8.324*** (0.267)	9.286*** (0.198)
Year dummy	Yes	Yes
Observations	62,047	62,047
Analyzed enterprises	25,936	25,936

Note: 1. Figures in ( ) represent standard errors. ***, **, and * are significance levels of 1 percent, 5 percent, and 10 percent, respectively.

V. Conclusions

In this study, we analyzed the effects of corporate taxation on firm investment ratio and growth. To this end, we relied on data rarely used in the literature. While most of the previous studies relied on data about larger firms subject to external audit requirements, we used KED data including firms exempt from external audit and sole proprietors.

We found that an increase in the effective corporate tax rate significantly lowered the investment ratio. In addition, a firm's years in business and asset amount had a negative effect on the investment ratio. This seems to be the natural result of stabilization or growth of firms. The ROA of each firm was found to have a significantly positive impact, which implies that

more profitable firms invest more in tangible assets. So, firms that perform better in the market expand their tangible assets faster than other firms to increase their profits.

The effect of the effective tax rate on the total payroll seemed to be negative, albeit at a low significance level. However, the effective tax rate had a statistically significant negative effect through an investment ratio change. An increase in the effective corporate tax rate reduced the investment ratio, which in turn reduced the total payroll and inhibited long-term firm growth. R&D activities and profitability promoted firm growth. We compared investment and R&D expenditure in terms of their inducement effect on firm growth. While the long-term tax elasticity through investment was -0.0001, the tax elasticity through R&D expenditure was -0.01, which suggests that enhancing R&D expenditure may be a more effective path for promoting firm growth. Our additional analysis on the determinants of R&D expenditure did not identify a direct effect of effective corporate tax rate. Firm size and profitability increased R&D expenditure.

Corporate taxation significantly lowered the share of production payroll in the firm payroll structure. In other words, the decrease in investment ratio caused by increased corporate taxation resulted in a decrease in production payroll share. A higher effective corporate tax rate indirectly inhibited firm growth measured as firm sales by lowering the investment ratio. These findings suggest that to induce economic growth through firm growth (payroll growth), the government needs to continuously provide incentives for investment, enhance R&D activities, and encourage firms to focus on profitability. In particular, the implication for tax policy is that it is important to reduce the negative effect of an increase in corporate taxation and build a foundation for long-term growth by enhancing tax support for R&D activities.[14] In addition, tax incentives closely targeted to R&D may be a better tool for inducing responses from large and profitable firms.

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14 Kim Hak-Soo (The R&D Tax Support for Innovation-Driven Growth, Discussion paper, Korea Institute of Public Finance, 2018) suggested improvements for Korea's tax support policy with a focus on efficiency improvement, including verifying the eligibility of R&D activities, reducing gaps in tax spending among firm sizes, and building an integrated database.

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An Empirical Analysis of the Effect of Income Redistribution Policies in Korea

Jong-Suk Han and Jinhee Woo*

I. Introduction

In Korea, income polarization has worsened in recent years, with low-income families earning less than they used to earn. The situation has emphasized the role of the government in income redistribution. In fact, income redistribution has been one of the guiding principles of the current administration's policies, as reflected in its economic policies in 2018, budget drafts in 2018, the 2018 amendment to tax laws, and the 2019 budget draft. The current situation makes it crucial to understand how taxes and fiscal policies contribute to income redistribution. Therefore, we analyze how income redistribution policies, which the government has been expanding, will affect Korea's overall economy.

In this study, we use various datasets to empirically analyze the effects of income redistribution policies on income distribution and the overall economy. First, we analyze fiscal aggregate data to identify changes in transfer payments, and we compare the Gini coefficients on market income and disposable income in member states of the Organization for Economic Co-operation and Development (OECD) to see how income inequality has been mitigated. Then, we use household microdata to measure the benefits, burdens, and net benefits

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experienced by different income deciles to determine how income redistribution policies affect people with different incomes.

We also empirically analyze changes in the scale of income redistribution policies and the benefits and burdens across income deciles. Our review of the Gini coefficients regarding market income and disposable income in OECD countries shows that Korea's Gini coefficients for market and disposable income are lower than those of the United States, the United Kingdom, Germany, Sweden, and Greece. Korea also reported the second-lowest (ahead of Chile) improvement rate, which is measured as the ratio between the Gini coefficients for disposable income and market income. Unlike in other countries, however, the improvement rate in Korea rose constantly from 2011~2015. We also investigate the scale of transfer payments during the past decade. Transfer expenditures are directly related to income redistribution policies. Therefore, the scale of transfer payments serves as a proxy indication of whether income redistribution policies have been expanding. In the consolidated fiscal balance, transfer expenditures consist of subsidies and current transfers. Current transfers are divided into transfers to local governments and transfer to households. Transfers to local governments are divided into goods and services, current transfers, and capital expenditures. Among those items, as only current transfers are proper transfer payments, only those were included. From 2011~2017, the overall scale of transfer payments increased, as did their percentage within the total expenditure. In other words, income redistribution policies have been expanding continuously in aggregate terms, which is reflected in the continued increase in the Gini coefficient improvement rate.

We also report the effect of income redistribution policies on households by analyzing the benefits, burdens, and net benefits to different income deciles. Net benefits are analyzed using data from the 10th Fiscal Panel of the Korean Institute of Public Finance (KIPF). Income deciles are defined using private income, which is the sum of market income and private transfer income. We equalized incomes using the OECD method. Analysis of household characteristics by income decile shows that most low-income households are elderly households with one or two members, and high-income households are working households with three or more members. The heads of high-income households are mostly people in their 40s or 50s with school-age children, whereas the heads of middle-income households are mostly people in their 30s or 40s with preschool children. Benefits consist of public cash transfer payments and public in-kind transfer payments. Burdens include direct taxes, social security contributions, and indirect taxes. Public cash transfer payments consist of public pension benefits and other cash transfer payments. Public in-kind transfer payments include

medical benefits, educational benefits, and loan benefits. By income decile, most public cash transfer payments are paid to the first decile, and the amounts decrease in the higher deciles. Meanwhile, public in-kind transfers are distributed across all deciles in a U shape due to the medical benefits provided to elderly low-income households and the educational benefits provided to high-income households with school-age children. As for burdens, direct taxes and social security contributions are progressively distributed. That is, households in higher-income deciles pay more direct taxes and social security contributions than those in lower deciles. The progressivity of social security contributions is lower than that of direct taxes. Though indirect taxes are paid by lower-income households, higher-income households pay more. However, the progressivity of indirect taxes is lower than that of direct taxes or social security contributions. We also analyze the net benefits of different income deciles by subtracting burdens from benefits. The analysis shows that the first five income deciles enjoy net benefits, and the sixth and higher deciles bear net burdens.

II. Previous Research

There has been no shortage of efforts to use household microdata to analyze the income redistribution effects of taxes and transfer payments. Early studies used household microdata, Gini coefficients on market income and disposable income, and indicators such as the squared coefficient of variation or mean logarithmic deviation.

Sung (2001) analyzed changes in the distribution structure and redistribution effect of tax policies using data from the Household Income and Expenditure Survey (HIES) from 1982~2000. He used Gini coefficients and decile dispersion ratios to measure changes in income inequality based on the gross incomes of households equalized by the square root of the number of household members. He also simulated how changes in demographic structure affect income distribution. Jung et al. (2011) analyzed changes in income inequality among working households before and after Korea's 1977 financial crisis. They analyzed the Gini coefficients on market income, current income, and disposable income; mean logarithmic deviation; the Atkinson index; and decile dispersion ratio data from the HIES data from 1990~2000 to measure changes in income inequality and income redistribution. Sung (2002) focused on the effect of tax policies on income redistribution. Following the example of Sung (2001), he used the HIES data (1982~2000) to analyze the status of and changes in income distribution and tax burdens and simulated how tax law amendments affected income redistribution. He also used Gini coefficients on market income and disposable income, the

squared coefficient of variation, and mean logarithmic deviation to analyze the correlation between progressivity of tax burden and income redistribution. He estimated the redistribution effects of different tax reform scenarios. Unlike the studies mentioned above, Park et al. (2004) focused on the income redistribution effect of fiscal expenditures. They also relied on data from the HIESs 1995~2005, but their work is distinguished by considering transfer payments as well as income taxes. They used behavioral and benefit approaches to measure the benefits from pure public goods and impure public goods, and they used Gini coefficients to analyze the income redistribution effect. Park et al. (2006) comprehensively analyzed how changes in tax burden and fiscal expenditures affected income redistribution. That study was distinguished by its analysis of income redistribution in terms of distribution of tax burden and transfer payments across income deciles. They estimated how increased tax burdens or expanded fiscal expenditures affected the income redistribution effect. In the process, they analyzed the degree of income redistribution that occurred through taxes and cash/in-kind expenditures across income deciles, as well as where transfer payments were made.

The studies discussed thus far treated income inequality as an indicator among others such as Gini coefficients, squared coefficient of variation, and mean logarithmic deviation. Although those indicators are readily available for measuring changes in income redistribution, they do not provide much information about the disposable incomes of particular deciles and how they have been changed by the relevant policies. Other studies have focused on the benefits and burdens of different income deciles to analyze the effects of income redistribution policies in more detail. Sung and Park (2008) analyzed the income redistribution effects of taxes, fiscal expenditures, and simulated policy changes by measuring the benefits and burdens of different income deciles. They used raw data from the 2006 HIES provided by Statistics Korea to estimate the direct taxes, cash benefits, indirect taxes, and in-kind benefits of individual households. Then, they used those estimated incomes to define income deciles and measured the benefits, burdens, and net benefits to households in each decile. They also simulated changes in income tax, indirect tax, and transfer payments to see how those changes would affect the benefits and burdens of different income deciles. Sung (2011) and Sung (2014) extended the work of Sung and Park (2008) to the 2009 HIES data and the 2013 HIES data, respectively. Sung (2011) analyzed Gini coefficients across income types and the benefits and burdens of income deciles to investigate income redistribution. He then used those findings to simulate changes in the burdens and benefits that would occur with various taxes and fiscal expenditures to analyze the income redistribution effects of different policies. The simulations showed that, although the tax burdens of higher-income households soared, the

number of benefits before receiving public transfer payments did not differ greatly between low-income and high-income households. However, an analysis of the ratio of benefits to burdens showed that the benefits were largely distributed to low-income households. Based on those findings, Sung concluded that fiscal expenditures have a larger effect on income redistribution than do taxes. Park (2010) used data from the 2008 Fiscal Panel (Year 1) to analyze the benefits and burdens of income deciles. Although the HIES includes data on the direct taxes imposed on different households, it also has numerous errors caused by inaccurate reports from the surveyed households. Therefore, Sung and Park (2008), Sung (2011), and Sung (2014) separately estimated income taxes. First, to define tax bases, they categorized incomes using taxpayer and income types and considered various deductions under the Income Tax Act. Then, they applied tax rates based on the estimated tax bases, applied the deductions, and used the resulting tax amounts. The Fiscal Panel data do not require income tax estimation, but researchers used estimated income taxes because questionnaire survey results include recollection errors, which are significant in the HIES. Unlike the HIES, the Fiscal Panel collects supporting documents for income deductions, such as withholding tax receipts. The panel uses information from the documents to answer survey questions, thereby considerably reducing errors about incomes and direct taxes. For this reason, Sung and Park (2008) used the direct tax variables from the Fiscal Panel data without separate estimation. The Fiscal Panel also collects detailed information about public pension payments and cash benefits, which researchers can use to analyze benefits. However, it is generally difficult to collect data regarding indirect taxes and in-kind benefits. Therefore, Park (2008) used the method proposed by Sung and Park (2008) to analyze indirect taxes and in-kind benefits. Based on the findings about net benefits across income deciles, Park (2010) concluded that the benefits from public transfers are received mostly by low-income groups such as the first- and second-income deciles. In addition, although income tax burdens increase progressively, social security contributions increase largely in proportion to income. However, the higher property taxes and consumption taxes paid by the higher-income deciles increase less progressively. Medical benefits and educational benefits, which are in-kind benefits, increased in proportion to income.

III. Analysis of Aggregate Data

In this chapter, we consider the effects of income redistribution policies by analyzing various data. First, we analyze changes in the Gini coefficients on market income and

disposable income and government transfer payments. Specifically, we compare the Gini coefficients on market income and disposable income across OECD countries at different times. We also compare the Gini coefficient on market income with the Gini coefficient on disposable income to measure the effects of income redistribution policies in different countries. The scale of a government's transfer payments can be another indicator to measure the scale of income redistribution policies. In particular, the scale of transfer payments indicates income redistribution on the fiscal expenditure side. To that end, we review the scale of transfer payments during the past decade. Most transfer payments in the consolidated fiscal balance go to local governments. Transfer payments to local governments are divided into current expenditures and capital expenditures depending on whether local governments spend them, and current expenditures are divided into goods and services and current transfers. Therefore, using the total transfer payments as the size of the government's income redistribution policies could result in overestimation. To ensure accuracy, we estimate and analyze only the part of the transfer payments to local governments that constitute transfer payments to households.

1. Income Inequality and Redistribution in OECD Countries

In this chapter, we use the Gini coefficients on market income and disposable income to investigate income inequality in OECD countries. The OECD equalizes household incomes using the number of household members, and income deciles are defined based on disposable income. Disposable incomes are measured by adding social security contributions and transfers to market incomes. Caution is advised when analyzing OECD data because countries can publish data collected at different times.

Table 1_Gini Coefficients in OECD Countries (as of 2015)

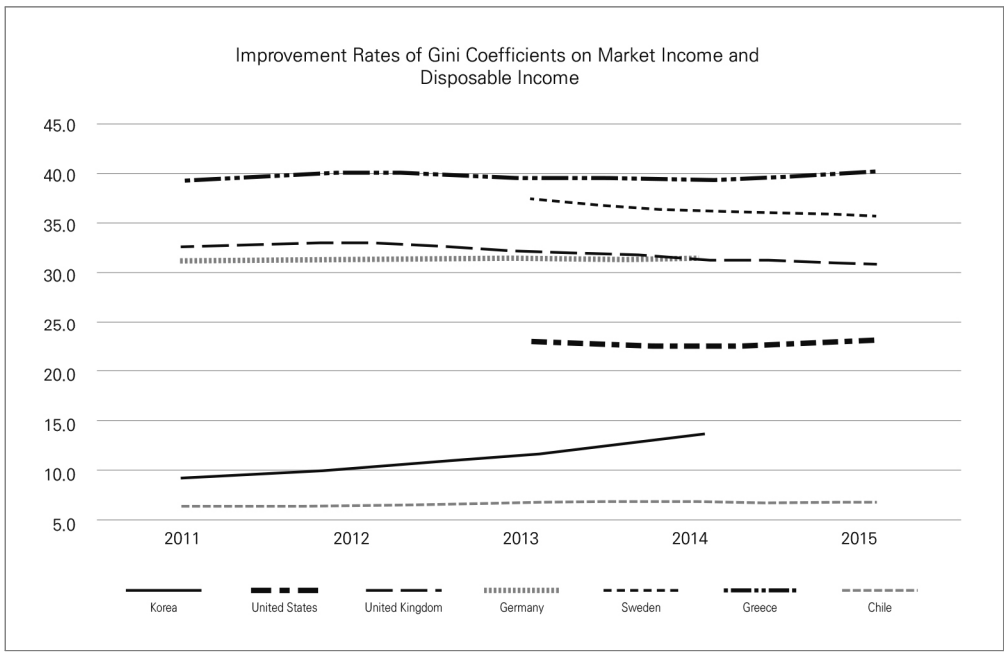
	Korea	United States	United Kingdom	Sweden	Greece	Chile
Market Income Gini	0.341	0.506	0.520	0.432	0.566	0.486
Disposable Income Gini	0.295	0.309	0.360	0.278	0.340	0.454
Improvement Rate	13.5%	22.9%	30.8%	35.6%	39.9%	6.6%

Source: OECD, Statistics Income Distribution and Poverty (https://stats.oecd.org/Index.aspx?DataSetCode=IDD, accessed on April 16, 2018); improvement rates calculated by the authors

First, Table 1 lists the Gini coefficients of six OECD countries: Korea, the United States, the United Kingdom, Sweden, Greece, and Chile. The improvement rate is calculated by subtracting the ratio between the Gini coefficient on disposable income and the Gini coefficient on market income from 100 percent. It is designed to measure the gap between the Gini coefficients on market income and disposable income. Disposable income includes both tax burden (which includes the social security contribution) and transfer payments and reflects the income redistribution policies of each country. Therefore, the improvement rate calculated using the Gini coefficients on disposable income and market income can be understood as an indicator of the effect of income redistribution policies. Korea's Gini coefficient on market income is 0.341, which is far lower than those of the United States, the United Kingdom, Sweden, Greece, and Chile. Koreacies, Korea's Gini coefficient, is the second lowest at 0.295, with the lowest being Sweden. The Gini coefficients on disposable income for the United Kingdom and Greece are 0.360 and 0.340, respectively, which is close to Korea's Gini coefficient. Chile's Gini coefficient on disposable income is 0.454, which is close to the Gini coefficients on market income for other countries. Korea's improvement rate is 13.5 percent, which is the second lowest after Chile's 6.6 percent. Greece reported the highest improvement rate at 39.9 percent, followed by Sweden at 35.6 percent. Northern European countries generally implement stronger income redistribution policies than Southern European countries. However, Sweden's improvement rate is lower than that of Greece, and Sweden shows a lower Gini coefficient on disposable income than Greece. Therefore, the effects of income redistribution policies cannot be sufficiently compared based solely on improvement rates. For a more accurate analysis, we need to consider the Gini coefficients on disposable income and market income and the improvement rates over time.

Figure 1_Improvement Rates of Gini Coefficients in OECD Countries (2011~2015)

(unit: %)



Source: OECD, Statistics Income Distribution and Poverty (https://stats.oecd.org/Index.aspx?DataSetCode=IDD, accessed on April 16, 2018); improvement rates calculated by the authors

So far, we considered Gini coefficients in 2015. To understand the effects of changes in the income redistribution policies of each country, we need to complete a time-series analysis of the Gini coefficient improvement rate in each country. Figure 1 shows how the improvement rates of the countries featured in Table 1 changed from 2011~2015. (We traced changes in improvement rates after 2011 because the OECD changed its definition of income in 2012.) In that period, the improvement rates of the United States, Germany, Greece, and Chile did not change significantly. The improvement rates of the United Kingdom and Sweden decreased slightly during that time, even though Korea's improvement rate has been rising continuously since 2011. Improvement rates indicate the effectiveness of income redistribution policies. Therefore, despite its low Gini coefficients, 'the country's improvement rate has steadily increased over the last five years, which indicates growing effectiveness of its income redistribution policies.

In this analysis, we showed that Korea's distribution of market income and disposable

income is more polarized than in other OECD countries. Korea also reports a lower Gini coefficient improvement rate, which might seem to suggest that its income redistribution policies are less effective than those found elsewhere. However, Korea's improvement rate has increased steadily during the past five years, which suggests that Korea has been bolstering the effect of its income redistribution policies more than the countries in which improvement rates did not change or decreased slightly.

2. Changes in Government Transfer Payments to Households

Next, we estimate the scale of government income redistribution policies by reviewing the aggregate total expenditures for transfer payments in the consolidated fiscal balance. We review the items in the total expenditures from 2011~2017 and analyze the scale of subsidies and current transfers, which are directly related to income redistribution policies.

Table 2_Total Expenditures and Current Expenditures in the Consolidated Fiscal Balance

Plans	2011	2012	2013	2014	2015	2016	2017
Total Expenditures	269.8	286.9	302.0	311.5	330.5	342.6	363.7
Current Expenditures	235.5	252.6	268.0	280.5	296.2	310	332.7
Goods and Services	53.0	55.4	57.8	59.6	63.2	65.1	67.5
Interest Paid	14.6	14.2	13.4	14.1	14.1	14.0	14.0
Subsidies and Current Transfers	165.2	179.4	193.5	203.6	216.2	228.3	248.5
Business Special Account	2.7	3.6	3.4	3.1	2.8	2.5	2.7
Capital Expenditures	34.3	34.3	34.0	31	34.3	32.6	31.0

Source: calculated by the authors based on the Statistics Korea Consolidated Fiscal Balance (http://kosis.kr/statHtml/statHtml.do?orgId=102&tblId=DT_102N_AD01&conn_path=I2, accessed on: April 18, 2018)

Table 2 lists the total expenditures, current expenditures, and capital expenditures in the consolidated fiscal balance from 2011~2017. As of 2017, the total expenditures were around KRW 363.7 trillion. Current expenditures account for 91.5 percent of the total expenditures at KRW 332.7 trillion. Current expenditures consist of goods and services, interest paid, subsidies and current transfers, and business special accounts. The scale of subsidies and current transfers, which are associated with income redistribution policies, is KRW 248.5 trillion, or 68.3 percent of the total expenditures.

Table 3_Specific Items in Subsidies and Current Transfers in the Consolidated Fiscal Balance

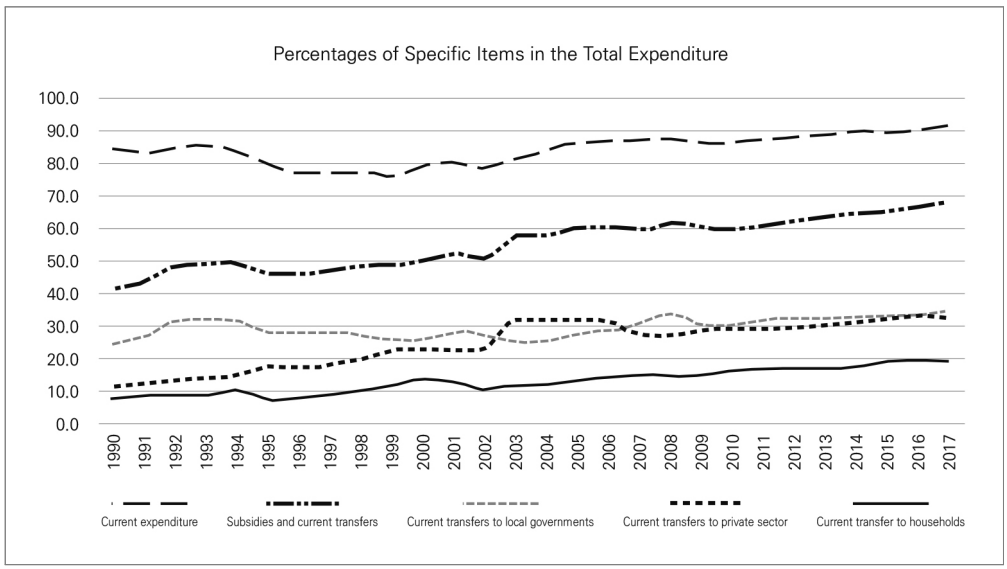
Plans	2011	2012	2013	2014	2015	2016	2017
Subsidies	0.5	0.4	0.4	0.4	0.5	0.5	0.5
Current Transfers to Local Governments	85.3	92.8	99.6	103.2	106.2	112.6	127.9
Current Transfers to Non-profit Organizations	32.4	36.5	40.4	42.7	46.9	47.7	48.3
Current Transfers to Households	45.8	48.5	51.6	55.9	61.3	66.2	70.6
Current Transfers to the Private Sector	78.3	84.9	92.1	98.6	108.2	113.9	118.8

Source: calculated by the authors based on the Statistics Korea Consolidated Fiscal Balance (http://kosis.kr/statHtml/statHtml.do?orgId=102&tblId=DT_102N_AD01&conn_path=I2, accessed on: April 18, 2018)

Table 3 lists the amounts spent for specific items within the category of subsidies and current transfers: subsidies, current transfers to local governments, current transfers to nonprofit organizations, and current transfers to households. Among the specific items, we define current transfers to nonprofit organizations and households as current transfers to the private sector. In 2017, the amount of current transfers to the private sector was KRW 118.8 trillion, or 47.8 percent of subsidies and current transfers. However, this approach does not consider the subset of current transfers to local governments that also constitute current transfers to the private sector, resulting in underestimation of the overall transfer to the private sector. Therefore, for a more accurate understanding of transfer payments to households, we need to estimate the subset of current transfers to local governments that constitutes current transfers to the private sector.

Figure 2_Changes in the Percentages of Specific Items in Total Expenditures (1990~2017)

(unit: %)



Source: calculated by the authors based on the Statistics Korea Consolidated Fiscal Balance (http://kosis.kr/statHtml/statHtml.do?orgId=102&tblId=DT_102N_AD01&conn_path=I2, accessed on: April 18, 2018)

Figure 2 shows the percentages of specific expenditure items within the total expenditures. The percentage of current transfers to households, which is directly linked with income redistribution policies, increased from 10 percent in 1990 to nearly 20 percent in 2017 (19.4 percent, to be precise). The percentage of current transfers to the private sector (including nonprofit organizations) also increased from around 11 percent in 1990 to around 22 percent in 2017. Meanwhile, current transfers to local governments has fluctuated around 30 percent for the past 30 years. Current transfers to local governments consist of goods and services, current transfers, and capital expenditures. To properly measure the percentage of transfers to households in the total expenditures, we need to consider the specifics of revenue and expenditure at the local government level.

Table 4_Revenue Items at Local Governments (Consolidated Fiscal Balance)

(unit: KRW trillion, %)

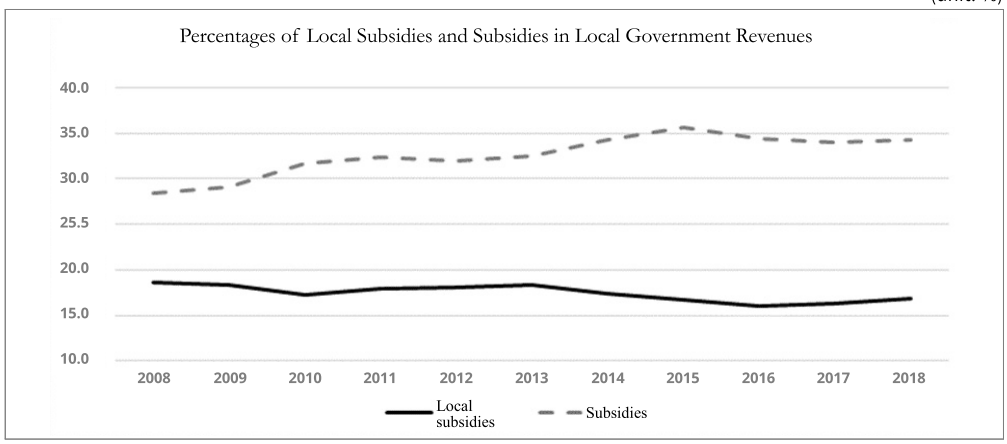
Year	Total Revenue (KRW trillion)	Local Tax Revenue	Non-Tax Revenue	Local Subsidies	Subsidies	Others
2011	185.5	26.8	20.0	18.0	32.4	2.8
2012	198.9	27.0	20.4	18.0	31.9	2.6
2013	208.9	26.2	20.4	18.3	32.5	2.6
2014	220.3	25.1	9.8	17.4	34.3	13.3
2015	234.0	25.8	9.2	16.7	35.6	12.7
2016	250.0	26.3	9.3	16.1	34.4	13.9
2017	259.4	27.8	9.2	16.3	34.0	12.7
Average	-	26.4	14.0	17.3	33.6	8.7

Notes: 1. Local subsidies = local subsidies + grants-in-aid for adjustments
2. Others = collection of local bonds + preservation and internal transactions
Source: calculated by the authors using the Ministry of the Interior and Safety's Financial Yearbook of Local Governments

To estimate the scale of current transfers to the private sector hidden within the current transfers to local governments, we need to inspect the specific items composing local government revenues. Table 4 summarizes those items as recorded in the consolidated fiscal balance. From 2011~2017, subsidies made up the largest part of local government revenues at 33.6 percent, followed by local tax revenues (26.4 percent) and local subsidies (17.4 percent). Although the percentage of local subsidies has declined, local government subsidies continue to increase (Figure 3).

Figure 3_Percentages of Local Subsidies and Subsidies in Local Government Revenues (2008~2017)

(unit: %)



Source: calculated by the authors based on the Ministry of the Interior and Safety's Financial Yearbook of Local Governments

Table 5_Expenditure Items at Local Governments (Consolidated Fiscal Balance)

(unit: KRW trillion, %)

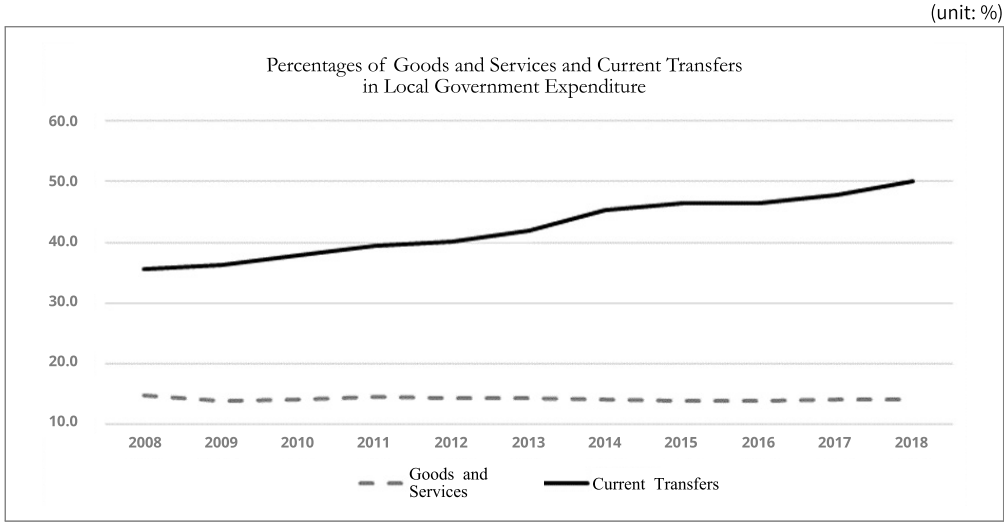
Year	Total Expenditures (KRW trillion)	Goods and Services	Current Transfers	Capital Expenditures	Others
2011	185.5	14.5	39.4	30.7	15.4
2012	198.9	14.3	40.1	29.8	15.8
2013	208.9	14.3	41.9	28.1	15.6
2014	220.3	14.2	45.2	25.4	15.2
2015	234.0	14.0	46.4	24.1	15.5
2016	250.0	14.0	46.5	23.0	16.6
2017	259.4	14.2	47.7	22.6	15.4
Average	-	14.2	43.9	26.3	15.6

Notes: 1. Goods and services = labor expenses + goods expenses
2. Others = loans and investments + preservation + internal transactions + reserves
Source: calculated by the authors based on the Ministry of the Interior and Safety's Financial Yearbook of Local Governments

Table 5 lists the items of expenditure at local governments in the consolidated fiscal balance from 2011~2017. During that period, current transfers accounted for the highest percentage at 43.9 percent, followed by capital expenditures at 26.3 percent and goods and services at 14.2 percent.

Figure 4_Percentages of Goods and Services and Current Transfers in Local Government Expenditures (2008~2017)

(unit: %)



Source: calculated by the authors based on the Ministry of the Interior and Safety's Financial Yearbook of Local Governments

Figure 4 shows that the percentage of current transfers has been increasing during the past 10 years, whereas the percentage of goods and services did not change much.

Thus, we showed that subsidies and local subsidies make up more than half of local government revenues, and the percentage of current transfers in local government expenditures began at 40 percent in 2011 and reached 50 percent in 2017. We can use the percentages of specific items in local government expenditures to estimate current transfers to households. By adding them to the central government current transfers to the private sector, we can identify the expenditures performed for income redistribution.

Table 6_Percentage of Current Transfers to the Private Sector in the Total Expenditures of the Central and Local Governments

(unit: %)

	2011	2012	2013	2014	2015	2016	2017	Average
Central	29.0	29.6	30.5	31.7	32.7	33.2	32.7	31.3
Household	17.0	16.9	17.1	17.9	18.5	19.3	19.4	18.0
Local	12.5	13.0	13.8	15.0	14.9	15.3	16.8	14.5
Total	41.5	42.6	44.3	46.6	47.6	48.5	49.4	45.7

Source: calculated by the authors based on the Statistics Korea Consolidated Fiscal Balance (http://kosis.kr/statHtml/statHtml.do?orgId=102&tblId=DT_102N_AD01&conn_path=I2, accessed on: April 18, 2018) and the Ministry of the Interior and Safety's Fiscal Year book of Local Governments.

Table 6 shows our estimation of the current transfers to the private sector by local governments and the central government. The central government current transfer to the private sector is the sum of current transfers to households and nonprofit organizations in the consolidated fiscal balance, which increased from 29.0 percent to 32.7 percent from 2011–2017. Current transfers to households make up 68.5 percent of the transfers to the private sector. The percentage of current transfers to households within the total expenditures of local governments increased from 12.5 percent in 2011 to 16.8 percent in 2017. The percentage of total expenditures of the central and local governments spent on current transfers to the private sector increased from 41.5 percent in 2011 to 49.4 percent in 2017.

So far, we reviewed Korea's income redistribution policies in aggregate terms, and our findings can be summarized as follows. Korea's Gini coefficients on disposable income and market income are lower than those of other OECD countries. Due to the low Gini coefficient on market income, the country's improvement rate (based on the ratio between the Gini coefficients on disposable income and market income) is lower than those of other countries. However, the improvement rate in Korea increased from 2011~2015, whereas the rates of

other countries held steady or declined slightly. Thus, despite its low improvement rate, Korea has been pursuing income redistribution policies more actively than countries in which the improvement rates remained steady or declined. The same conclusion can be drawn from the continuous increase in expenditures related to income redistribution policies as a percentage of total government expenditures from 1990~2017. The current transfers to the private sector as a percentage of total expenditures increased at both the central and local government levels from 41.5 percent in 2011 to 49.4 percent in 2017.

In other words, the government has been expanding its income redistribution policies. Therefore, we need to analyze the effects of those policies on both income distribution and the overall economy. In Chapter IV, we use a heterogeneous economic agent model to analyze how the government's income redistribution policies affect income distribution and the overall economy.

IV. Household Analysis

Aggregate variables such as Gini coefficients and transfer payments are useful for analyzing overall scales and effects. However, they do not tell us much about how income redistribution policies affect people in different income groups. Therefore, we have estimated and analyzed the benefits, burdens, and net benefits of different income deciles using household microdata from the 10th Fiscal Panel. Most income redistribution policies provide benefits to households based on their members. For example, basic pensions are provided to households with members aged 65 or older, and child benefits are provided to households with children aged five or younger. In other words, transfer payments to households are largely affected by the characteristics of those households. To better understand these policy characteristics, we study the characteristics of household members in income deciles. Then we analyze the benefits, burdens, and net benefits for the income deciles.

1. Data

We measured the benefits, burdens, and net benefits for income deciles using data from the KIPF's 10th Fiscal Panel (2016 data). The KIPF has been collecting household microdata (household income and consumption and public transfer payments such as taxes) into Fiscal Panels since 2008 to study and analyze the effects of tax and fiscal policies and administration

on the welfare of individual households and income redistribution. For each annual Fiscal Panel, the KIPF surveys around 5,000 households. In this study, we used data from the 10th Fiscal Panel, which is the most recent.[16]

The Fiscal Panel consists of a household survey and household member survey. To understand household incomes, expenditures, tax burdens, and public transfer payments, we need to use the findings from both surveys. The household survey collects basic economic information about each household, including information about homeownership, the General Immovable Property Tax, car ownership, expenditures, transfer payments to individuals, and refunds from the General Income Tax. The household member survey investigates household members aged 15 and older with income. The survey data provide detailed information about the incomes, pension/insurance expenditures, and income deductions of the surveyed members. Starting with the second Fiscal Panel, the survey has also asked about details of individual economic activities. However, the data do not provide a full overview of respondents' yearly economic activities because the survey asks only about their economic activities as of May 1 in the survey year.[17]

The Fiscal Panel is distinguished from other household surveys by the accuracy of its income and income tax variables. The Fiscal Panel collects supporting documents for income deductions. For workers, the panel collects withholding tax receipts from the previous year. For household members who report their aggregate income, the panel collects aggregate income tax returns (with consent of the household members). Household members who report their aggregate income personally submit a wide range of relevant documents to tax offices. Of the documents submitted to tax offices, the panel collects the Final Returns of Tax Base and Computation of Global Income Tax filed in May and Income Deduction Statements. However, some taxpayers earning income from businesses, such as door-to-door sales and insurance solicitation, pay their income taxes at year end. In those cases, the panel also collects withholding tax invoices. Based on the collected documents, the survey participants enter information about annual income, income deductions, and tax amounts in the household member questionnaire forms. Therefore, for household members who provide the documents above, the panel collects the same data as the National Tax Service. Through

16 In this study, we use the beta version of the 10th Fiscal Panel data provided by the Fiscal Panel Team at the Tax and Fiscal Projection Center.

17 Because of this limitation, we use Korean Labor & Income Panel Study data to estimate labor productivity parameters for the model proposed in Chapter III.

this process, the Fiscal Panel minimizes the recollection errors found in other household microdata.

Table 7_Supporting Documents Collected by the Fiscal Panel

Year (imputed year)	Income-Reporting Households and Household Members			Number of Documents Collected			Collection Rate		
	All (household)	Earned Income (household members)	Aggregate Income (household members)	All (household)	Earned Income (household members)	Aggregate Income (household members)	All (household)	Earned Income (household members)	Aggregate Income (household members)
Year 1 (2007)	2,612	2,387	721	703	639	97	26.9%	26.8%	13.5%
Year 2 (2008)	2,800	2,576	806	1,331	1,223	213	47.5%	47.5%	26.4%
Year 3 (2009)	2,772	2,558	879	1,495	1,345	252	53.9%	52.6%	28.7%
Year 4 (2010)	2,769	2,546	874	1,673	1,516	289	60.4%	59.5%	33.1%
Year 5 (2011)	2,757	2,645	852	1,707	1,544	316	61.9%	58.4%	37.1%
Year 6 (2012)	2,867	2,786	920	1,791	1,651	364	62.5%	59.3%	39.6%
Year 7 (2013)	2,912	2,954	894	1,892	1,785	378	65.0%	60.4%	42.3%
Year 8 (2014)	2,958	3,064	901	1,928	1,876	377	65.2%	61.2%	41.8%
Year 9 (2015)	2,978	3,137	920	1,944	1,921	376	65.3%	61.2%	40.9%
Year 10 (2016)	2,980	3,196	937	1,967	1,939	401	66.0%	60.7%	42.8%

Source: calculated by the authors based on Korea Institute of Public Finance, *Fiscal Panel Year 1-10 Data User Guide* (beta version, internal document)

Even though the Fiscal Panel collects supporting documents for income deductions, the survey data could suffer from recollection errors if the collection rate is low. Table 7 summarizes the supporting documents collected by the Fiscal Panel during the past decade. In Year 10, the Panel collected supporting documents from 60.7 percent of household members with employment income and 42.8 percent of household members who reported aggregate income. Overall, 66.0 percent of households with income-reporting members

submitted their supporting documents. In other words, two-thirds of the income data are free of recollection errors.

For our empirical analysis of income redistribution, we divide income into six categories. Market income is the income that a household gains using labor or capital for economic activities and consists of employment income, business income, and property income. Private income is the sum of market income and private transfer income. Private transfer income includes transfer income from other households and income from private pensions and insurance. Transfer income from other households represents inheritances and gifts. Gross income is the sum of private income and public cash transfer income. Public cash transfer income consists of public pension income and other social security benefits. Public pension income consists of pension benefits from the National Pension, and the Special Occupational Pension (including Government Employee Pension, Teachers' Pension, Military Pension, and the Specific Post Office Pension). Other social security benefits consist of various transfer payments, including National Basic Livelihood Security benefits, basic pension, unemployment benefits, and tax credits. Disposable income is gross income minus direct taxes, social security contributions, and other items that households pay directly to the government and acts as a limit on household expenditures. Direct taxes are the income tax and property tax. Social security contributions are required contributions to the National Pension and Special Occupational Pension, the National Health Insurance premium, and the Employment Insurance premium. Most previous studies have analyzed the redistributive effects of government policies by examining disposable income. After-tax income is disposable income minus indirect taxes such as the value-added tax, individual consumption taxes, transport/energy/environmental taxes, the liquor tax, and the tobacco tax. Unlike direct taxes, it is extremely difficult to collect data on value-added tax and other indirect taxes paid by individual households. Thus, the amount of indirect taxes is estimated based on household consumption. Final income is defined as the sum of after-tax income and income from public in-kind transfers. In this study, income from public in-kind transfers includes medical benefits from the National Health Insurance Service, educational benefits from the public education system, house funds loaned at low-interest rates under government policies, and loan benefits, including interest benefits for student loans. Like indirect taxes, income from public in-kind transfers is not readily available for data collection. Therefore, we estimated it based on household healthcare expenditures, number of children in the public education system, house funds, student loans, and other factors.

Table 8_Income, Burden, and Benefit Items in the Fiscal Panel Surveys

Classification	Income Category	Item	Sub-items
Income	Market Income	Employment Income	
		Business Income	
		Property Income	Lease income, interests and dividends, and income from the transfer of securities
	Private Transfer Income	Transfer Income from Other Households	
		Private Pension Income	
		Private Insurance Income	
Burdens	Direct Taxes	Income Tax	Employment income, general property tax
		Property Tax	Property tax, general immovable property tax
	Social Security Contribution	National Health Insurance Premium	
		Employment Insurance Premium	
		Public Pension Contributions	National Pension, Government Employee Pension, Teacher Pension, Military Pension, Specific Post Office Pension
Benefits	Public Cash Transfer Income	Public Pension Benefits	National Pension, Government Employee Pension, Teachers' Pension, Military Pension, Specific Post Office Pension
		Other Social Security Benefits	Basic Livelihood Security, Earned Income Tax Credit, Basic Pension, Child Support Grant, Workers' Compensation benefits, Employment Insurance benefits Patriots and Veterans Pension, Disability benefits, and Disability Pension
	Public In-kind Transfer Income	Other In-kind Benefits	

Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Table 8 summarizes the income, benefit, and burden items available in the Fiscal Panel, including the components of each income category and the sub-components of each component. To estimate after-tax income and final income, we estimated indirect taxes and public in-kind transfers using the method proposed by Oh et al. (2017).

To measure the benefits and burdens of each income decile, we needed to determine a reference income. In this study, we follow the examples of Sung and Park (2008) and other previous studies in Korea by defining income deciles based on private income, which represents a household's income immediately before it is directly affected by the government through taxes and fiscal expenditures, making it ideal for analyzing the redistributive effects

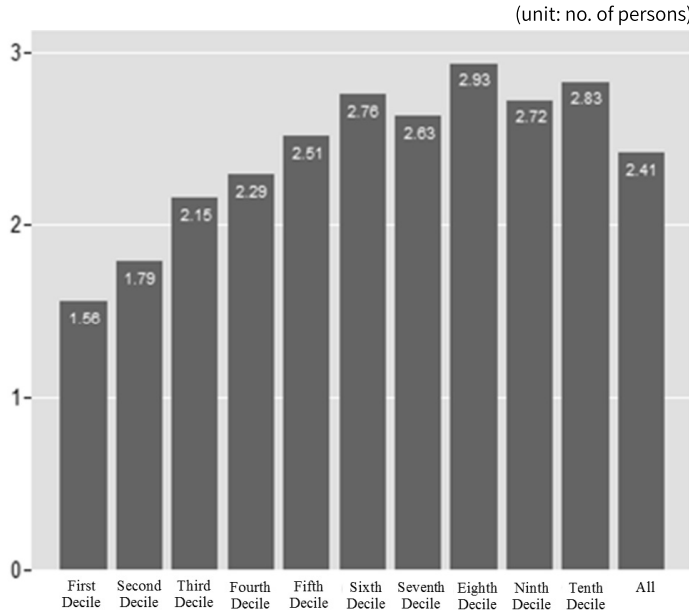
of government policies. Although studies outside of Korea rely mostly on market income to define income deciles, their definition of market income seems to include private transfer income. In fact, private income and private pensions are already included in capital income. For example, Chang et al. (2017) defined market income as employment income, capital income, and private transfers. We define 10 income deciles by equalizing incomes using the OECD method.

2. Household Characteristics by Income Decile

Before analyzing the benefits and burdens to the different income deciles, we need to look into the personal characteristics of the heads of household (e.g., sex, age, educational attainment), the number of children per household, and the average ages of those children. Many items, including income deductions and public transfer expenditures, are provided based on that kind of personal information about household members. Therefore, those characteristics help us understand the findings about benefits and burdens.

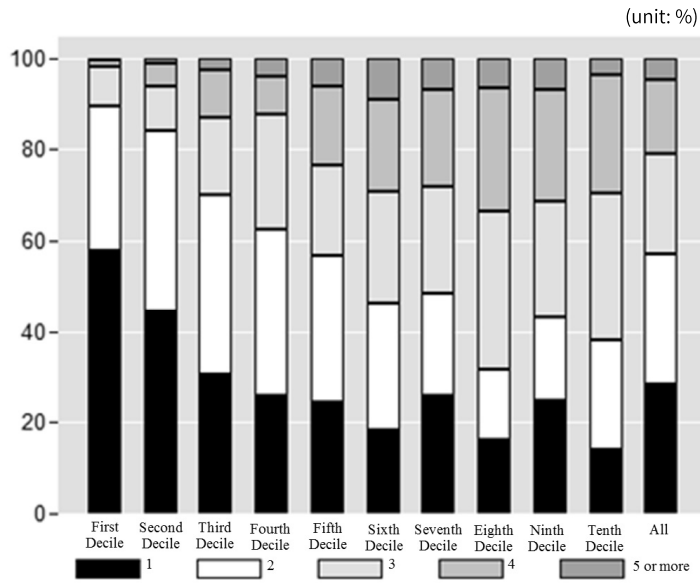
Figure 5_Average Number of Household Members

(unit: no. of persons)



Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Figure 6_Distribution of the Number of Household Members

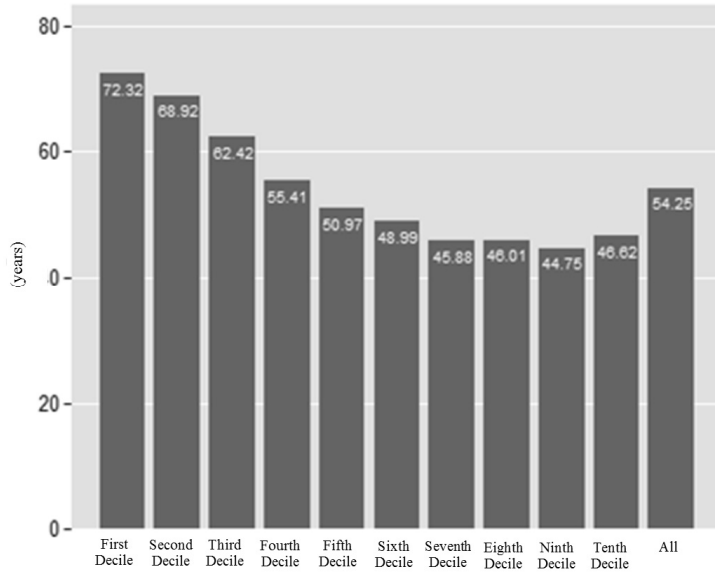


Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Figures 5 and 6 show the average number of members per household across income deciles and the distribution of those household numbers in each decile, respectively. The overall average number of members per household is 2.41. The percentage of one- or two-member households exceeds 55 percent. The findings indicate that the average number of household members increases in the higher-income deciles. The average number of household members is 1.56 in the first decile, which increases to 2.76 in the fifth decile and 2.83 in the tenth decile. The increase in average number of household members correlates with the decrease in percentage of one- or two-member households. The percentage of one- or two-member households is almost 90 percent in the first decile and does not drop below 50 percent in the bottom five deciles. Yet it is less than 50 percent in the sixth and higher deciles. Households with three or more members mostly include children. Therefore, income deduction and public transfer expenditures for children are expected to have a greater effect on the top five deciles.

Figure 7_Average Age of the Heads of Households

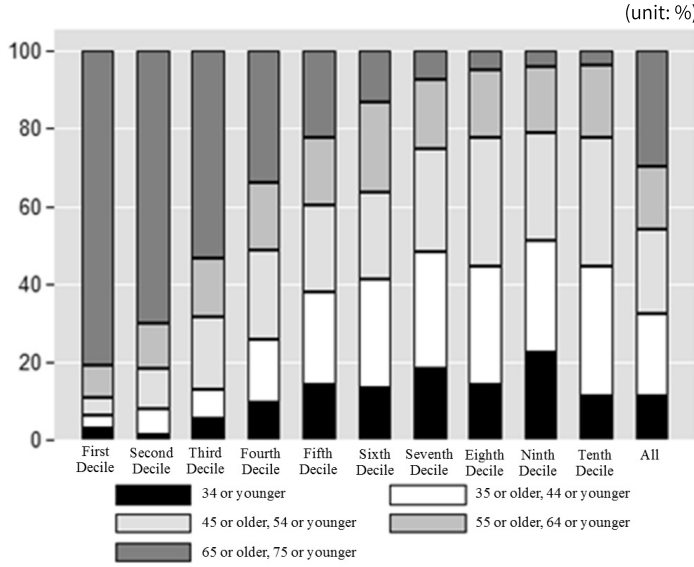
(unit: years)



Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel.

Figure 8_Distribution of the Average Age of the Heads of Households

(unit: %)

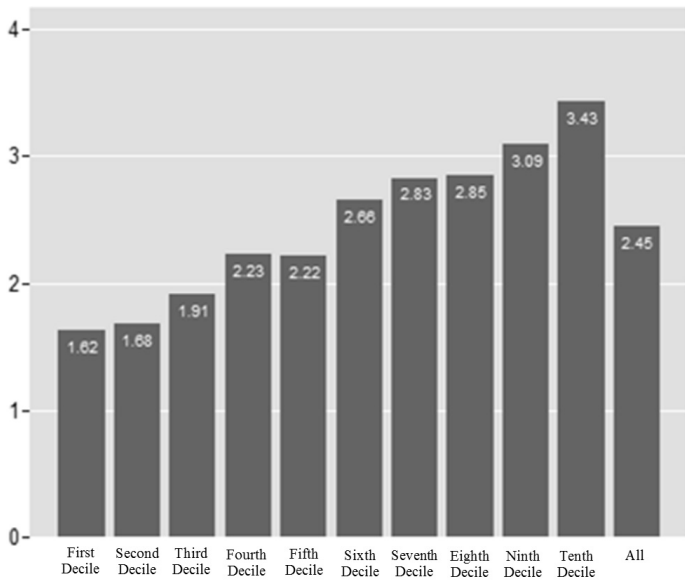


Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel.

Figures 7 and 8 show the average age of the heads of households and the distribution of their ages across deciles. The average age of all heads of households is 54.3 years, with higher-income deciles reporting lower ages. The average ages of the heads of households in the first and second deciles are 72.3 and 68.9, respectively. The percentage of households with a head of household aged 65 or older is 80 percent in the first decile, 70 percent in the second decile, and 50 percent in the third decile. That is, most households in the low-income deciles are headed by elderly people. The average age of the heads of households drops to the mid-40s in the top five deciles. The most economically active heads of households (aged 35~44 and 45~54) are concentrated in the eighth to tenth income deciles. From those findings, we infer that basic pension and other public transfer payments to elderly households are mostly paid to the first through third income deciles, whereas employment tax credits for low-income working households are mostly provided to households in the fifth and higher deciles.

Figure 9_Average Educational Attainment of Heads of Households

(unit: %)

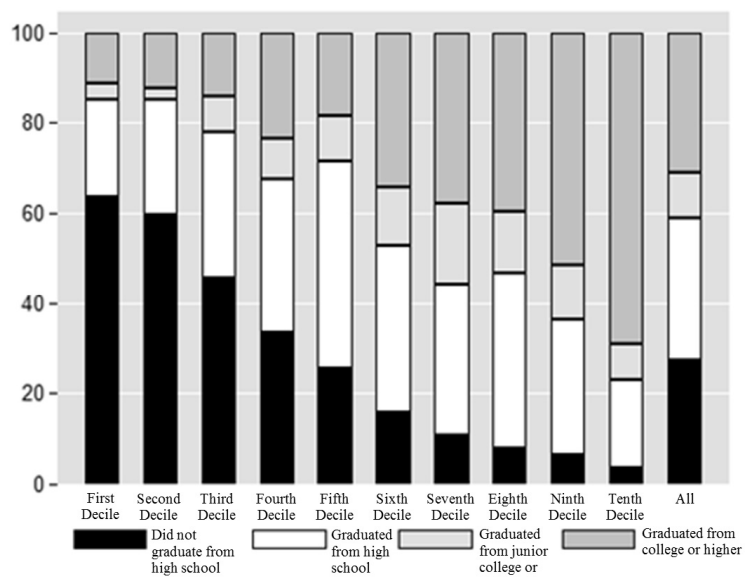


Note: did not graduate from high school = 1, graduated from high school = 2, graduated from junior college or college = 3, graduated from college or higher = 4
Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel.

Figure 9 shows the average educational attainment of the heads of households, and Figure 10 shows their distribution by income decile. The overall average educational attainment of the heads of households is between high school graduate and junior college/college graduate. Higher levels of educational attainment are found in higher income deciles. This finding seems to indicate that educational attainment is positively correlated with income level. In the first and second deciles, more than 60 percent of the heads of household did not graduate from high school, which can be explained by the high percentage of older (65 or older) heads of households in those deciles because many people that age did not receive a proper education. The percentage of heads of households who did not graduate from high school drops below 50 percent in the third and higher deciles and declines at an even higher rate in the sixth and higher deciles. Meanwhile, the percentage of heads of households who graduated from junior college or college exceeds 50 percent in the top five deciles, and the percentage of college graduates exceeds 50 percent in the ninth and tenth deciles. Given the wage disparity among groups with different levels of educational attainment, it is unsurprising that heads of households with higher levels of education are concentrated in the higher-income deciles.

Figure 10_Distribution of Educational Attainment of Heads of Households

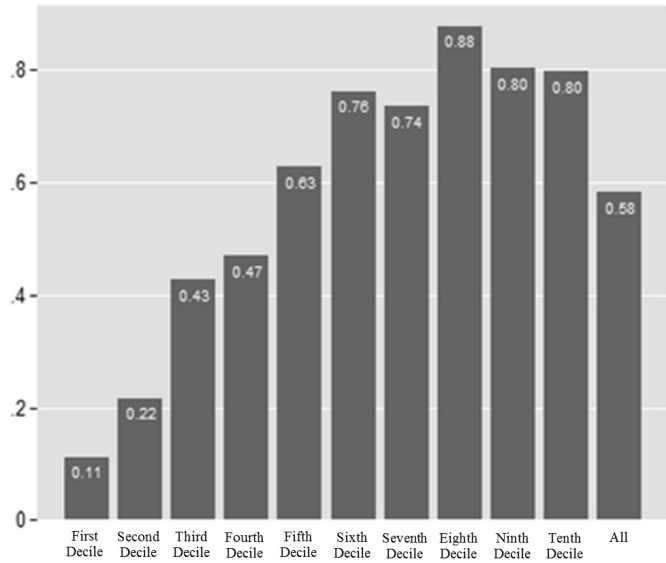
(unit: %)



Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel.

Figure 11_Average Number of Children per Household

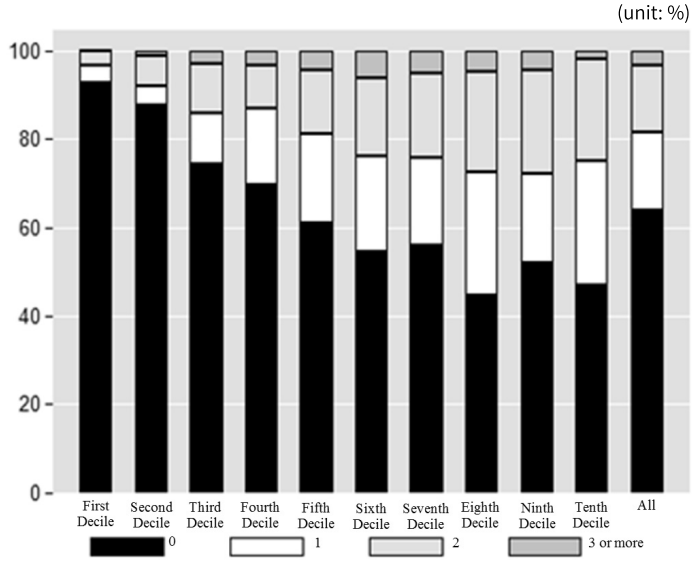
(unit: no. of persons)



Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Figure 12_Distribution of the Number of Children per Household

(unit: %)

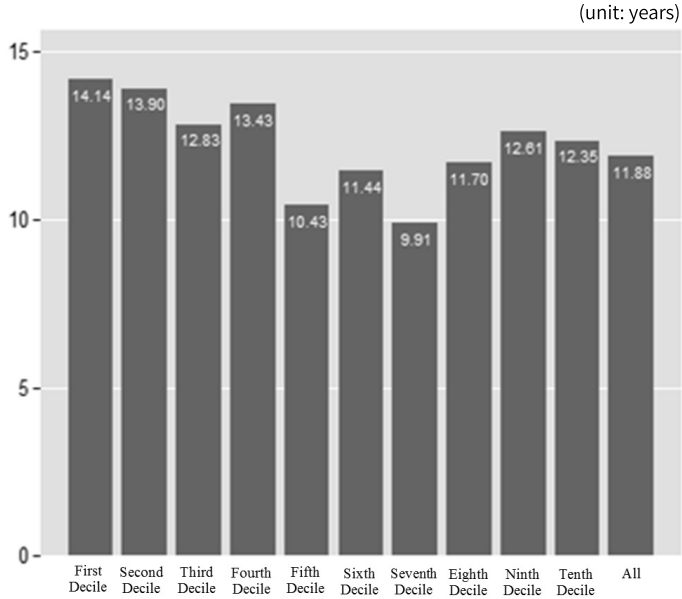


Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Daycare center services, childcare benefits, and the recently introduced child benefits are provided to households with children. Thus, the distribution of children per household in each income decile provides helpful information for understanding the effects of public transfer payments. Figure 11 shows the average number of children per household in each decile, and Figure 12 shows the distribution of households with different numbers of children. The overall average number of children is 0.58 per household. The number increases with income level and declines slightly in the ninth and tenth deciles. The first five deciles contain mostly elderly one- or two-member households, with more than 60 percent of households childless. Meanwhile, in the sixth and higher deciles, where the average age of heads of households drops below 50 years, more than 40 percent of households have one or more children. That percentage increases to 50 percent in the top three deciles. However, even in the top three deciles, most households with children have one or two; few households have three or more children.

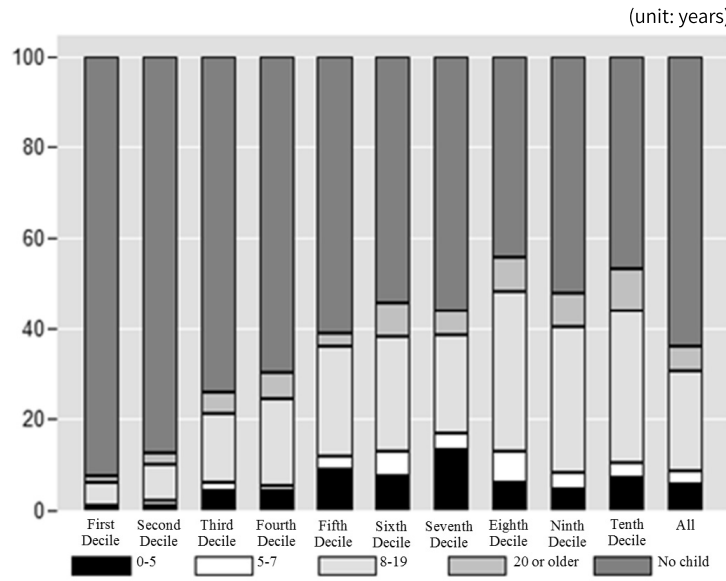
Figure 13_Average Age of Children

(unit: years)



Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Figure 14_Distribution of Child Ages



Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Child-related benefits are linked with the ages of children. Specifically, childcare subsidies, childcare benefits, and child benefits are provided to households with preschoolers, and educational benefits are provided to households with school-age children. Figure 13 shows the average age of children in each income decile, and Figure 14 shows the age distribution of children. The overall average age of children is 11.9 years. The average age increases in higher-income deciles. Households with children eligible for child benefits (aged 0~5) are concentrated in the fifth to seventh deciles. The ages of children in the eighth and higher deciles range between eight and 19, so those children attend elementary, middle, or high schools.

To summarize our findings on the household characteristics in different income deciles, elderly one- or two-member households are concentrated in the bottom three deciles, and households with three or more members and children are concentrated in the seventh decile. The number of children increases with income level. However, most of the households in the eighth or higher deciles with children have school-age children, whereas households with children aged 0~5 are concentrated in the fifth to seventh deciles.

Table 9_Private Income Composition of Households (Average)

(unit: KRW 10,000, %)

	Private Income	Market Income				Private Transfer Income		
		Total	Employment Income	Business Income	Property Income	All	Private Pension Private Insurance	Transfer Income from Other Households
Amount	3,597	3,437	2,596	732	110	160	138	22
Percentage		85.8	59.9	21.4	4.5	14.2	13.3	0.9

Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

We next discuss the private income used in defining income deciles. Table 9 shows the private income of households with specific components. The average private income of households is KRW 35.97 million. Market income composes 85.8% of that private income at KRW 34.37 million, and private transfer income makes up the remaining 14.2% at KRW 1.6 million. Market income consists of employment income, business income, and property income. The average employment income was KRW 25.96 million, making up 60 percent of households' private income. Private transfer income consists of private income/insurance and transfer income from other households. The former comprises more than 90 percent of private transfer income at KRW 1.38 million.

Table 10_Private Income and Components by Income Decile

(unit: KRW 10,000, %)

Income Decile	Private Income	Market Income				Private Transfer Income		
		All	Employment Income	Business Income	Property Income	All	Private Pension/ Insurance	Transfer Income from Other Households
First Decile	90	42	18	15	9	47	47	1
Second Decile	563	320	151	126	43	243	236	7
Third Decile	1,182	923	554	281	88	259	244	15
Fourth Decile	1,877	1,654	1,088	469	97	223	195	28
Fifth Decile	2,578	2,433	1,709	649	74	145	125	21
Sixth Decile	3,372	3,237	2,282	845	110	136	109	27
Seventh Decile	4,082	3,982	2,787	1,100	95	100	71	29
Eighth Decile	5,326	5,210	3,971	1,133	106	116	98	18
Ninth Decile	6,509	6,412	5,273	988	151	96	70	26
Tenth Decile	10,444	10,201	8,158	1,719	324	244	191	52
Average	3,597	3,437	2,596	732	110	160	138	22

Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Table 10 shows the private income and specific components of each income decile. The private income of the fifth decile is KRW 25.78 million, which is 72 percent of the average income of KRW 35.97 million. This translates into a mean-median value of 1.40. The dispersion between the tenth and first deciles is 242.9. The dispersion between the tenth and fifth deciles is 4.20, and the dispersion between the fifth and first deciles is 57.9, which indicates a higher income gap among lower-income groups than among higher-income groups. This finding can be explained by the high percentage of elderly households without market income in the lower-income deciles.

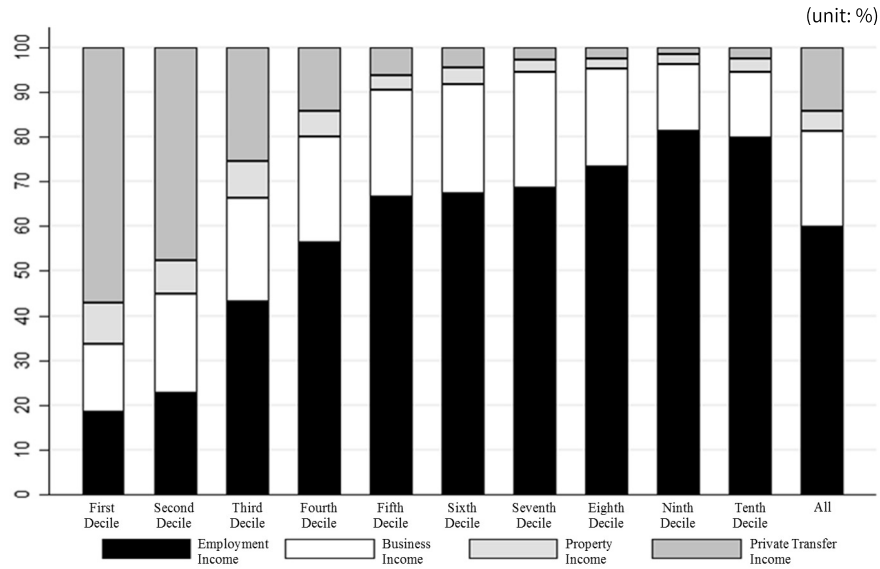
Table 11_Percentages of Private Income Components by Income Decile

(unit: KRW 10,000, %)

Income Decile	Private Income	Market Income				Private Transfer Income		
		All	Employment Income	Business Income	Property Income	All	Private Pension/ Insurance	Transfer Income from Other Households
First Decile	90	43.0	18.4	15.3	9.3	57.0	55.1	1.9
Second Decile	563	52.5	22.8	22.2	7.5	47.5	46.6	1.0
Third Decile	1,182	74.5	43.1	23.3	8.0	25.5	24.1	1.4
Fourth Decile	1,877	85.8	56.2	23.8	5.8	14.2	12.6	1.6
Fifth Decile	2,578	93.8	66.6	24.1	3.2	6.2	5.2	1.0
Sixth Decile	3,372	95.5	67.4	24.4	3.7	4.5	3.7	0.8
Seventh Decile	4,082	97.2	68.5	26.1	2.6	2.8	2.1	0.7
Eighth Decile	5,326	97.6	73.4	22.0	2.3	2.4	2.0	0.4
Ninth Decile	6,509	98.5	81.3	15.0	2.2	1.5	1.1	0.4
Tenth Decile	10,444	97.6	79.8	14.8	3.0	2.4	1.9	0.5
Average	3,597	85.8	59.9	21.4	4.5	14.2	13.3	0.9

Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Figure 15_Income Composition by Income Decile



Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

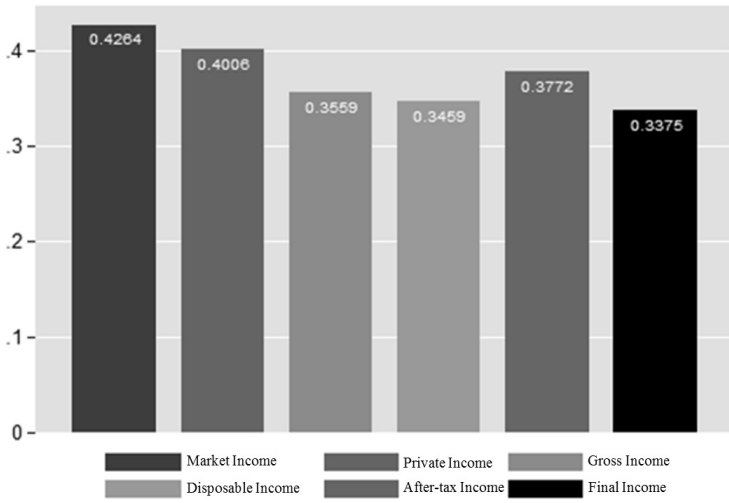
Next, we consider the income composition of each income decile. Table 11 and Figure 15 show the percentages of each component in the private income of each income decile. In the higher-income deciles, the percentage of market income increases, and the percentage of private transfer income declines. Within the market income, employment income makes up higher percentages of income in the higher-income deciles, and the percentage of property income declines. This finding is attributable to the higher percentages of elderly households in lower-income deciles. Meanwhile, business income shows a U-shaped distribution. Private transfer income mostly consists of private pensions and insurance, which also decline in the higher income deciles. Transfer income from other households declines in the higher income deciles, but it accounts for only a small percentage of private income in any decile. The income composition in each income decile correlates with the average age of the heads of households. The percentage of employment income sharply increases in the third and higher deciles along with the percentage of working households.

3. Analysis of the Burdens and Benefits by Income Decile

Before analyzing the burdens and benefits to the different income deciles, we need to

analyze changes in the Gini coefficients across income stages. As explained earlier, the income stages are market income, private income, gross income, disposable income, after-tax income, and final income.

Figure 16_Changes in Gini Coefficients Across Income Stages



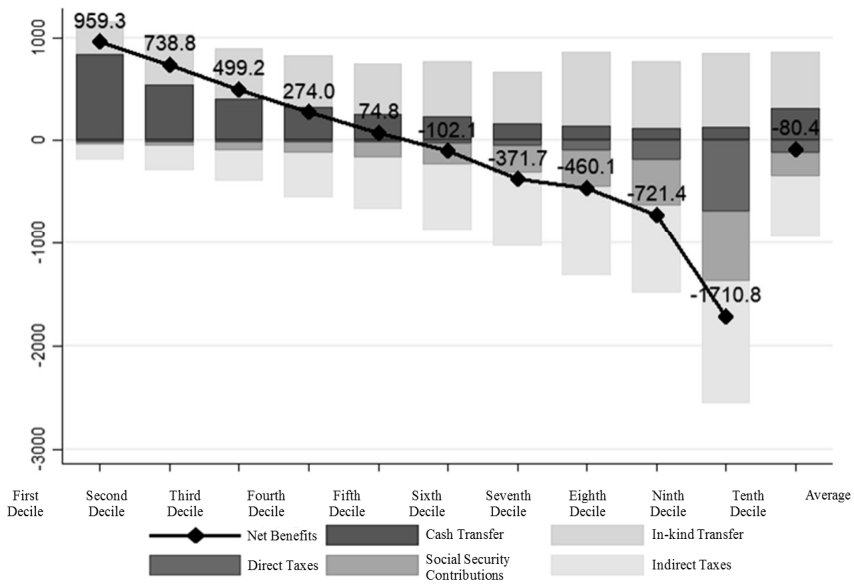
Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Figure 16 shows the Gini coefficients across income stages. The Gini coefficient on market income is 0.426, and the Gini coefficient on private income is 0.400. The Gini coefficient on private income is lower than that on market income because elderly households with little or no market income are concentrated in the lower income deciles, and their main sources of income are private pensions and insurance. The Gini coefficient on gross income, which combines private income and public cash transfer income, is 0.356 and shows the highest improvement rate. This indicates that public cash transfers play the most significant role in improvement of Gini coefficients. The Gini coefficient on disposable income, which considers gross income, direct taxes, and disposable income, is 0.346, which is slightly higher than that on gross income. The redistributive effect is caused by the progressive structure of the income tax. However, in terms of Gini coefficient improvement rates, the redistributive effect is not as significant as that of public cash transfer payments. The Gini coefficient on after-tax income, which considers disposable income and indirect taxes, is higher than that on disposable income, indicating that indirect taxes have a retrogressive structure. The Gini

coefficient on final income, which considers after-tax income and public in-kind transfer, is 0.338. Although it shows significant improvement over the Gini coefficient on after-tax income, the improvement rate is not significant compared with that on disposable income. Public in-kind transfer income also contributes to income redistribution, albeit at a lower rate. The majority of medical benefits are enjoyed by elderly households, and educational benefits mostly target households with school-age children. Most elderly households are in the lower income deciles, whereas households with children, particularly households with school-age children, are concentrated in the higher income deciles, which explains the low contribution of in-kind benefits to income redistribution.

Next, we measure the benefits and burdens of each income decile and compare their net benefits to identify the redistributive effects at different income levels. Benefits encompass all support that the government provides to households, including both public cash transfers and in-kind transfer income. On the other hand, burdens are the amounts paid by households to the government and include direct taxes, social security contributions, and indirect taxes. Using those definitions, we measured the benefits, burdens, and net benefits for each income decile as follows.

Figure 17_Benefits, Burdens, and Net Benefits by Income Decile



Source: compiled by the authors based on data from the KIPF, 10th Fiscal Panel

Figure 17 shows the benefits, burdens, and net benefits of the income deciles. The bars above 0 indicate benefits, and those below 0 indicate burdens. Net benefits are represented by black lines. Lines above 0 indicate net benefits, and those below 0 indicate net burdens. The overall average net benefit for all households is KRW -804,000. In other words, an average household bears more burdens than the benefits it receives. Net benefits decline in higher income deciles, with households in the sixth and higher deciles bearing net burdens. The lower five income deciles record net benefits, which means they receive more benefits from the government than they pay.

As for burdens and benefits, although benefits increase in the higher income deciles, burdens increase at a progressive rate. Cash transfer benefits sharply decline at higher income levels, but in-kind transfer income increases in those deciles. In-kind transfer income consists of medical benefits, educational benefits, and loan benefits. Although all households are eligible for medical benefits, the primary beneficiaries are elderly households. On the other hand, educational benefits are provided to households with school-age children, which are primarily found in higher income deciles. For this reason, in-kind transfer income is distributed in a U shape, weakening the progressivity of benefits across all income deciles.

The distribution of burden across income deciles shows a more consistently progressive structure than the distribution of benefits. Although both direct taxes and social security contributions are progressively distributed, the former shows a more progressive distribution than the latter. The income deciles that pay meaningful amounts of direct taxes are the sixth and higher deciles, with the others paying little to no direct tax. Meanwhile, the third and higher income deciles pay meaningful amounts of social security contributions. In the ninth and tenth deciles, the amount of direct taxes increases at a higher rate than social security contributions. However, because all households must spend at least a minimum amount of money regardless of income, indirect taxes are paid by households across all income deciles.

V. Conclusion and Policy Implications

In this study, we examined the effects and scales of income redistribution policies and changes based on aggregate variables of Gini coefficients on market income and disposable income and aggregate transfer payments. We also analyzed the indicators related to income redistribution in the United States, the United Kingdom, Germany, Sweden, Greece, and Chile. As indicators of income redistribution, we used improvement rates measured by the ratios between the Gini coefficients on disposable income and market income and those ratios

over time. The findings show that Korea's Gini coefficients on disposable income and market income are lower than those of other countries. This explains the country's low improvement rate, which is the second lowest after Chile. However, unlike other countries, Korea reports continuous growth in that improvement rate.

The amounts of transfer payments and their percentages of total expenditure have been rising during the past decade, indicating the reinforcement of income redistribution policies in terms of fiscal expenditure. Within the total expenditure, income redistribution is represented by subsidies and current transfers. Current transfers consist of those to local governments, nonprofit organizations, and households. Current transfers to nonprofit organizations and current transfers to households represent transfer payments to households and therefore can be considered fiscal expenditures for income redistribution. Transfers to local governments are divided into goods and services, current transfers, and capital expenditures. Therefore, to encompass all expenditures related to income redistribution, we considered the current transfers to the private sector hidden within the current transfers to local governments, in addition to those made directly by the central government to nonprofits and households. In the consolidated fiscal balance, we used the composition of total expenditures to separate the current transfers to households from the current transfers to local governments and estimated the current transfers to the private sector from the central and local governments. Our analysis showed that, from 2011~2017, the overall scale of current transfers to the private sector increased, as well as their percentage of the total expenditure. In other words, Korea's income redistribution policies have expanded in aggregate terms and produced a reinforced redistributive effect.

To further analyze the effects of income redistribution policies on households, we measured the benefits and burdens of income deciles and analyzed their net benefits using data from the 10th Fiscal Panel. Income deciles were calculated by equalizing private income (market income and private transfer income) by the square of the number of household members. Before measuring benefits and burdens, we analyzed the household characteristics of each income decile. Whereas the lower income deciles contain mostly elderly one- or two-member households, most households in the higher income deciles contain workers and have three or more members. As for the ages of the heads of households and children, most households in the middle income deciles had younger heads of household and children than in the upper and lower deciles. Meanwhile, high percentages of households in the higher income deciles contained school-age children and heads of households in their 40s and 50s. These household characteristics are closely correlated with the redistributive effect of public

transfer payments on each income decile because those benefits are provided based on those personal characteristics. Higher income deciles earn higher employment income and market income, with lower percentages of private transfer income such as private pensions and insurance.

Then we measured the benefits and burdens of each income decile. Burdens include direct taxes, social security contributions, and indirect taxes. Benefits include public cash transfer payments, such as public pension benefits, and public in-kind transfer payments such as medical benefits, educational benefits, and loan benefits. By income decile, most public cash transfer payments are paid to the first decile, and the amount decreases sharply in higher deciles. Meanwhile, public in-kind transfer payments are distributed across deciles in a U shape. This finding can be explained by the high percentage of medical benefit–receiving elderly households in the lower income deciles and the high percentage of educational benefit–receiving households with school-age children in higher income deciles. As for burdens, higher income deciles pay more direct taxes at a progressive rate. However, the progressivity of social security contributions is lower than that of direct taxes. As for indirect taxes, which consist of the value-added tax and other individual consumption taxes, lower income deciles pay certain amounts, and higher income deciles pay more. However, the progressivity of indirect taxes is lower than that of both direct taxes and social security contributions. We also analyzed the net benefits of the income deciles and found that the first five income deciles enjoy net benefits, whereas the sixth and higher deciles bear net burdens.

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Establishing a Quantitative Evaluation System for the Fiscal Policy for Employment

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I. Introduction

Korea's current government has made job creation one of its top priorities. It has been designing expansionary fiscal policies intended to create jobs and is expected to implement them with full force. In fact, seven of the Moon Jae-in government's 26 key policy tasks can be classified as job creation policies designed to promote a so-called "income-led growth" strategy,[1] which is reflected in the KRW 19.2 trillion (12.4 percent) increase in the job creation budget in 2018. Furthermore, the budget and expenditures for the employment incentive programs of the Ministry of Employment and Labor (MOEL) increased by KRW 1.05 trillion, 41.82 percent, between 2017 and 2018. Given that most of the government's business and industrial policies have job creation as one of their main goals even when they are not specifically designed for such purposes, the total size of Korea's fiscal policies aimed at job creation is probably larger than usually estimated and expanding at a much faster rate than claimedcan be easily assessed.

A wide range of concerns has been raised about the effectiveness of the government's

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1 Based on State Affairs Planning Advisory Committee (2017), "Moon Jae-in Government's 5-Year Plan for Management of State Affairs"

fiscal policies for employment. Although the overall effect of any job creation policy needs to be assessed over the long term, the current fiscal policy for employment has not lived yet up to expectations, judging by recently released employment indicators and the public's level satisfaction with it.

Job creation and job losses are affected by factors beyond the government's control, such as the global economy and demographic changes. However, it is still sensible to review whether the government is fully addressing the factors that it can control and identify possible policy improvements.

Therefore, in this study, we focus on aspects of the fiscal policy for employment that the government can improve: policy design, evaluation, and feedback. A fiscal policy for employment needs to consider the demand side of the labor market, including firm efficiency and the long-term employment capacity of the national economy (reflecting industrial dynamics), as well as the supply side. Then, policy outcomes need to be evaluated periodically, and the policy's effectiveness and efficiency need to be improved continually using feedback from the periodic evaluations. The current fiscal policy for employment in Korea, however, has focused only on job creation and losses, without fully considering mechanisms that might improve economic efficiency and firm competitiveness or create demand for labor.

We here propose a periodic quantitative evaluation system for the job creation policy, which is one of the current government's top priorities, to improve its effectiveness. To this end, we built a comprehensive panel database by pooling data on employment and wages, industrial and firm characteristics, and government policies to evaluate specific outcome indicators for the job creation policy. We also suggest a quantitative evaluation methodology and provide evaluation examples.

For this study, we performed a comprehensive policy evaluation by pooling business, employment, and policy data from 2010 to 2015. Specifically, we built a comprehensive database by pooling (1) firm-level panel data from Korea Enterprise Data (KED) and (2) employment insurance data on business establishments and insureds. We also pooled data about (3) firm-level participation history in government financial support programs for small and medium enterprises (SMEs), which has been one of Korea's key SME policies on the demand side, from the three key institutions implementing those financial assistance programs. We then analyzed those data using various methods widely accepted in the field of policy evaluation. We assessed the evidence of job creation and the targeting and effects of the job creation policy at the individual, firm, and industry levels to see whether a policy evaluation based on a multi-year pool of firm data, employment data, and policy data is

possible, and here we present those evaluation results.

Although our policy evaluation results are important, the main significance of our study is proving that of building a comprehensive database and periodically evaluating a governmental fiscal policyons are possible using techniques and data available in 2018. This study is an extension of several years of research projects, which means that no small amount of preparation and efforts was involved. However, this study shows that multi-year research projects at a government-funded research institute in Korea can successfully construct a database, use evaluation methods, and perform policy evaluations.

This study proceeds as follows. Chapter II reviews our merged dataset, containing both employment data and firm data, and presents descriptive statistics. Chapter III describes firm-level participation history in government financial support programs. Chapter IV provides example policy evaluations at the industry, firm, and individual levels. Chapter V uses the evaluations performed in the previous chapters to make suggestions for the development of a quantitative evaluation system for the fiscal policy for employment. Chapter VI provides our conclusions.

II. Employment-Enterprise Merged Dataset and Basic Analysis

This chapter provides a basic analysis of the evaluation data developed for this study. The dataset developed for this study combines enterprise data and employment data, which could allow us to conduct basic analyses that are impossible using employment data or enterprise data alone. However, it is important to verify how much employment can be explained by combining enterprise data with employmentthat combined data.

The KED contains data on around 300,000 enterprises per year. When combined with the Employment Insurance data on business establishments, the data show that KED companies annually employ around ten million full time employees, as shown in the following table. Of the twelve million full time employees in Korea in 2015, Employment Insurance data can track around 6.5 million workers. The discrepancy can be explained by the fact that Employment Insurance does not cover full time workers who are day laborers, creating a gap between the number of full time workers and the number of insureds. Although the dataset constructed for this study does not include all workers in the Korean economy, the 6.5 million workers it does contain can be used for both policy evaluation and career tracking on the individual and industrial levels.

Table 1_Number of Full Time Workers, Insureds, and Persons Acquiring/Losing Employment Insurance

Year	Full-time workers	Insureds	Persons acquiring insurance	Persons losing insurance	Persons acquiring eligibility minus persons losing insurance
2010	8,509,938	5,337,504	2,521,321	2,154,029	367,292
2011	8,037,371	5,694,270	2,664,099	2,268,882	395,217
2012	9,619,490	6,185,825	2,837,002	2,436,273	400,729
2013	9,772,773	6,423,759	2,870,198	2,519,135	351,063
2014	10,065,395	6,577,441	2,929,445	2,629,397	300,048
2015	10,095,879	6,532,824	2,920,193	2,620,264	299,929

Note: Authors' calculations using KED (2018) and Employment Insurance data (2017). The figures represent numbers of persons.

Table 2 summarizes the findings of an analysis about enterprise size that we made during the planning phase of this study using KED and KIS-Data. It provides information about the revenue, total assets, operating profits, R&D expenses, and corporate tax payments of the enterprises included in the integrated database.

Table 2_Basic Statistics from the 2011~2015 Integrated Database By Enterprise Size

(unit: no. of enterprises, 10,000 persons, KRW trillion, %)

Year	2011				
Enterprise size	Total	SMEs		Middle standing/large enterprises	
No. of enterprises	255,341	249,772	97.82%	5,569	2.18%
Revenue	3,298	1,127	34.18%	2,171	65.82%
Total assets	4,408	1,143	25.93%	3,265	74.07%
Operating profits	175	47	26.58%	129	73.42%
R&D expenses	36	11	29.82%	25	70.18%
Full time workers	778	503	64.72%	274	35.28%
Insureds	544	332	61.01%	212	38.99%
Persons acquiring insurance	258	183	71.02%	75	28.98%
Persons losing insurance	221	159	72.28%	61	27.72%
Persons acquiring insurance minus persons losing insurance	37	24	63.53%	14	36.47%

Table 2_Basic Statistics from the 2011~2015 Integrated Database By Enterprise Size (continued)

(unit: no. of enterprises, 10,000 persons, KRW trillion, %)

Year	2012				
Enterprise size	Total	SMEs		Middle standing/large enterprises	
No. of enterprises	282,510	276,704	97.94%	5,806	2.06%
Revenue	3,653	1,177	32.23%	2,476	67.77%
Total assets	5,351	1,252	23.40%	4,099	76.60%
Operating profits	175	46	26.24%	129	73.76%
R&D expenses	39	11	29.38%	27	70.62%
Full time workers	939	612	65.15%	327	34.85%
Insureds	598	366	61.21%	232	38.79%
Persons acquiring insurance	277	198	71.51%	79	28.49%
Persons losing insurance	239	173	72.36%	66	27.64%
Persons acquiring insurance minus persons losing insurance	38	25	66.11%	13	33.89%
Year	2013				
Enterprise size	Total	SMEs		Middle standing/large enterprises	
No. of enterprises	307,755	301,539	97.98%	6,216	2.02%
Revenue	3,638	1,219	33.52%	2,418	66.48%
Total assets	6,459	1,214	18.80%	5,245	81.20%
Operating profits	173	52	29.82%	122	70.18%
R&D expenses	48	12	25.41%	35	74.59%
Full time workers	970	637	65.75%	332	34.25%
Insureds	635	390	61.39%	245	38.61%
Persons acquiring insurance	286	209	73.26%	76	26.74%
Persons losing insurance	251	185	73.69%	66	26.31%
Persons acquiring insurance minus persons losing insurance	35	25	70.18%	10	29.82%
Year	2014				
Enterprise size	Total	SMEs		Middle standing/large enterprises	
No. of enterprises	320,987	314,393	97.95%	6,594	2.05%
Revenue	3,874	1,208	31.19%	2,666	68.81%
Total assets	7,809	1,184	15.16%	6,625	84.84%
Operating profits	180	52	28.72%	128	71.28%
R&D expenses	52	13	24.22%	39	75.78%
Full time workers	1,002	647	64.56%	355	35.44%
Insureds	654	393	60.17%	260	39.83%
Persons acquiring insurance	292	211	72.27%	81	27.73%
Persons losing insurance	262	189	72.01%	73	27.99%
Persons acquiring insurance minus persons losing insurance	30	22	74.56%	8	25.44%

Table 2_Basic Statistics from the 2011~2015 Integrated Database By Enterprise Size (continued)

(unit: no. of enterprises, 10,000 persons, KRW trillion, %)

Year	2015				
Enterprise size	Total	SMEs		Middle standing/large enterprises	
No. of enterprises	305,373	298,666	97.80%	6,707	2.20%
Revenue	3,780	1,184	31.34%	2,595	68.66%
Total assets	8,170	1,177	14.41%	6,993	85.59%
Operating profits	199	54	27.18%	145	72.82%
R&D expenses	48	12	25.40%	36	74.60%
Full time workers	1,003	632	63.00%	371	37.00%
Insureds	649	386	59.45%	263	40.55%
Persons acquiring insurance	291	209	71.79%	82	28.21%
Persons losing insurance	260	186	71.33%	75	28.67%
Persons acquiring insurance minus persons losing insurance	30	23	75.77%	7	24.23%

Source: Authors' calculations using KED (2018) and Employment Insurance data (2017)

The above tables show that the total revenue of the enterprises included in the data is around KRW 3,780 trillion. According to the 2015 Economic Census, the total revenue of all enterprises with physical business establishments was KRW 5,303 trillion. Thus, the KED includes about 71 percent of all Korean business revenue.

According to the integrated database, large enterprises and SMEs employed around 41 percent and 59 percent of workers insured by Employment Insurance, respectively. The former accounted for 24 percent of the net increase in the number of workers with insurance (as calculated by the number of workers acquiring insurance minus the number of workers losing insurance), and the latter accounted for 76 percent of that increase. Thus, the average contribution to employment by large enterprises is higher than their marginal contribution. As we discuss again in Section 3, this finding can be explained by the high percentage of startups in the SME group.

1. Dynamism of the Employment Ecosystem

As shown in Table 1, the integrated database indicates that the number of workers who acquired insurance in 2015 was 2,920,193, which represents a simple acquisition rate of 44.7 percent, given the total number of insureds (6,532,824). The number of workers who lost insurance was 2,620,264, which represents a simple loss rate of 40.11 percent. Those ratios

are lower than the rates calculated based only on the Employment Insurance data. However, they still indicate a high level of mobility. Of the total of 12,655,202 insureds in only the Employment Insurance data, 6,880,808 newly acquired insurance (simple acquisition rate of 54.4 percent), and 6,412,984 lost their insurance (simple loss rate of 50.7 percent).

Although unavailable at the micro level, the most comprehensive and reliable employment data for 2018 is Statistics Korea's administrative statistics on jobs. Statistics Korea provides statistics on job loss and creation based on all available administrative statistics. According to the 2016 statistics, which are the most current available, 23.23 million jobs were held in Korea in 2016, of which 31.64 percent were created, and 30.70 percent were lost.

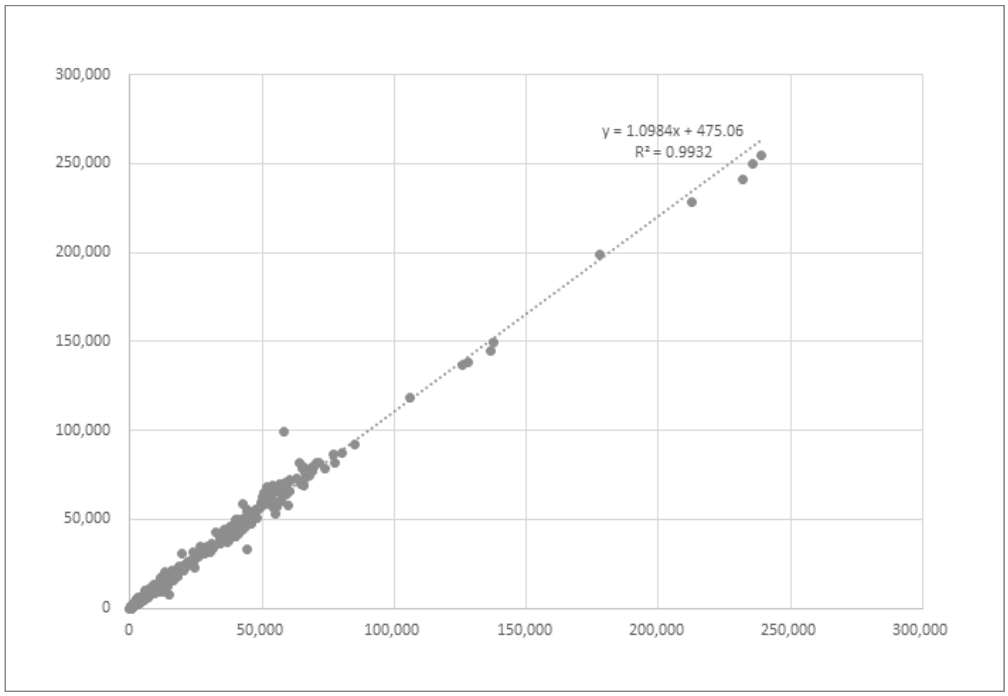
It should be noted that the job replacement ratio derived from those data is similar to the statistics in the United States. According to the U.S. Bureau of Labor Statistics, the separation rate in the United States in 2017 was 43 percent.[2]

2. Differences Between Gross and Net Changes in Employment

The data show that most job loss is associated with job creation, which means that lost jobs are the inevitable result of creating new matches between employers and employees. Given the numbers of workers acquiring and losing Employment Insurance status within 1,029 observations aggregated at the three-digit of industry-groups level under the Korean Standard Industrial Classification System between 2011 and 2015, the correlation coefficient between job loss and job creation is 0.9966, as shown in Figure 1 below. That finding indicates the existence of a near one-to-one linear relationship between annual job creation and annual job loss. Job creation without job loss or job loss without job creation is extremely rare.

2 https://www.bls.gov/news.release/jolts.t16.htm, accessed on July 31, 2018

Figure 1_Acquisition(y) and Loss(x) of Employment Insurance Status at the Three-Digit Industry Level, 2011~2015



Note: Aggregated at the three-digit level under the Korean Standard Industrial Classification System
Source: Authors' calculations using KED and Employment Insurance data

The job creation policy intends to achieve a net increase in jobs. However, it is difficult to identify the portion of job creation or loss that might affect a net increase. As can be seen in the employment incentive program for young job seekers begun in 2018, Korea's job creation policy focuses only on gross changes in jobs. For example, the program does not include even the most basic insurance restrictions for applicants. Such an approach undermines the effectiveness of the policy.

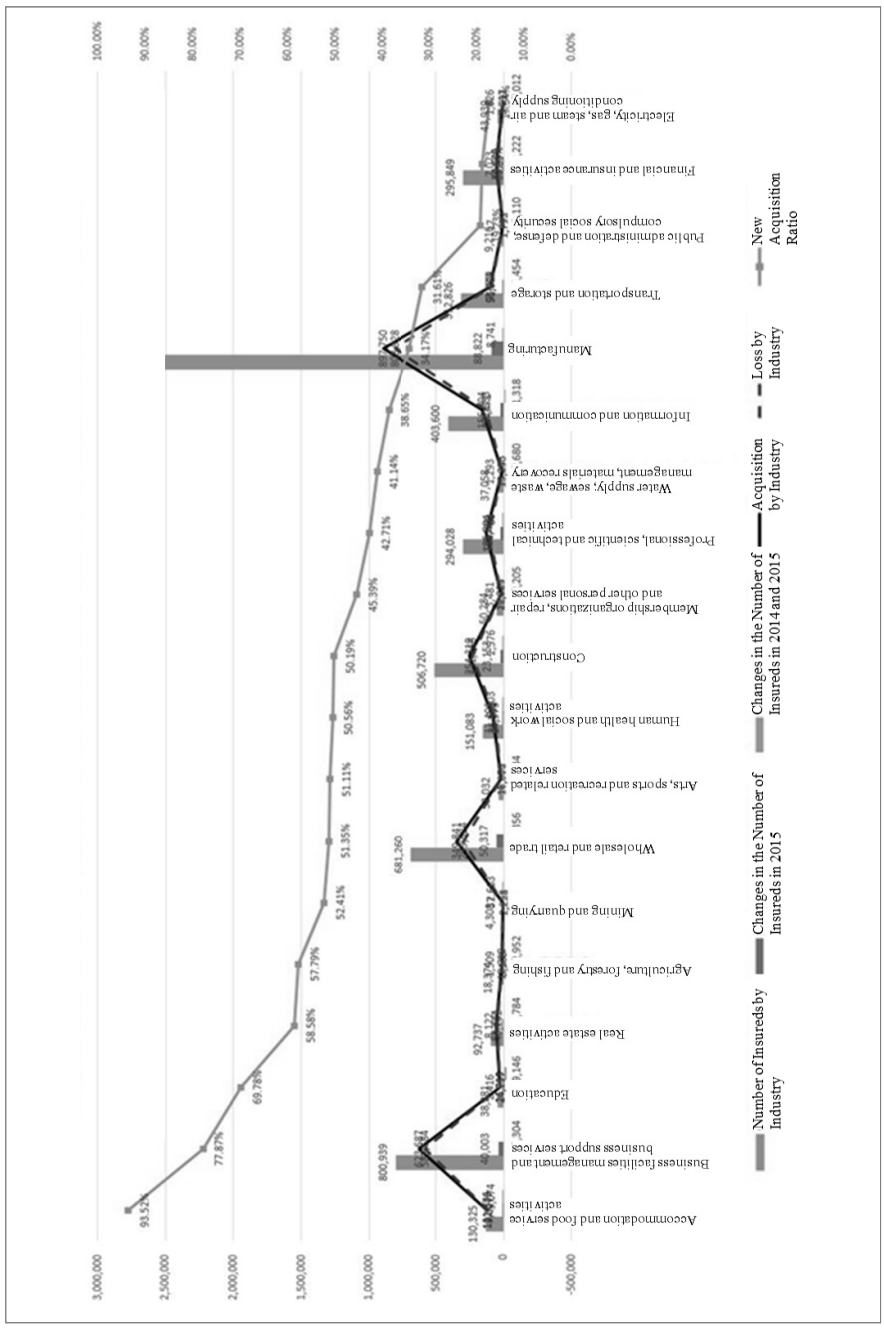
Figure 2 shows the number of workers eligible for Employment Insurance by industry in 2015, the number of workers acquiring (total increase) and losing (total decrease) insurance by industry in the same year, the net change in the number of insureds, and a comparison of the net change in the number of insureds between 2014 and 2015. The changes in the number of insureds in 2015 is somewhat different from the net changes in 2014 and 2015. That discrepancy can be explained by the difference between the enterprises included in the 2014

data and those in the 2015 data. The green line represents the new acquisition ratio, the ratio of the number of workers newly acquiring insurance to the total number of workers eligible for Employment Insurance.

The new acquisition ratio in the accommodation and food service activities section is 93.52 percent, which indicates a particularly high level of mobility in that labor market, even considering the possibility of acquiring insurance multiple times in a year. The new acquisition ratios are relatively lower in the manufacturing and transportation and storage sections, but even they remain higher than 30 percent.[3] The public administration and defense section reports a new acquisition ratio of 19.23 percent, which is interesting because it is close to the 18.3 percent job loss rate in the U.S. public sector.

3 On the industry group level, the auto manufacturing group reports significantly lower job loss and creation than other groups.

Figure 2_Gross and Net Changes in Jobs at the One-Digit Industry Level



Note: Aggregated at the one-digit level under the Korean Standard Industrial Classification System
Source: Author's calculations based on KED and Employment Insurance data

3. Decomposition of Net Changes: Job Creation By Enterprise Size and Firm Age

The following table classifies the enterprises included in the data by size (large enterprises and SMEs) and firm age (less than three-year-old enterprises [startups] and others [non-startups]). The data show that startups contribute more to additional employment than SMEs.

Table 3_Job Creation By Firm Size and Firm Age

(unit: no. of enterprises, %, no. of persons)

All Industries, 2015	No. of Enterprises	Percentage of No. of Enterprises	No. of Insureds	Percentage of No. of Insureds	No. of Insureds per Enterprise	Net Increase in No. of Insureds	Percentage of Net Increase in No. of Insureds	Net Increase in No. of Insureds Per Enterprise
Startup Middle Standing/ Large Enterprises	352	0.12	44,182	0.68	125.52	23,776	7.89	67.55
Non-Startup Middle Standing/ Large Enterprises	6,355	2.08	2,586,098	39.87	406.94	49,214	16.34	7.74
Startup SMEs	45,358	14.58	227,262	3.50	5.01	160,163	53.16	3.53
Non-Startup SMEs	253,308	82.95	3,629,239	55.95	14.33	68,126	22.61	0.27
Total	305,373	100.00	6,486,781	100.00	21.24	301,279	100.00	0.99
Middle Standing/ Large Enterprises	6,707	2.20	2,630,280	40.55	392.17	72,990	24.23	10.88
Small Businesses	298,666	97.80	3,856,501	59.45	12.91	228,289	75.77	0.76
Total	305,373	100.00	6,486,781	100.00	21.24	301,279	100.00	0.99
Startups	45,710	14.97	271,444	4.18	5.94	183,939	61.05	4.02
Non-Startups	259,663	85.03	6,215,337	95.82	23.94	117,340	38.95	0.45
Total	305,373	100.00	6,486,781	100.00	21.24	301,279	100.00	0.99

Source: Authors' calculations using KED and Employment Insurance data

It should be noted that the data in this study could be used to develop job mobility data on the individual worker level. The next section performs such analysis for illustrative purposes. Specifically, we use 2010~2015 job mobility data on workers who acquired insurance in 2015 to analyze their job mobility and the creation of high-quality jobs for young workers.

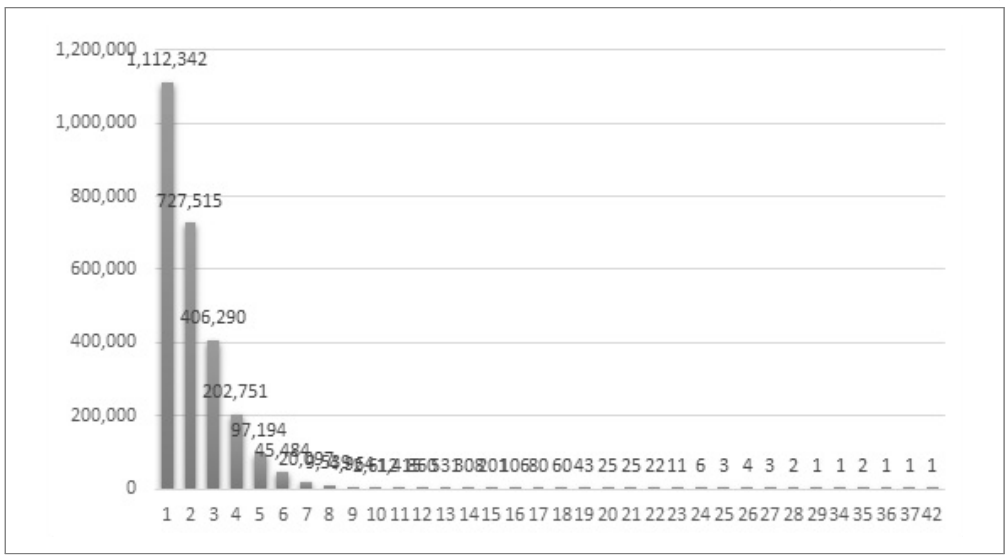
4. Persons Employed in 2015

A. Turnover

According to the job mobility data from the KED-Employment Insurance data pool, an average worker who acquired insurance in 2015 acquired insurance 2.16 times between 2010 and 2015. The highest number of acquisitions was 42. Of 2,632,500 total workers, 1,520,158 reported two or more acquisitions. That is, 57 percent of workers who acquired insurance in 2015 changed jobs at least once in the preceding five-year period.

Figure 3_Number of Insurance Acquisitions Between 2010 and 2015 for Workers Acquiring Insurance in 2015

(unit: no. of workers)



Source: Authors' calculations using KED and Employment Insurance data

B. High-quality Jobs for Young Workers

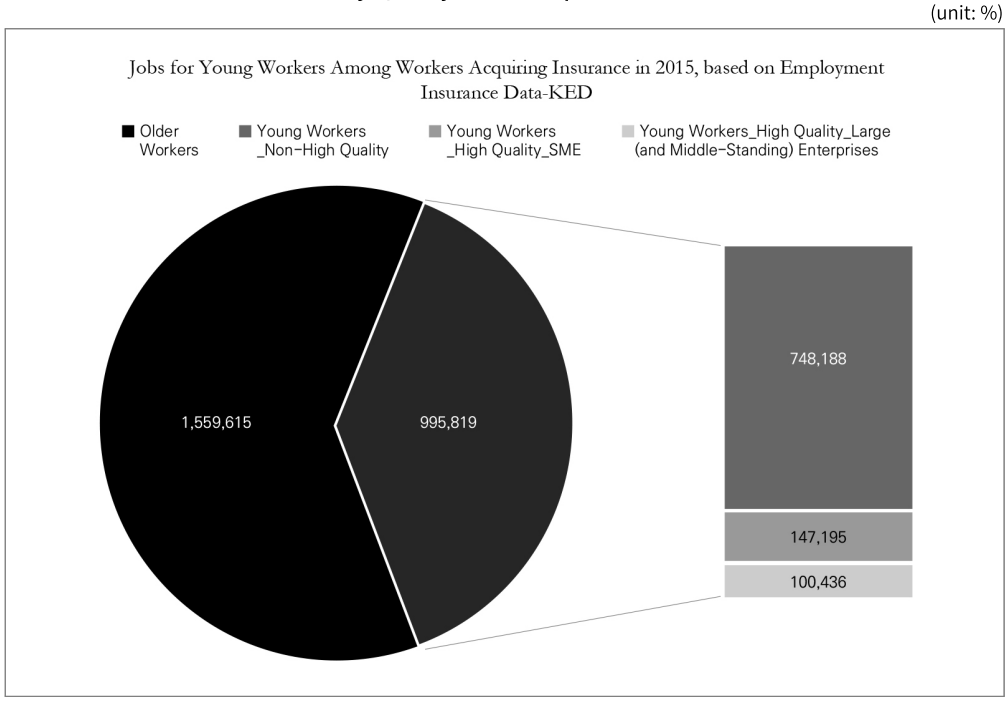
In the present study, we define high-quality jobs in two ways: a monthly wage of KRW 2.4 million or higher and a monthly wage of KRW 2 million or higher. When applying the KRW 2.4 million criterion to the 2,555,434 workers who acquired insurance in 2015,[4] 613,730 jobs were high-quality jobs, of which 121,895 were high-quality jobs for young workers (defined as workers aged 15 to 29).[5]

When applying the KRW 2 million criterion to the 2,555,434 workers who acquired insurance in 2015,[6] 914,987 jobs were high-quality jobs, of which 247,631 were high-quality jobs for young workers.

By enterprise size, when applying the KRW 2 million criterion, 147,195 of the 247,631 high-quality jobs for young workers were created by SMEs, and 100,436 jobs were created by large and middle-standing enterprises.

Figure 4_Jobs for Young Workers Among Workers Acquiring Insurance in 2015, By Quality and Enterprise Size

(unit: %)



Note: These figures are based on the KRW 2 million criterion.
Source: Authors' calculations using KED and Employment Insurance data

4 This figure does not reflect workers who acquired insurance more than ten times in the five-year period or outlier businesses.

5 However, some job creation programs for young workers, such as Save for Tomorrow Mutual Aid, define young workers as those aged 15 to 34.

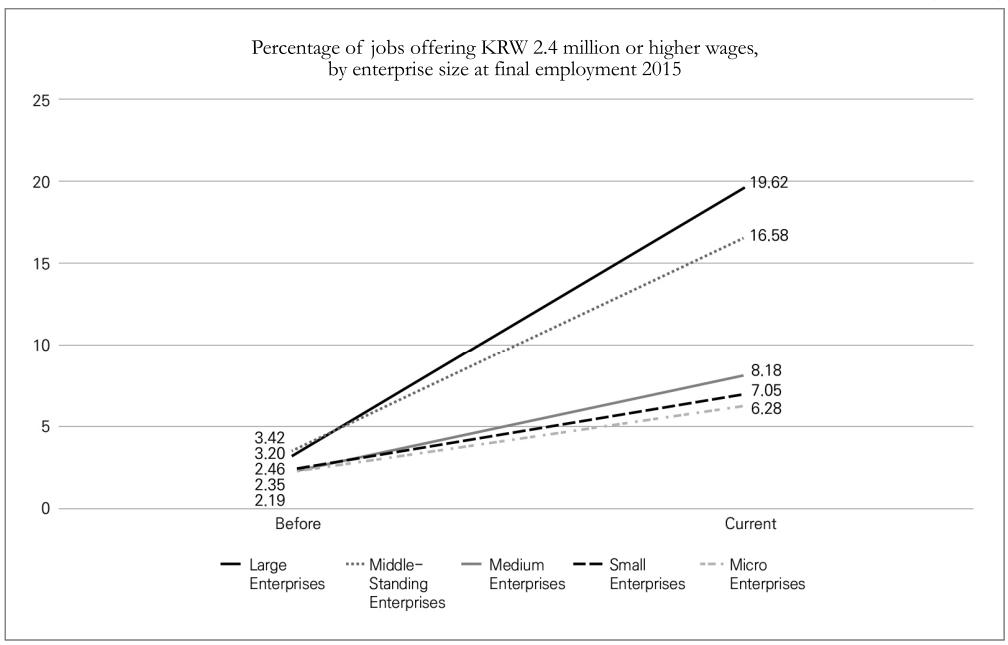
6 This figure does not reflect workers who acquired insurance more than ten times in the five-year period or outlier businesses.

C. Turnover and High-quality Jobs

One noteworthy finding of this analysis is that turnover actually raises the possibility finding high-quality jobs. The data confirm that the percentage of workers in high-quality jobs increases after turnover.

Figure 5_Percentage of High-quality Jobs Before and After Turnover, By Enterprise Size at Final Employment

(unit: %)



(unit: %)

Percentage of jobs offering KRW 2.4 million or higher wages	Before	Current
Large Enterprises	3.20	19.62
Middle-Standing Enterprises	3.42	16.58
Medium Enterprises	2.35	8.18
Small Enterprises	2.46	7.05
Micro-enterprises	2.19	6.28

Note: Number of workers
Source: Authors' calculations using KED and Employment Insurance data

When we look at the jobs from which workers moved on to high-quality jobs, jobs at SMEs account for a considerable percentage. Among the workers who moved to high-quality jobs, more than 60 percent of them previously worked at SMEs.

Table 4_Previous Jobs of Young Workers Who Moved to High-quality Jobs, By Enterprise Size

Previous Jobs of Young Workers in High-quality Jobs	Frequency	Percentage
Micro-enterprises	10,882	7.24
Small Enterprises	30,990	20.62
Medium Enterprises	53,370	35.5
Middle-Standing Enterprises	28,791	19.15
Large Enterprises	19,138	12.73
Others (finance, hospital, etc.)	7,146	4.75
Total	150,317	100

Note: Authors' calculations using the constructed database

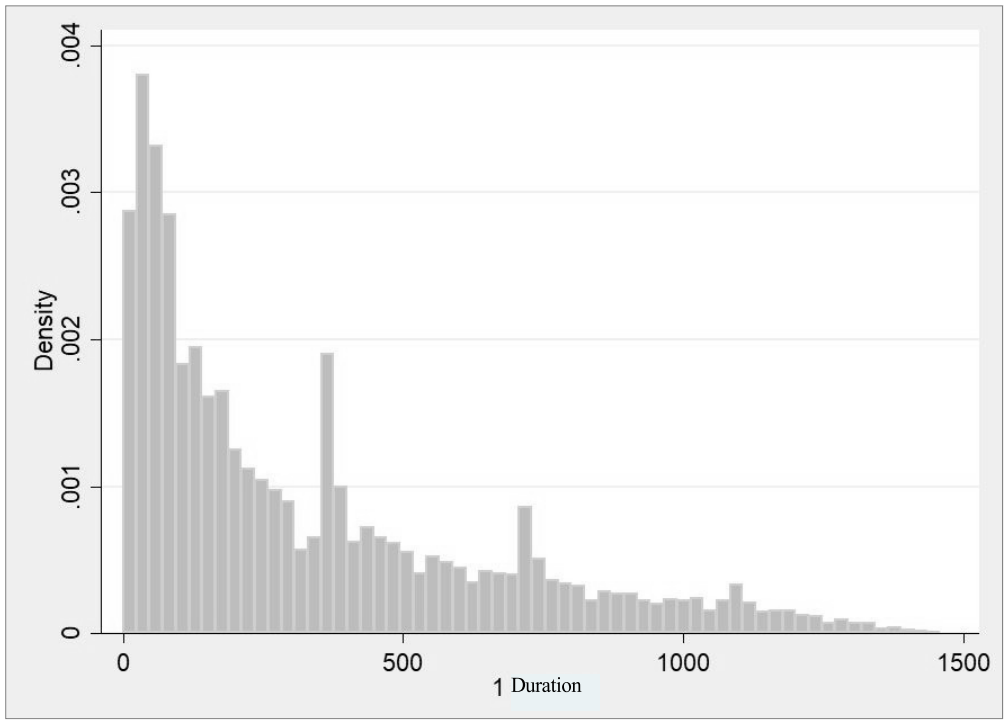
5. Persons Employed in 2012

This section discusses the basic statistics of persons employed in 2012. Although the data on persons employed in 2015 are significant because they represent the latest data, analyzing the job mobility of persons employed in 2012 helps us understand workers' turnover decisions.

A. Job Tenure

The figure below shows a histogram representing the tenure of jobs created in 2012, based on Employment Insurance data and the KED. As can be seen from the graph, the bars peak in the first, second, and third years, and the graph shows a high turnover rate in general.

Figure 6_Tenure of Jobs Generated in 2012



Source: Authors' calculations using the constructed database; tenure is expressed as number of days.

B. Turnover and Changes in Average Real Monthly Wages By Enterprise Size

This section looks into the basic statistics of how turnover changes workers' average monthly wages. In particular, we analyze turnover by enterprise size to understand the turnover of workers at SMEs and large enterprises and how their monthly wages change after turnover.

Young job seekers today prefer jobs that they can keep for the rest of their working lives. For this reason, many of them spend considerable time and energy finding jobs at public sector organizations, large enterprises, and middle-standing enterprises. The jobs at large and middle-standing enterprises are typically better than those at SMEs. However, if the business ecosystem facilitates new matches between workers and jobs and the resulting growth in wages and human capital improves the average monthly wages of workers who move to other jobs, it would be unreasonable to put too much value on the first job. In fact, the employment

decisions observed among young workers in Korea are reinforced by social pressure. The public shares a belief that it is difficult to move from one job to another, especially when moving from an SME to a large enterprise. That perception creates social pressure that causes young workers at SMEs to consider their jobs as a failure. Another widespread belief is that it is difficult to achieve a pay raise when moving from one SME to another SME. The public also tends to think that employees at large enterprises seldom move to SMEs and that when they do, it is under special circumstances, and they are likely to be paid less in their new positions. In this subsection, we test the validity of that belief by looking into changes in monthly wages before and after turnover by enterprise size. (Although the following figures have been adjusted for inflation using the GDP deflator, that adjustment is not significant because the average tenure in a job is less than 300 days for workers who change jobs within five years of beginning employment. In those cases, adjusting for annual inflation could create bias.[7]

As identified in the KED,[8] the number of workers employed in 2012 who moved to large enterprises, middle-standing enterprises, and SMEs before 2015 and received average monthly wages between KRW 500,000 and KRW 5 million was 937,952.[9] The average period before turnover was 257 days. The analysis shows that 581,123 of the workers who changed jobs (63.02 percent) received more real monthly wages after turnover. The average monthly wages before turnover was KRW 1,589,253, and the average increase in monthly wages after turnover was KRW 154,726, or 9.74 percent. Those findings indicate that turnover actually improves job quality by raising the efficiency of job–worker matching.

629,477 of the workers changing jobs moved from one SME to another SME, of whom 391,721 (62.23 percent) reported an increase in wages. The overall net increase in average monthly wages was KRW 130,478 (growth rate: 8.04 percent). 103,752 workers moved from SMEs to large or middle-standing enterprises, of whom 69,158 (66.66 percent) reported an increase in wages. The overall net increase in average monthly wages was KRW 250,593

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7 Our findings are not materially different with no inflation adjustment.

8 This analysis did not consider enterprises classified as "other" enterprises (including hospitals) in the KED. The number of employees at the "other" enterprises is around 40,000. Including them in the analysis did not change the findings in material ways. The number of workers moving to high-quality jobs actually increased when including the "other" enterprises because most of the enterprises in that category offer high-quality jobs.

9 Workers who received KRW 500,000 or less and those who received more than KRW 5 million were excluded as outliers because, in addition to their small numbers and the need to improve the visibility of the distribution, they are not the main concern of policymakers. In any case, including those workers did not change the findings in material ways.

(growth rate: 16.57 percent). 100,060 workers moved from large or middle-standing enterprises to SMEs, of whom 60,811 (60.77 percent) received higher monthly wages. Their average monthly wage increased by KRW 112,286 (growth rate: 7.41 percent), which indicates that moving from large enterprises to SMEs also raises job quality. 104,663 workers moved from large or middle-standing enterprises to other large or middle-standing enterprises, of whom 69,433 (66.34 percent) reported an increase in wages. Their average monthly wages increased by KRW 246,103 (growth rate: 16 percent) compared with their average monthly wages during the 264 days before turnover. Thus, although it is true that moving from SMEs to large enterprises or from large enterprises to other large enterprises has a high chance of resulting in higher wages, moving from SME to SME or large enterprise to SME also results in higher wages. In addition, 20 percent of turnover opportunities given to new employees within a year of hire are for positions at large enterprises, and around half of those opportunities go to workers at SMEs. Therefore, the widespread belief that workers in SMEs have a low chance of moving to large enterprises is largely baseless.

Table 5_Turnover and Wage Changes Between 2012 and 2015 for Workers Hired in 2012

(unit: no. of workers, %, KRW)

Turnover category	Increased no. of workers	Decreased no. of workers	Total no. of workers	Percentage increase	Average monthly wage before turnover	Average increase after turnover	Growth rate	Average duration (no. of days)
SME–SME	391,721	237,756	629,477	62.23	1,622,367	130,478	8.04	242
SME–large enterprise	69,158	34,594	103,752	66.66	1,512,324	250,593	16.57	279
Large enterprise –SME	60,811	39,249	100,060	60.77	1,515,881	112,286	7.41	315
Large enterprise –large enterprises	69,433	35,230	104,663	66.34	1,536,496	246,103	16.02	264
Total	591,123	346,829	937,952	63.02	1,589,253	154,726	9.74	257

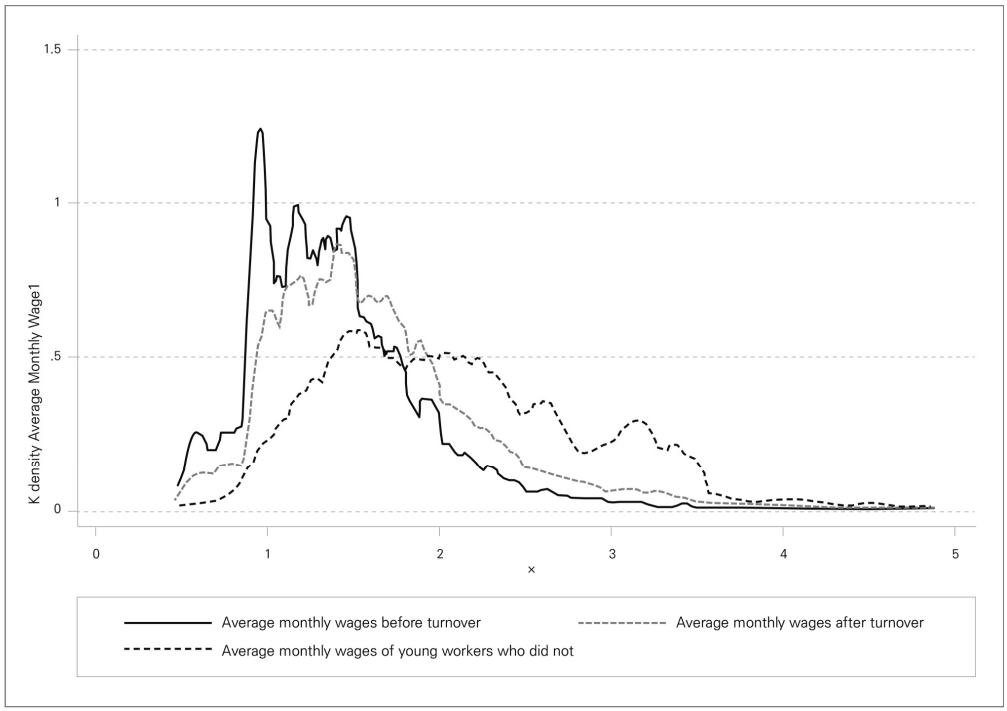
Source: Authors' calculations using the constructed database

Next, we consider changes in the distribution of average monthly wages before and after turnover. The average wage and percentage data are more intuitive and easier to understand for the public, but the distribution data contain more information.

The following figure shows changes in the wage distribution before and after turnover among young persons employed in 2012 who moved to other jobs before 2015[10] and the wage distribution of those who did not change jobs during that period. Although the workers who did not change jobs reported higher wages, the wage gap between the two groups narrowed after turnover.

Figure 7_Average Monthly Wages of Workers Hired in 2012 Before and After Turnover

(unit: KRW million)



Source: Authors' calculations using the constructed database

10 Here, young workers are defined as workers under 30 at the time of acquiring insurance.

III. Basic Analysis of SME Policy Data

It is widely agreed that industry policies and fiscal policies for industries expressly or implicitly share two main goals: generating added value and creating high-quality jobs. Although industrial policies for both large and small enterprises list job creation as one of their main goals, creating high-quality jobs is the essence of SME policies. Discussions about the significance of SME policies rarely fail to highlight the employment-generating capabilities of SMEs.[11]

For the empirical analysis discussed in Chapter IV, we relied on financial support data for SMEs between 2010 and 2015 from the three organizations that provide those services: the Korea Credit Guarantee Fund (KODIT), the Korea Technology Finance Corporation (KOTEC), and the Small & Medium Business Corporation (SBC). Because these datasets are all-population data containing information on all enterprises that benefit from these programs as of the end of each year, they clearly separate those enterprises that did and did not receive any loan or guarantee service from these organizations. The following sections summarize the 2010–2015 data used in this analysis and the support history data from KODIT, KOTEC, and the SBC between 2003 and 2015.[12]

1. KODIT Support History Data

The following table summarizes the standard guarantees provided by KODIT between 2003 and 2015 in terms of the total amount guaranteed and the number of guarantees provided. As shown in the table, the amount guaranteed by KODIT grew steadily from KRW 25 trillion in 2003 to KRW 46 trillion in 2015.

11 In this report, most statistics on SMEs are placed in footnotes rather than the main body because definitions of SME are often too broad, with no lower bound, so the statistics are unreliable. Nonetheless, the phrase "99–88," which means that 99.9 percent of SMEs are responsible for 88 percent of total employment, is found in almost every mention of SMEs by SME policymakers or the press. See Chang et al. (2013) for a discussion of the background of that term and why it is problematic.

12 See Chang et al. (2013) and Chang (2014) for more detailed discussions of policy finance for SMEs.

Table 6_KODIT General Guarantee Data

(unit: KRW 100 million, no. of guarantees)

	Outstanding general guarantees	No. of guarantees
2003	246,277	133,943
2004	308,380	142,554
2005	334,993	141,011
2006	357,855	142,613
2007	377,658	150,388
2008	423,409	170,439
2009	554,463	208,042
2010	386,766	227,238
2011	383,852	233,003
2012	392,485	229,631
2013	405,572	222,575
2014	417,835	215,288
2015	463,235	204,975

Note: Authors' calculations using data from KODIT (2016)

2. KOTEC Data

KOTEC The following table shows the amounts that KOTEC guaranteed between 2003 and 2015. As was the case with KODIT, the amount guaranteed by KOTEC grew from KRW 11 trillion in 2003 to KRW 20 trillion in 2015.

Table 7_KOTEC Guarantee Data

(unit: KRW 100 million, no. of guarantees)

	Outstanding guarantees	No. of guarantees
2003	112,974	30,076
2004	126,218	32,344
2005	123,474	32,814
2006	133,662	29,933
2007	150,343	32,361
2008	174,393	36,288
2009	240,204	44,322
2010	174,137	48,607
2011	170,246	52,193
2012	176,592	57,737
2013	189,351	62,891
2014	191,773	66,060
2015	198,457	69,916

Note: Authors' calculations using data from KOTEC (2016)

3. SBC Data

As in the previous sections, we summarize the loans provided by the SBC between 2003 and 2015 in the following table. The total amount of SBC loans grew from KRW 2 trillion in 2003 to KRW 16 trillion in 2015. However, unlike the guarantees provided by KODIT and KOTEC, the loans provided by the SBC are reflected in the MSS budget. Therefore, these loans directly affect Korea's SME-related budget. Given that guarantees and loans have similar financial effects on the enterprises that benefit from them and considering how subsidies and loans receive different treatments in budget execution, our findings on the scale of financial programs can be further improved in the future.

Table 8_SBC Loan Data (Outstanding Loans)

(unit: KRW 100 million, no. of loans)

	Total Amount of Loans	No. of Loans
2003	20,109	4,468
2004	42,331	7,877
2005	65,679	11,390
2006	86,762	14,255
2007	106,328	16,405
2008	128,252	19,087
2009	166,530	25,419
2010	179,212	26,416
2011	180,927	27,225
2012	175,853	28,047
2013	176,230	32,978
2014	168,517	36,808
2015	164,960	43,228

Note: Authors' calculations using data from the SBC (2016)

IV. Sample Policy Evaluations

1. Industry-Level Evaluation of Government Financial Support, 2011~2015

First, we perform a sample policy evaluation on the industry level. As explained earlier, job creation and loss clearly differ from net changes in jobs. On the three-digit industry group level, the total number of jobs between 2010 and 2015 did not change significantly even

though many jobs were created and destroyed. Therefore, we need to consider how the fiscal policy affects net changes in jobs on the industry level. Even when the individual enterprises benefiting from a policy show job increases, those new jobs might represent a mere transfer of jobs from one enterprise to another if the total number of jobs within the industry stays the same.

Granted, a policy can be credited with contributing to a positive outcome, such as improving the productivity of assisted enterprises or creating high-quality jobs, without achieving a net increase in jobs. However, enterprises receiving subsidies or loans from the government tend to lose their productivity, and the number of high-quality jobs in those enterprises does not increase.[13] Therefore, the effect of a net increase in jobs constitutes a basic element required for a policy evaluation.

This chapter takes government financial support programs for SMEs as the target for a policy evaluation. Specifically, we use two methodologies to analyze the effects of the fiscal policy for employment on net changes in employment at the three-digit industry level under the 9th KSIC. Unlike individual enterprises, an industry represents a heterogenous population, which makes it difficult to define a control group that controls for group characteristics through a matching or regression analysis. Therefore, a panel model is suitable for the present evaluation because it can control for the fixed effects of individual industries and years. For this analysis, we used a fixed effect panel model and a dynamic panel model to analyze how the finance policy affected changed the number of insureds in each industry.

For the fixed effect panel model, the observational unit is industries, and the controlled variables are defined at the industry level. We considered the fixed effects of industries and years and looked into changes in the performance indicators according to the amount of financial support provided through the finance policy.

$$y_{i,t} = \alpha + P_{i,t}\beta + x_{i,t-1}\gamma + \nu_i + \upsilon_t + \epsilon_{i,t}$$

$P_{i,t}$: Amount of financial support in year t for industry i
$X_{i,t-1}$: Characteristics of industry i in year t-1

The following table shows the findings from the fixed effect panel model for the net changes in the number of insureds in each industry. The findings show that the amount of government financial support did not affect the net changes in the number of insureds in each

13 See Chang (2014)

industry. Given that the total assets, revenue, and operating profits in the previous period significantly affected the number of insureds in each industry, even when controlling for fixed effects by industry and year, the lack of a significant effect from the finance policy seems to be meaningful.

Table 9_Effect of Government Financial Support on the Net Change in the Number of Insureds By Industry (Fixed effect panel model)

Dependent variable: net changes in the number of the insureds by industry						
Independent variable	Coefficient	Standard error	t value	p value	95% confidence interval	
Government Financial Support by Industry	**-0.0000910**	**0.0024033**	**0.04**	**0.97**	**-0.0048120**	**0.0046300**
Number of Insureds in the Previous Period by Industry	-0.1455228	0.0206826	7.04	0.00	-0.1861521	-0.1048936
Total Assets in the Previous Period by Industry	0.0000293	0.0000090	3.24	0.00	0.0000115	0.0000470
Total Revenue in the Previous Period by Industry	-0.0001067	0.0000457	2.33	0.02	-0.0001965	-0.0000169
Total Operating Profits in the Previous Period by Industry	0.0004670	0.0001369	3.41	0.00	0.0001982	0.0007359
Total R&D Expenses in the Previous Period by Industry	-0.0012296	0.0003221	3.82	0.00	-0.0018623	-0.0005969
Number of Enterprises in the Previous Period by Industry	0.8177902	0.3701671	2.21	0.03	0.0906279	1.5449520
Percentage of SMEs in the Previous Period by Industry	43.0209600	59.1386200	0.73	0.47	-73.1519200	159.1938000
Percentage of SMEs in the Previous Period by Industry in Terms of Revenue	-26.7628500	17.7735900	1.51	0.13	-61.6775900	8.1518840
Percentage of SMEs in the Previous Period by Industry in Terms of Total Assets	15.3657800	19.6040300	0.78	0.43	-23.1446900	53.8762500
Percentage of SMEs in the Previous Period by Industry in Terms of R&D Expenses	2.5376800	7.2640320	0.35	0.73	-11.7319000	16.8072600
Percentage of SMEs in the Previous Period by Industry in Terms of the Number of Insureds	39.4281700	29.0470700	1.36	0.18	-17.6323600	96.4887000
2013	151.1392000	193.114100	0.78	0.434	-228.2173000	530.4958000
2014	64.6038500	208.930100	0.31	0.757	-345.8218000	475.0295000
2015	165.1733000	219.052800	0.75	0.451	-265.1376000	595.4842000

sigma_u = 9617.38
sigma_e = 1757.5116
rho = 0.96768409 (fraction of variance due to u_i)

Source: Authors' calculations using the constructed database

2. Firm-Level Evaluation of Government Financial Support, 2011~2015

The next example is an evaluation of the effect of government financial support on the number of workers acquiring insurance at the enterprise level. We used the fixed panel model for this analysis and used the following performance indicators: the number of jobs acquired by workers, the number of jobs acquired by young workers, and the number of high-quality jobs acquired by young workers (average monthly wage of KRW 2 million or higher, when adjusted for inflation).[14]

Specifically, we estimated the effects of the policy's financial supports on the performance indicators while controlling for changes in enterprise characteristics, enterprise fixed effects, and year fixed effects in the preceding period.

$$y_{i,t} = \alpha + P_{i,t}\beta + x_{i,t-1}\gamma + \nu_i + \upsilon_t + \epsilon_{i,t}$$

$P_{i,t}$: Financial support in year t for enterprise i

As the following tables show, government financial support increased the number of jobs acquired by workers by 0.57. However, the programs did not have any statistically significant effect on the number of jobs acquired by young workers, and they decreased the number of high-quality jobs acquired by young workers by 0.05. Although those findings are important in themselves, it is equally important to note that government financial support has different effects on different performance indicators, and an increase in the number of jobs acquired by workers does not necessarily imply an increase in the number of jobs or high-quality jobs acquired by young workers. This finding differs significantly from the vague expectations, which are not based on quantitative facts, often presented for policies.

14 Using other methods mentioned in the present study, such as propensity score matching or multivariate regression analyses controlling for time differences, did not change the findings significantly. To demonstrate that various data can be analyzed using various methods, we here present the findings from a fixed effect panel model.

Table 10_Effect of Government Financial Support, 2011~2015: Firm-level Fixed Effect Model

Type of Acquisition of Insurance	Acquisition of Insurance by Workers		Acquisition of Insurance by Young Workers		Acquisition of Insurance by Young Workers at High-quality Jobs	
	Coefficient	p value	Coefficient	p value	Coefficient	p value
Government Financial Support	**0.570*** **	**0.00**	**0.112***	**0.09**	**-0.052*** **	**0.00**
Total Revenue in the Previous Period	-0.000***	0.00	-0.000	0.48	0.000***	0.00
Total Assets in the Previous Period	0.000***	0.00	0.000***	0.00	0.000***	0.00
Operating Profits in the Previous Period	0.000***	0.00	0.000***	0.00	0.000***	0.00
Firm age in the Previous Period	0.270	0.59	0.173	0.50	0.035	0.50
ROA in the Previous Period	0.002	0.31	0.000	0.73	-0.000	0.57
Loss of Insurance by Young Workers in the Previous Period	0.231***	0.00	0.198***	0.00	0.007***	0.00
Loss of Insurance by Older Workers in the Previous Period	-0.052***	0.00	-0.052***	0.00	0.001***	0.00
Average Total Assets of SMEs in the Previous Period	-0.000***	0.00	0.000**	0.01	0.000	0.13
Average Revenue of SMEs in the Previous Period	0.000	0.18	0.000	0.44	-0.000	0.48
Average Operating Profits of SMEs in the Previous Period	0.001	0.30	0.000	0.27	-0.000	0.93
Average R&D Expenses of SMEs in the Previous Period	-0.000	0.86	-0.001**	0.03	0.000***	0.00
Average Firm age of SMEs in the Previous Period	-0.036	0.78	-0.085	0.21	-0.024*	0.08
Average ROA of SMEs in the Previous Period	0.011	0.64	0.020	0.11	0.004*	0.09
2013	-0.555	0.27	-0.345	0.19	-0.013	0.80
2014	-1.023	0.30	-0.546	0.29	-0.011	0.91
2015	-1.052	0.48	-0.675	0.38	0.034	0.83
Constant	9.612**	0.02	1.498	0.49	-0.093	0.83
Sigma_u	36.43		15.98		1.84	
Sigma_e	15.45		8.05		1.63	
Rho	0.85		0.80		0.56	
No. of Observations	543,571		543,571		543,571	
No. of Groups	229,173		229,173		229,173	

Note: *** represents statistical significance at the 1 percent, ** 5 percent, and * 10 percent levels.
Source: Authors' estimation

This study focuses on developing a quantitative evaluation system, rather than on the results of individual evaluations. Therefore, it is important to review the applicability of various methods. The fixed effect panel model does not allow the use of dependent variables in previous periods as explanatory variables. To address that issue, we used a dynamic panel estimation. Table 11 below shows the results of a dynamic panel estimation based on the Arellano-Bond estimation model. The findings show that the scale of the financial support did not significantly affect the net changes in the number of insureds in each industry.

Because they use instrumental variables, estimates based on the Arellano-Bond model are less robust than those produced using the fixed effect panel model. However, we note that this only affects other control variables and did not affect the significance of our findings about government financial support. We include this information specifically to stress to policymakers in the field that a theoretically or logically superior model does not always produce better findings when applied to real-world data.

Table 11_Effects of Government Financial Support on Net Changes in the Number of Insureds By Industry: Arellano-Bond Estimator

Dependent variable: net changes in the number of insureds by industry						
Independent variable	Coefficient	Standard error	t value	p value	95% confidence interval	
Net Changes in the Number of Insureds in the Previous Period By Industry	0.01583080	0.03931750	0.40	0.69	-0.0612300	0.0928916
Amount of Government Financial Support by Industry	**-0.00120040**	**0.00251150**	**-0.48**	**0.63**	**-0.0061229**	**0.0037221**
ROA in the Previous Period By Industry	-29.97766000	47.85256000	-0.63	0.53	-123.7670000	63.8116400
Number of Insureds in the Previous Period By Industry	-0.21168140	0.01897360	-11.16	0.00	-0.2488689	-0.1744939
Total Assets in the Previous Period By Industry	0.00003560	0.00000918	3.88	0.00	0.0000176	0.0000536
Total Revenue in the Previous Period By Industry	-0.00006450	0.00004840	-1.33	0.18	-0.0001593	0.0000304
Total Operating Profits in the Previous Period By Industry	0.00041230	0.00015100	2.73	0.01	0.0001164	0.0007083
Total R&D Expenses in the Previous Period By Industry	-0.00122050	0.00029750	-4.10	0.00	-0.0018036	-0.0006375
Number of Enterprises in the Previous Period By Industry	1.67775100	0.33013210	5.08	0.00	1.0307040	2.3247980
Percentage of SMEs in the Previous Period By Industry in Terms of R&D Expenses	-1.40490500	7.16097000	-0.20	0.84	-15.4401500	12.6303400

Source: Author's estimation

3. Individual-Level Evaluation of Government Financial Support, 2012

Our last example evaluates the policy at the individual level. Specifically, we here compare the periods until the first turnover and the average monthly wages before and after the turnover between the treatment group, individuals hired by beneficiary enterprises in 2012, and the control group, individuals with similar characteristics hired by other enterprises with similar characteristics.

We chose to analyze the first turnover of persons employed in 2012 because the average monthly wage data in the Employment Insurance database are recorded only when workers acquire or lose insurance, which makes it difficult to verify changes in monthly wages while workers remain at a single enterprise.[15] For this evaluation, a typical panel analysis model and the difference-in-differences method are problematic because individuals change jobs at different times. In addition, because few previous researchers have attempted an individual-level policy evaluation, we decided to set the direction for data development by moving from lower- to higher-level data, thereby ensuring the robustness of our analysis by starting with the simplest data.

Such a simple analysis also has its own benefits. Because the Korean economy is characterized by a high turnover ratio and a short turnover period, a simple analysis allows us to explore most individual cases. Furthermore, the wages received by a worker after a turnover reflect the market's evaluation of that worker's value, which raises the objectivity of the data.

For this analysis, we first gathered data for individuals who were hired by SMEs in 2012 and changed jobs before 2015. Then, we divided those individuals into two groups: an experimental group of individuals hired by beneficiary SMEs in 2012 and a control group of individuals with similar characteristics (starting wage level, sex, first job, and period to the first turnover) hired by non-beneficiary enterprises. To remove outliers and unrelated data, we excluded individuals paid more than KRW 10 million per month and those whose average monthly wages at their first jobs exceeded KRW 5 million. Although the findings did not confirm a statistically significant overall increase in average monthly wages,[16] individuals who

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15 Under the Employment Insurance scheme, the differences between the amounts to be paid and the amounts actually paid are settled for each individual company. For this reason, the Employment Information Service holds only the pre-settlement data. The Korea Workers' Compensation & Welfare Service keeps the post-settlement wage data, but those data are not yet available for policy evaluation purposes.

16 The increase in average monthly wages is significantly higher for enterprises benefiting from the finance policy even when including enterprises with no R&D expenses in the analysis.

received KRW 2 million or less a month in their first jobs received around KRW 7,000 more in monthly wages when they moved to SMEs receiving financial supports, which was statistically significant at the 1 percent level. On the other hand, individuals who were paid more than KRW 2 million in monthly wages in their first jobs reported lower wage growth at the statistically significant level of 10 percent. Some control variables produced significant findings. The R&D expense variable was associated with positive changes in monthly wages in most cases reported in this study, which suggests that an individual can expect to be paid higher wages when moving to an enterprise with high R&D spending. As for the individual characteristics, caution is required when analyzing the Employment Insurance data on insureds because they do not contain information about educational background. However, women reported an increase in average monthly wages of KRW 190,000. Specifically, women paid KRW 2 million or less in monthly wages reported a wage increase of KRW 210,000, and women paid more than KRW 2 million reported an increase of KRW 120,000, which were both lower than the increases among similarly situated men. This finding seems significant given an average wage of around KRW 2 million. The data also show that an older worker is likely to see a smaller increase in monthly wages upon the first turnover than a younger worker.

Table 12_Government Financial Support Effect: Net Increase in Average Monthly Wages upon First Turnover, Overall

Dependent variable: net increase in average monthly wages				
Independent variable	Coefficient	Standard error	t value	p value
Government Financial Support	**-0.0012745**	**0.0028382**	**-0.45**	**0.65**
Total Assets	-0.0000005***	0.0000001	-4.55	0.00
Revenue	0.0000006***	0.0000001	5.52	0.00
Total Number of Insureds	-0.0000954***	0.0000064	-14.85	0.00
Operating Profits	0.0004178	0.0002969	1.41	0.16
R&D Expenses	0.0000236***	0.0000018	13.52	0.00
Operation Return on Assets Ratio	-0.0002339***	0.0000672	-3.48	0.00
Firm age	-0.0017704***	0.0001841	-9.62	0.00
Average Monthly Wages	-0.2712440***	0.0028449	-95.35	0.00
Industry SME Average Total Assets	-0.0000112***	0.0000016	-7.19	0.00
Industry SME Average Revenue	-0.0000120***	0.0000012	-9.96	0.00
Industry SME Average Operating Profits	0.0002861***	0.0000237	12.05	0.00
Industry SME Average R&D Expenses	0.0001726***	0.0000139	12.40	0.00
Industry SME Average Firm age	-0.0153011***	0.0009927	-15.41	0.00
Industry SME Average ROA	-0.0050866***	0.0002806	-18.13	0.00
Female	-0.1899233***	0.0028155	-67.46	0.00
Age at Time of Acquisition	-0.0003966***	0.0001304	-3.04	0.00
Constant	0.8905929***	0.0103490	86.06	0.00

Note: The number of observations was 221,887. *** represents statistical significance at the 1 percent, ** 5 percent, and * 10 percent levels. Units are KRW million and number of years.
Source: Author's estimation

Table 13_Government Financial Support Effect: Net Increase in Average Monthly Wages upon First Turnover, Average Monthly Wages of KRW 2 Million or Less

Dependent variable: net increase in average monthly wages				
Independent variable	Coefficient	Standard error	t value	p value
Government Financial Support	**0.0071683*** **	**0.0028479**	**2.52**	**0.01**
Total Assets	-0.0000006***	0.0000001	-5.18	0.00
Revenue	0.0000007***	0.0000001	6.30	0.00
Total Number of Insureds	-0.0001214***	0.0000064	-18.97	0.00
Operating Profits	0.0003911	0.0003595	1.09	0.28
R&D Expenses	0.0000134***	0.0000022	6.03	0.00
Operation Return on Assets Ratio	-0.0003406***	0.0000869	-3.92	0.00
Firm age	-0.0015047***	0.0001811	-8.31	0.00
Average Monthly Wages	-0.4637462***	0.0049405	-93.87	0.00
Industry SME Average Total Assets	-0.0000125***	0.0000014	-9.28	0.00
Industry SME Average Revenue	-0.0000114***	0.0000011	-10.38	0.00
Industry SME Average Operating Profits	0.0002488***	0.0000244	10.18	0.00
Industry SME Average R&D Expenses	0.0002607***	0.0000135	19.28	0.00
Industry SME Average Firm age	-0.0091686***	0.0009555	-9.60	0.00
Industry SME Average ROA	-0.0042909***	0.0002876	-14.92	0.00
Female	-0.2193085***	0.0028090	-78.07	0.00
Age at Time of Acquisition	-0.0008319***	0.0001267	-6.57	0.00
Constant	1.1082040***	0.0114844	96.50	0.00

Note: The number of observations was 155,494. *** represents statistical significance at the 1 percent, ** 5 percent, and * 10 percent levels. Units are KRW million and number of years.
Source: Author's estimation

Table 14_Government Financial Support Effect: Net Increase in Average Monthly Wages upon First Turnover, Average Monthly Wages of More than KRW 2 Million

Dependent variable: net increase in average monthly wages				
Independent variable	Coefficient	Standard error	t value	p value
Government Financial Support	**-0.0116712***	**0.0066616**	**-1.75**	**0.08**
Total Assets	-0.0000003	0.0000002	-1.22	0.22
Revenue	0.0000006***	0.0000002	2.50	0.01
Total Number of Insureds	-0.0000048	0.0000352	-0.14	0.89
Operating Profits	0.0007186*	0.0004104	1.75	0.08
R&D Expenses	0.0000317***	0.0000028	11.37	0.00
Operation Return on Assets Ratio	-0.0000131	0.0001031	-0.13	0.90
Firm age	-0.0015030***	0.0004318	-3.48	0.00
Average Monthly Wages	-0.2227158***	0.0069148	-32.21	0.00
Industry SME Average Total Assets	-0.0000035	0.0000045	-0.78	0.43
Industry SME Average Revenue	-0.0000116***	0.0000036	-3.23	0.00
Industry SME Average Operating Profits	0.0003885***	0.0000537	7.24	0.00
Industry SME Average R&D Expenses	-0.0000469	0.0000358	-1.31	0.19
Industry SME Average Firm age	-0.0283251***	0.0029004	-9.77	0.00
Industry SME Average ROA	-0.0047960***	0.0006959	-6.89	0.00
Female	-0.1256639***	0.0098904	-12.71	0.00
Age at Time of Acquisition	-0.0030467***	0.0004877	-6.25	0.00
Constant	0.9726864***	0.0304298	31.96	0.00

Note: The number of observations was 66,257. *** represents statistical significance at the 1 percent, ** 5 percent, and * 10 percent levels. Units are KRW million and number of years.
Source: Author's estimation

V. Suggestions for the Development of a Quantitative Evaluation System for the Fiscal Policy for Employment

So far, we have discussed sample quantitative evaluations of the fiscal policy for employment. We built a database by pooling multiple-year employment data, enterprise data, and policy data that encompass a significant portion of the national economy. Then, we used that database to analyze how the fiscal policy for employment affects industry, the jobs created by enterprises, and the job decisions of individual workers. Our analyses have confirmed the possibility of performing quantitative evaluations of the fiscal policy for employment using data on industry, enterprises, and individuals along with currently available indicators and methods. In addition, our sample evaluations have shown that using the feedback provided by the evaluation results as input for discussions of future policies could improve the effectiveness of the fiscal policy for employment.

This chapter provides detailed proposals for the construction and operation of a quantitative evaluation system, along with suggestions to facilitate that endeavor. We clarify the goals of the fiscal policy for employment from the standpoint of the national economy, and we discuss the need to align the performance indicators with the ultimate goals of the fiscal policy for employment.

1. Clarification of Policy Goals, Proposals for Developing a Strategic Performance Indicator System, and Example Strategies

First and foremost, a quantitative evaluation system for the fiscal policy for employment requires clarification of its policy goals. From the standpoint of the national economy, the ultimate goals of the fiscal policy for employment should include (1) the quantitative goal of a net gain in the number of jobs and (2) the qualitative goal of creating high-quality jobs and improving the quality of existing jobs. At present, job quality improvement mostly means higher wages. However, we could also consider other objectives related to worker quality of life, such as working environments and working hours.

Those goals represent the minimum requirements for job creation policies. Policies that achieved those goals in full could still produce other results that might promoteaffecting long-term economic growth. Changes in the optimal number of jobs needed to meet the goal of for job growth or job quality improvements needed to maximize the value added by the policy might differ from the changes in the number of jobs needed to realize economic

optimization. In other words, job growth could cause inefficiency if it doesn't result from improved firm-level or industry-level efficiency. The potential trade-off between jobs and economic growth needs to be discussed on the national economy level to identify the optimal balance between the externality of job creation policies and the pace of Korea's economic growth. For example, if the strategic importance of faster growth is paramount, the balancing point should be moved closer to growth optimization. If, on the other hand, the externality of job policies (such as increased human capital across the national economy) is deemed more valuable, emphasis should be placed on job growth and job quality improvement. Granted, from the perspective of ultra long-term sustainability, the two goals can be pursued without major conflict. Better jobs cannot be created without economic growth, and the sustainable growth of human capital cannot be expected without high-quality jobs. In sum, the job-centered approach stresses the need for economic growth in connection with the continued generation of high-quality jobs, whereas the growth-centered approach takes the position that economic growth will produce more wealth and more jobs. Thus, iDespite their differences, the two approaches share many similarities.

As previously discussed, the current fiscal policy for employment has produced outcomes that raise concerns about its goals, that is, job growth and job quality improvement. Therefore, we next explore ways to achieve those policy goals by developing and maximizing the performance of a strategic system of indicators.

We already mentioned that most currently used performance indicators for the fiscal policy for employment focus on gross changes rather than net changes, making them unsuitable reflections of the dynamism of the job ecosystem. When the government promotes job creation or preservation through fiscal expenditure, the effectiveness of the approach is likely to be diminished as the efficiency of the dynamic job ecosystem improves. The approach could even produce unintended side effects that negatively affect the net number of jobs. In other words, job growth and the prevention of job loss at individual enterprises supported by the government are not appropriate indicators in themselves. If the jobs created or preserved by government support replace similar jobs in other enterprises, their creation or preservation does not produce a net increase in jobs.

We examined the current status of job creation in Korea and empirically showed that the dynamic changes in the job ecosystem exceed the expectations of policymakers and the general public. Therefore, when conducting a quantitative evaluation of a job creation policy, we need to pay attention to the net increase in jobs across the national economy rather than the gross increase or decrease in individual jobs. As an interim step, we need to establish

performance indicators for a net increase in jobs on the industry level and use them to review the effectiveness of the overall policy. A net increase in jobs across the national economy is the ultimate goal of the job creation policy, but we recommend using net job increases within industries as performance indicators as an intermediary step. This analysis should empirically identify and use data from industries that have a stable number of jobs. A net increase in jobs in one industry might not reflect a net increase across the economy if the level of inter-industry job mobility is high. However, inter-industry job changes are typically more difficult than job changes within an industry. To evaluate job quality improvement, we need to select wage indicators (such as the economy-wide average monthly wage) and indicators of working hours and workers' welfare and manage them as the top-priority performance indicators. The ideal approach would compare and manage the overall distribution of those indicators. However, it would be more practical to monitor summary statistics, including means and variances.

Applying indicators designed to measure ultimate policy goals might generate difficulties in managing specific programs. For example, it would be difficult to verify on the individual program level which jobs contribute to a net increase in jobs and which policy targets are closely related to that net increase.

Therefore, we need a strategic system based on empirical data and quantitative evaluation results. Our inquiry identified several strategic issues with the current fiscal policy for employment that are common to policies in other areas as well. The basic approach used by the current job creation policy is to achieve and document partial successes and expect that they will somehow add up to the success of the overall policy. This approach pays inadequate attention to the overall ecosystem and strategic drive. In other words, the policy assumes that job increases achieved under various programs will together increase the number of jobs across the economy. In terms of policy management, it uses a general approach rather than a selective approach.[17] To compare the current situation to a war, in which the term "strategy" has traditionally been used, the current policy can be likened to a military commander who relies on the performance of individual soldiers rather than a strategic use of her troops to

17 A prime example of such an approach is the additional employment incentive program for young workers. It does not modify its goals by industry or enterprises, and it provides incentives to applicants as long as they are eligible SMEs. The same can be said about the financial support policy for SMEs; it pursues SME support without exceptions. Such an approach results in a seeming lack of consideration for the dynamic nature of the business ecosystem. For example, the program supports enterprises in their third or later year in business, labeling them as businesses in the "death valley," even though many of them are forced out of the market.

achieve overall success. Such a strategy would render the existence of commanders and military units above the squad level meaningless or, to put it bluntly, does not qualify as a strategy at all.

Establishing a detailed strategic structure for the fiscal policy for employment clearly lies outside the scope of our study here. Establishing clearly defined job creation goals for internal use or public release and establishing performance indicators to determine how or if specific programs are achieving those goals are the government's responsibility. Such decisions cannot be made by policy evaluators or researchers. To use the war analogy once again, a commander engaged in a battle makes a variety of strategic decisions; she chooses the main attack force and the secondary attack force and makes a set of strategic and tactical decisions based on her assessments of enemy forces, battlefield terrain, and available resources to achieve the final victory. Likewise, the job creation policy needs to be implemented based on a clear picture of its overall strategic structure. Without those strategic structures, the only viable course of action is to simply order individual soldiers to take out as many enemy soldiers as possible. Obviously, a war cannot be won using that approach. A strategic structure should be established by collecting the work of experts in and outside the government, identifying policy alternatives informed by facts, and choosing the best options through thorough discussion. Individual researchers cannot be expected to tackle such a task or set the strategic direction on their own.

Nonetheless, we have here provided example evaluations that suggest improvements that could be made to the existing job creation policy. We next present an example of a strategic system of performance indicators that could be used for future evaluations. Whether the following strategic structure is the best option is not our main concern here. Our purpose is show why different strategic approaches require different sets of performance indicators.

Given the previously mentioned dynamism of the job ecosystem, government intervention in job creation needs to be minimized. The government should not forcibly sustain or expand inefficient jobs that could be replaced by more efficient alternatives in the market, thereby improving the efficiency of the national economy and allowing even more jobs to be created. Thus, the government could use financial support programs to ease the withdrawal of inefficient enterprises from the market and facilitate market entry by new and more efficient businesses. Under that kind of a strategic system, the government could implement programs that specifically target enterprises of different ages and levels of competitiveness. For example, the government could offer workforce growth support to young enterprises because insufficient data makes it difficult to determine their levels of competitiveness, offer assistance

to maintain or slightly reduce the workforces of highly competitive enterprises old enough for their competitiveness to be properly evaluated, (thereby encouraging them to improve their labor productivity), and offer workforce reduction support for older enterprises with low levels of competitiveness. Under this hypothetical system, workforce reduction in some programs could actually help increase the number of jobs across the whole economy. In addition, some industries and enterprises create more high-quality jobs or better help workers move to better jobs than others. A strategic approach would focus the government's financial resources on those enterprises and industries, instead of targeting all enterprises or SMEs. Furthermore, enterprises with different characteristics respond well to different policy instruments. In the current situation, large enterprises generally respond best to corporate tax cuts, middle-standing companies to expanded opportunities for government procurement, and SMEs to government financial support programs. Likewise, the job creation policy needs to use the instruments found most effective by its various targets, including at the industry level. When an industry is restructuring, it would be sensible to help it regain competitiveness rather than expand employment within it and to create more jobs in other growing industries at the same time.[18]

Granted, an incompetent commander can do more damage in the presence of a clearly defined strategic structure than he can on his own. In this sense, adopting a clearly defined strategic structure might seem riskier than relying on brute force without any strategy or command. However, a clearly defined strategic structure with a quantitative evaluation system such as we are here proposing will allow the government to monitor whether its strategies are being executed as intended. Suppose that specific programs are producing their intended results in terms of their performance indicators, but the overall policy is failing to achieve its ultimate goals. That would indicate a need to revise the strategies or improve their execution. For example, if the government set interim strategic indicators for startups and achieved the intended outcomes, but the policy was found to produce a smaller than expected net increase in jobs, it would indicate that the government support was not producing the intended result despite net job increases at individual startups, perhaps as a result of the moral hazard to the enterprises and individuals benefiting from the program. In any case, the ideal strategy will vary with the situation and the capabilities of the personnel involved. If a promising strategy is proposed and accepted, it remains only to be executed in a specific direction. A quantitative

18 See Chapter II of Chang (2014) for a more detailed discussion of industrial classification and suggestions for using it to vary policy directions.

evaluation of the fiscal policy for employment would provide a powerful infrastructure to inform such decisions.

In sum, to use the war analogy once again, it is reasonable to set ultimate victory (increase in high-quality jobs) as the end goal, establish a strategic structure and operational plans to reach that goal (selective support for targets likely to contribute to a net increase in jobs and help for enterprises with low job increase potential to withdraw from the market) and then define performance indicators and goals for individual units (individual job creation programs). All quantitative evaluations should be carried out within the overarching framework to determine whether the end goal, not just the program goal, has been achieved.

2. Evaluation Organization and Frequency

In this section, we discuss who should be tasked with overseeing the quantitative evaluation of the fiscal policy for employment. The MOEF is responsible for evaluating the outcomes of Korea's economic policies and establishing and coordinating economic strategies for jobs within the overall national economy. In addition, that ministry holds an advantageous position in securing information on enterprises, employment, and support history. Therefore, under the current policy structure, the MOEF is best suited to carry out these quantitative evaluations. The MOEF is not the only ministry suitable for quantitative evaluation, and a change in the political situation might make another agency better placed for this task.

Therefore, rather than pre-designating a government body to complete the evaluation, periodic quantitative evaluations of the fiscal policy for employment should be assigned to whichever body is best positioned to review national strategies against their goals and give feedback from a neutral standpoint. To maximize the evaluation performance, the selected government body should not have conflicts of interest and should have adequate data acquisition and analysis capabilities.

As for the frequency of the policy evaluation, our findings in this study suggest that an annual evaluation is quite feasible under the current circumstances. Granted, compiling enterprise information takes at least a year, so it would be impossible to secure a comprehensive set of enterprise, employment, and support history data for a certain year within that year. However, evaluations based on data other than enterprise data can be carried out in the same year. Even though policy instruments and methods can greatly vary, most programs do not change much over the course of their implementation. A single-year lag would not have a significant effect on the relevance of an evaluation.

3. Evaluation Data

The evaluation data are the basic elements of any quantitative evaluation. One contribution of this study is that we confirmed the possibility of analyzing pooled enterprise data, employment data, and support history data. However, given the difficulty of that analysis, we reiterate that the evaluating organization must be able to access and pool the relevant data in a stable and continuous manner.

For the enterprise ecosystem data, the KED and other enterprise accounting data are the most feasible options in terms of data acquisition and maintenance. These accounting data encompass many aspects of the Korean economy and contain various information about the covered enterprises. We learned that as of 2018, annual data are readily available on about 300,000 enterprises for periods after 2010. Those data provided us with an in-depth insight into around 50 percent of all workers covered by Employment Insurance and areas responsible for about 75 percent of economy-wide revenue.

However, those data pose a problem in analyzing micro-enterprises and self-employed workers. Although the data contain information on micro-enterprises, only 60,000 of them are included as of 2018, which accounts for only a small portion of micro-enterprises.[19] An ideal way to address this issue would be to use data available from Statistics Korea. The Economic Census carried out by that organization every five years encompasses all enterprises with business establishments. The Mining and Manufacturing Survey is carried out every year on all businesses in the mining and manufacturing sectors that employ 10 or more full-time workers. Those data can be used to overcome the limited scope of the enterprise accounting data. However, the Statistics Korea data will not necessarily be readily available for data requests from, or analyses by, the evaluating organization. For this reason, we recommend using publicly available enterprise ecosystem data as the primary source of information for the policy evaluation and supplementing them with Statistics Korea data.

For employment data, the Employment Insurance data we used in this study can serve as a basic source of information. However, we identified several possible improvements to those data. For example, although the Employment Information Service database offers comprehensive information aptly managed by a well-established system, the data reflect only the average monthly wages of insureds at the time they acquire their employee status. The data

19 However, it should be noted that even 60,000 is overwhelmingly higher than the number of micro-enterprises included in other publicly available databases, and the accounting data can be quite useful for quantitative evaluation.

provide no insight into changes in wages over time. If we could track changes in average monthly wages based on the Employment Insurance data, we would be able to carry out various evaluations of job quality improvements in a more reasonable manner.

In addition, information about workers not covered by Employment Insurance must be acquired from other sources, such as National Pension data. As we discussed in relation to enterprise data, pooling various administrative data is likely to be prohibitively difficult, but it might be reasonable to use them as supplementary sources of information.

For the support history data, many job-related policies are not currently classified as job creation policies. Thus, we need to develop a system that pools and manages the data on all the relevant policies. Until such a system becomes available, it would be desirable to access and secure data on the SME policy from the SME Support History Data Management System and other organizations and evaluate the support programs led by the MOEL using support history data from the Employment Information Service. We found that, unlike the historical data about government support for enterprises, the historical data regarding individuals who benefit from programs are not being compiled or managed at all. In the future, support history data on individuals need to be gathered for comprehensive management.

VI. Conclusion

A fiscal policy for employment needs to consider the demand side of the labor market as well as its supply side, including the efficiency of firms and the long-term employment capacity of the national economy. It also needs to be regularly evaluated for its outcomes, and its effectiveness and efficiency need to be continually improved through feedback. However, to this point, the fiscal policy for employment in Korea has focused only on currently observed job creation and loss, without a full consideration of the mechanisms that might improve economic efficiency, improve firm competitiveness, or create a demand for labor.

To address that issue, we have proposed a periodic quantitative evaluation system for the government's current job creation policy. We built a comprehensive panel dataset by pooling data on employment and wages, industrial and firm characteristics, and government policies to assess the specific outcome indicators of the job creation policy. We have also presented examples of our quantitative evaluation methodology and actual findings

Specifically, we analyzed the state of job creation at the individual, firm, and industry levels and evaluated the targeting and effect of the job creation policy by linking the following databases: 1) firm-level panel data from 2010 to 2015 from the KED; 2) Employment

Insurance data at the establishment and insured levels; and 3) firm-level historical data about the financial support program for SMEs, which constitutes one of Korea's key SME support policies, from the three financial organizations providing that service.

We looked into the current status of job creation in Korea and empirically showed that the dynamic changes in the job ecosystem exceed the expectations of both policymakers and the general public. The data used in the present study contain information about the workers at around 300,000 enterprises covered by Employment Insurance, excluding small business entities. Our analysis of the data shows that more than 40 percent of all insureds change jobs each year, and 60 to 70 percent of those who change jobs experience an increase in their average monthly wages, regardless of the size of the enterprises they leave and join. That finding indicates that the Korean economy is going through an active period of job market restructuring, which improves the efficiency of the overall economy. That, in turn, strongly implies that not all jobs are suitable targets for government policies, and the government's intervention in job creation and loss could have a negative effect on the efficiency of the national economy if it is not supported by a sophisticated system of policy evaluation and feedback.

The 2010~2015 period, which preceded the launch of the Moon Jae-in administration, saw a continuous increase in employment as measured by the number of full time workers and workers covered by Employment Insurance, albeit at a slowing rate.[20] However, despite the steady decline in the job growth rate, we found that the percentage of high-quality jobs has increased. It should be noted that recent changes in jobs are not qualitatively different from changes in the past. Having said that, it is likely that recent policy changes have accelerated these trends, which implies the need to consider the possibility that the recent minimum wage change improved job quality in connection with the innovation-driven growth policy, not the income-led growth policy. Although the minimum wage rate bears no relevance to income-led growth, it is probable that the lowered minimum wage improved job quality by forcing less competitive enterprises out of the market. The government needs to clearly state its position on this issue.

The industry-level analysis using the fixed effect panel model and the dynamic panel model did not produce any evidence that government financial support contributed to an additional

20 The number of full-time workers increased by 18.6 percent. This finding is consistent with the result of the Statistics Korea Economic Census, which found an 18.4 percent increase in the total number of workers between 2010 and 2015, even though the Census is conducted on a different scope of workers.

increase in employment at the industry level. That finding suggests that the fiscal policy has failed to achieve its intended goals for industry-level employment. Those designing and evaluating future industrial policies will need to consider industry-level evaluations and the feedback from those evaluation results.

In our individual-level analysis of persons employed in 2012, we used multivariate regression methods with controls before the implementation of the treatment and industrial and individual characteristics. We found a gap in the period until turnover and wages after turnover between workers hired by beneficiary SMEs and those hired by non-beneficiaries. Those findings suggest the need to execute enterprise policies based on the long-term competitiveness of people (human capital) and their externality, rather than focusing on enterprises or jobs whose existence is temporary at best.

The present study is significant because it confirms that a quantitative evaluation system can be developed based on a pool of enterprise and employment data and that individual-, enterprise-, and industry-level analyses and long-term impact analyses can be conducted using currently available data and methods. Through our analyses, we found room for improvement in the efficacy of the existing fiscal policy. We have also demonstrated dissonance between common public beliefs and the actual conditions of the job ecosystem and confirmed the need for active communication among policymakers and policy researchers.

Our findings in this study make it clear that the fiscal policy for employment has produced disappointing outcomes in several respects. Although improving the effectiveness of the policy using feedback from evaluation results could be a solution, we also need to consider reviewing the direction of government spending on the job creation policy. Korea's job ecosystem is characterized by dynamic changes and high mobility, comparable to that of the United States, and all Koreans, including those who change jobs, benefit from it. However, policymakers seem to be fixating on the concept of "lifetime employment" at a single company and gross changes rather than net changes in job numbers. Most job creation policies are aimed at creating, sustaining, and preventing the loss of jobs. We need to acknowledge that those goals might work against the strengths of the Korean economy today.

An even more crucial finding of this study is the dissonance between the actual conditions of the job ecosystem and the public's perceptions. The data clearly indicate that SME employees can and do move to larger enterprises, contrary to widely-held belief. Many workers change jobs during their careers, and an average worker has a fair chance of moving to a better job. However, the public's belief is quite removed from this reality. Before making decisions about massive expenditures for job creation, the government needs to ask whether job seekers

have access to information about which SMEs offer the best opportunities to build their careers. The findings of this study robustly indicate that working at SMEs with high R&D spending improves the likelihood of being paid more when moving to other enterprises. Does the public have access to information about which SMEs spend more on R&D? Do young workers have access to information about which SMEs offer the best opportunities to build their careers and improve their chances of working at larger enterprises? Such information is a public good that the government could gather and provide to the public to improve the efficiency of the national economy. Then, the government would not have to commit massive resources or worry about the various side effects of its fiscal policy, which are detected through policy evaluation. If we are to improve the effectiveness and efficiency of government spending on job creation, we need to produce and communicate the relevant information to the public and among government agencies based on well-defined priorities. At that point, the government could consider focusing its spending on the provision of accurate information and the design of a job creation policy aligned with the actual conditions of the job ecosystem, diverting resources from traditional fiscal programs such as subsidies and loans to more urgent areas such as welfare programs.

Developing a quantitative evaluation system for the fiscal policy for employment is meaningful in itself. However, such a system is also a crucial instrument for achieving the end goal of the job creation policy for the national economy by evaluating its strategic validity and feeding back the results. Despite its limitations, we hope that this study will contribute to the development of a system of periodic quantitative evaluation for the job creation policy and improve the efficacy of that policy.

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Fiscal Policies in the Changing Labor Market: Unemployment Safety Net Policies

Moon Jung Kim*

I. Introduction

Changes in international trade and demographics and advances in technology are expected to change the labor market. Governments should anticipate such changes. This paper reviews the direction of the Korean government's fiscal policies for employment, focusing on the unemployment safety net for the following three reasons. First, structural unemployment is likely to become more common than cyclical unemployment, and the current unemployment benefit system might not be optimally designed to respond to structural unemployment. Second, the unemployment safety net policy is a relatively passive labor market policy, which makes it particularly relevant when unemployment is caused by factors outside the control of individual workers. In contrast, active labor market policies assume that unemployment is caused by the choices of those who provide labor, such as economic inactivity. Therefore, active labor market policies alone are unlikely to be sufficient responses to unemployment issues caused by a lack of demand for labor. Third, the Korean government is already working to improve the country's unemployment safety net, and those efforts need to be informed by current research to ensure the implementation of relevant policies.

In this paper, I provide an overview of the overall issues and highlight areas in which the government needs to change direction, rather than providing a detailed look at Korea's

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unemployment safety net. First, I review the latest unemployment statistics to identify changes in the nature of unemployment and the unemployed (Chapter II). Then I look into the current status of Korea's unemployment safety net (Chapter III) and summarize its key issues (Chapter IV). Some of the issues have been discussed repeatedly in existing work on South Korea's labor market, whereas others are becoming significant in the rapidly changing labor market. Chapter V points out the limitations of existing unemployment safety net policies and proposes long-term directions for those policies, with a focus on managing the financial resources used for fiscal policies for employment.

II. Facts About Unemployment in South Korea

In this chapter, I present facts from the Economically Active Population Survey (EAPS), conducted by Statistics Korea, and the Korean Labor & Income Panel Study (KLIPS), from the Korea Labor Institute.

Before looking at the statistics, several points are noteworthy. First, in principle, *unemployed* can describe two cases: a person moving from employment to job seeking and a person moving from an economically inactive status to job seeking. Second, the unemployment rate and the number of the unemployed have different implications for the current status of unemployment. A rapid increase in the number of unemployed people aged 60 and older, for example, does not indicate whether the unemployment rate has increased or only the number of unemployed people of a certain age. However, even when the number of unemployed people is small compared with the overall size of the economically active population, the absolute number of unemployed people at any given time cannot be ignored because it represents the size of the population that labor market fiscal policies should target.

1. Age and Gender Composition of the Unemployed Population

Figure 1 shows changes in the age and gender composition of the unemployed, and Figure 2 shows annual changes in the economic activity indicators across genders.

First, Figure 1 (A) shows changes in the age composition of the unemployed population between 2000 and 2018. One noteworthy change is the increased percentage of unemployed people aged 60 and older after the Global Financial Crisis of 2007~2008. The figure also demonstrates a slight increase in the percentage of unemployed people aged 50 to 59 and a decline in the percentage of unemployed people aged 15 to 19. Unemployed people aged 20 to 29 make up the largest percentage of the unemployed population, and that percentage

fluctuates greatly from year to year. The percentage of unemployed people in their 20s increased between 2012 and 2017 and began to decline in 2018.

The number of unemployed people in different age groups is important because the absolute size of the unemployed population can be more important than their percentage of the whole when selecting fiscal targets. Figure 1 (B) provides that information. First, the total number of unemployed people increased from 2014 to 2018, and the number of people unemployed in 2016 was higher than it had been in 2000. Second, the number of unemployed people in their 30s and 40s changed little between 2002 and 2013. However, in 2014, the number of unemployed people in their 40s increased slightly, whereas the number of unemployed people in their 30s remained unchanged. Third, the number of unemployed people in their 50s changed little between 2002 and 2013, saw a significant increase in 2014, and then plateaued between 2014 and 2018. Fourth, the number of unemployed people aged 15 to 19 declined sharply throughout the period. Fifth, the number of the unemployed people aged 60 and older has been growing steadily, albeit at a higher rate since 2014. Sixth, unemployed people aged 20 to 29 form the largest group of the unemployed by age, and the size of that group has fluctuated significantly, beginning to increase in 2014 and decreasing slightly in 2018.

Although the number of unemployed people in their 30s and 40s remained unchanged or increased slightly from 2000 to 2018, the number of unemployed people in other age groups (other than the 15~19-year-old group) increased. As a result, the percentage of persons in their 30s and 40s in the unemployed group declined. The total number of unemployed people increased greatly in 2014, even though the exact causes remain unclear (possible causes include the economic cycle, policy factors, and structural unemployment). That increase in the number of unemployed people was observed in all age groups except teenagers and persons in their 30s.

Further research is required to identify the factors that affect the number of unemployed people. Unemployment occurs when the economically active population grows along with the total population and the demand for labor cannot keep up with that increase. Thus, the number of unemployed people is affected by both population size and labor demand. In addition, only persons looking for work are treated as unemployed. Therefore, the number of unemployed people might also be increased by labor market policies that motivate people to look for work.

Figure 1 (C) shows annual changes in the gender ratio of the unemployed by age group.[1] The gender ratio of the 15~19-year-old group does not show any discernable pattern. In the other age groups, however, the percentage of unemployed women has generally increased

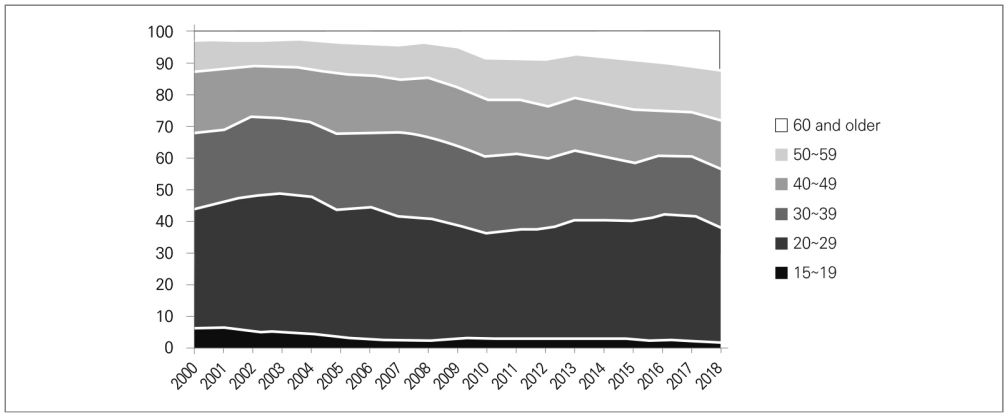
1 Here, the gender ratio of the unemployed was calculated by dividing the number of unemployed women in a specific age group by the number of unemployed men in the same group.

over the years, particularly between 2010 and 2011, immediately after the Global Financial Crisis. In and after 2013, different age groups showed different changes in the percentage of unemployed women. Among women age 60 and older, the percentage continued to increase throughout the period. The percentage of unemployed women in their 20s generally increased as well. Among unemployed people in their 30s to 50s, the percentage of women increased between 2014 and 2015 and then declined.

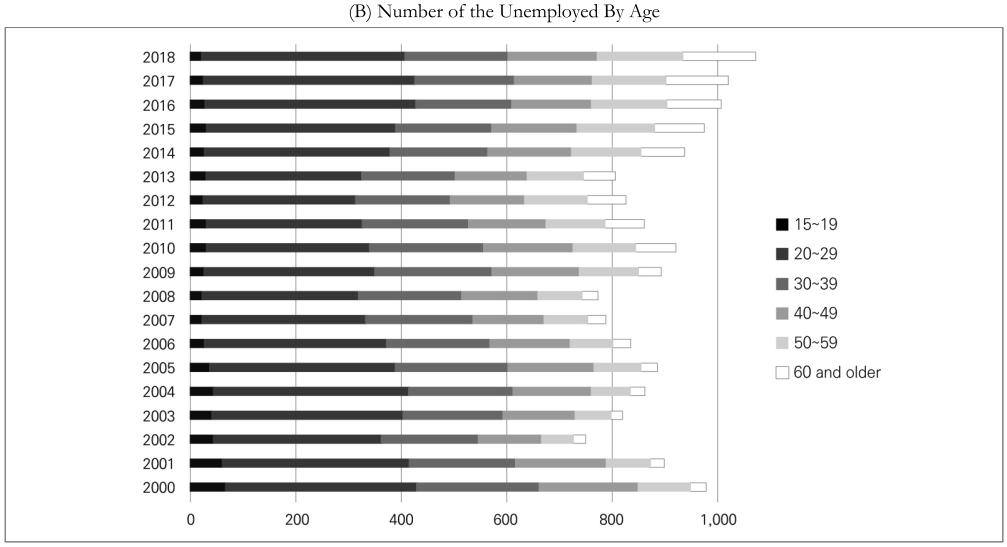
Figure 1_Number and Percentage of Unemployed People By Age

(unit: %, thousand persons, ratio)

(A) Age Composition of the Unemployed



(B) Number of the Unemployed By Age



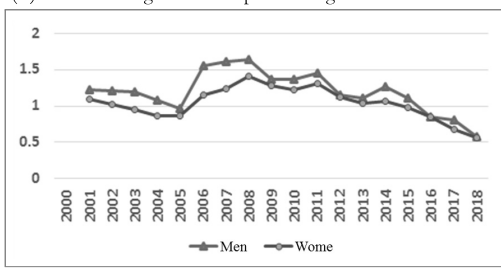
(C) Gender Ratio of the Unemployed By Age (Women/Men)

Source: KOSIS, http://kosis.kr/index/index.do Unemployment By Gender/Age June 1999–July 2019 (accessed on: September 2, 2019) (source data: Statistics Korea, Economically Active Population Survey)

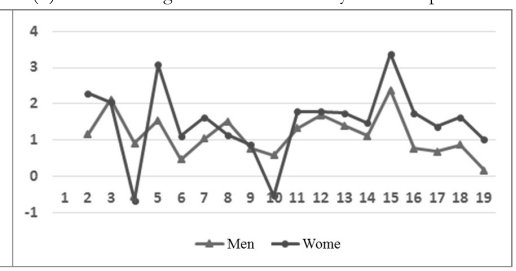
Figure 2_Annual Changes in Economic Activity Indicators By Gender

(unit: %)

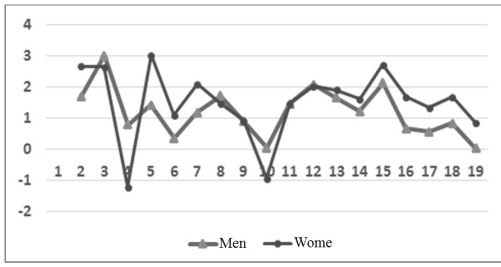
(A) Annual Changes in the Population Age 15 Years and Older



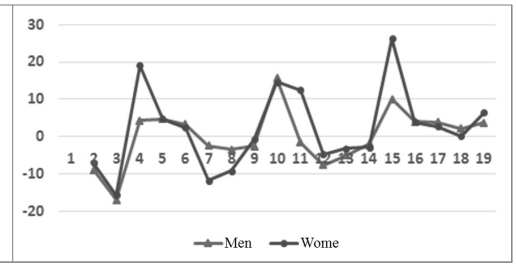
(B) Annual Changes in the Economically Active Population



(C) Annual Changes in the Employed Population



(D) Annual Changes in the Unemployed Population



Source: KOSIS, http://kosis.kr/index/index.do Economically Active Population By Gender 2000~2018 (accessed on: September 2, 2019) (source data: Statistics Korea, Economically Active Population Survey)

A complete understanding of changes in the gender composition of the unemployed population must consider unemployment caused by marriage or childbirth, as well as demographic structures, the economic cycle, and labor market policies. However, I do not go into those details in this paper. Instead, I look into changes in the working-age population, the economically active population, and the employed population to understand, at least partially, the relative increase in unemployed women across all age groups older than 15~19 years.

As shown in Figure 2 (A), the annual growth rate of the population aged 15 years and older has been generally declining without a visible difference between the genders. On the other hand, Figure 2 (B) shows that the annual growth of the economically active population was similar between the genders until 2014; the growth rates of the two groups began to diverge in 2015, and the gap continued until 2018. In other words, although the growth rate of the economically active population declined for both genders, it declined faster among men than among women. The changes in the annual growth rate of the employed population in Figure 2 (C) show trends similar to the changes in the annual growth rate of the economically active population because the economically active population is the sum of the employed and unemployed populations, and most of the people in the economically active population are employed.

The annual growth rate of the unemployed population [Figure 2 (D)] shows similar trends between men and women, even though the unemployment rate for women increased at a higher rate than for men. Specifically, the annual growth rate of the unemployed population surged in 2004, 2010, and 2015. Although the growth rates were similar between men and women in 2010, the number of unemployed women increased year-over-year at higher rates than the number of unemployed men in 2004 and 2015. The annual growth rate of unemployed women does not overwhelm that of unemployed men in any year, which means that the number of unemployed women did not recover to the level observed before any given period, which could explain the increasing gap between the number of unemployed women and men in the analyzed period.

To summarize the findings about unemployed women, the growth rate in the working age population does not differ conspicuously between men and women. Therefore, it is difficult to conclude that the patterns of increase seen in the number of unemployed women stem primarily from changes in the demographic structure. The relative increase in the number of unemployed women could be explained by a greater increase in the economic participation rate of women in 2014 and 2015 (both employed and unemployed women) and the inability of the labor market to incorporate those economically active women in the employed

population.

One of the trends that poses an interesting policy or academic question is the conspicuous increase in women's economic participation rate in 2014 and 2015. It could be related to the increase in the number of the unemployed people across all age groups shown in Figure 1 (B). For example, women might participate in economic activities as second earners when their male spouses lose their jobs. Another possible explanation is that many women continue to be economically active without getting married or that they try to minimize their inactive periods even after they get married because it is difficult to find an economically reliable spouse during a prolonged recession. In fact, the 2018 Marriage and Divorce Statistics Summary reports a steady decline in the general marriage rate (calculated by dividing the total number of marriages by the number of men aged 15 and older and multiplying the result by 1,000) in and after 2014.

2. Education Levels in the Unemployed Population

Figure 3 (A) shows that the percentage of graduates from universities and higher educational institutions in the unemployed population has increased significantly. Combined with unemployed junior college graduates, the rate reached 50 percent of the total unemployed population in the 2017~2018 period. The percentage of unemployed people with an education level of middle school graduate or lower has been declining since 2000; though it began to increase slightly in recent years, it has remained below 15 percent. Younger age groups often report higher levels of education level than older groups. Therefore, it is important to understand the number of unemployed people by both age and education level.

Figure 3 (B) shows that the percentage of college graduates (from universities and junior colleges) in the unemployed population is rising across all age groups. It is not surprising that the percentage of unemployed college graduates and others with higher education has increased over time because the education level in the overall population increased during the same period. However, the annual changes in the percentage of college graduates who are unemployed have varied by age group. The percentages increased steadily among people in their 20s and 30s, with the latter reporting a higher rate of increase than the former. In 2018, the percentage of unemployed college graduates in both groups decreased significantly. Among people in their 40s and 50s, the percentage of unemployed college graduates increased mostly steadily. The percentage of unemployed college graduates has been increasing at the slowest rate among people in their 60s.

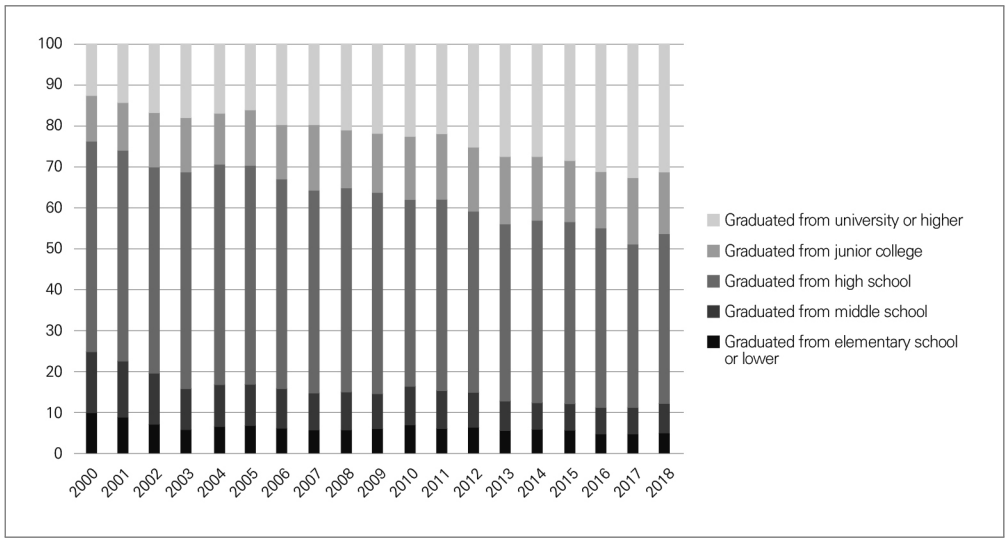
The increasing percentage of college graduates among the unemployed has two policy implications. First, expanding higher education might not be the most effective way to resolve unemployment. In some cases, the expansion of higher education is proposed as a policy instrument for vulnerable groups. However, that is effective only in a society in which the distribution of education has not changed significantly over time. In a society in which the supply of college graduates is already sufficient, the expansion of higher education could lower the wage premium of that education. Such an expansion could escalate competition for jobs among workers with higher education, thereby lowering the employment premiums of college graduates and thus lowering the consequent labor income.

Second, unless it is coupled with policies to boost demand for high-skill labor, a policy expanding access to higher education could raise unemployment rates by increasing the number of college graduates while the demand for skilled labor and the number of jobs for college graduates stays the same. College graduates tend to keep looking for jobs and remain unemployed until they find jobs that offer wages sufficient to make up for the cost of their education.

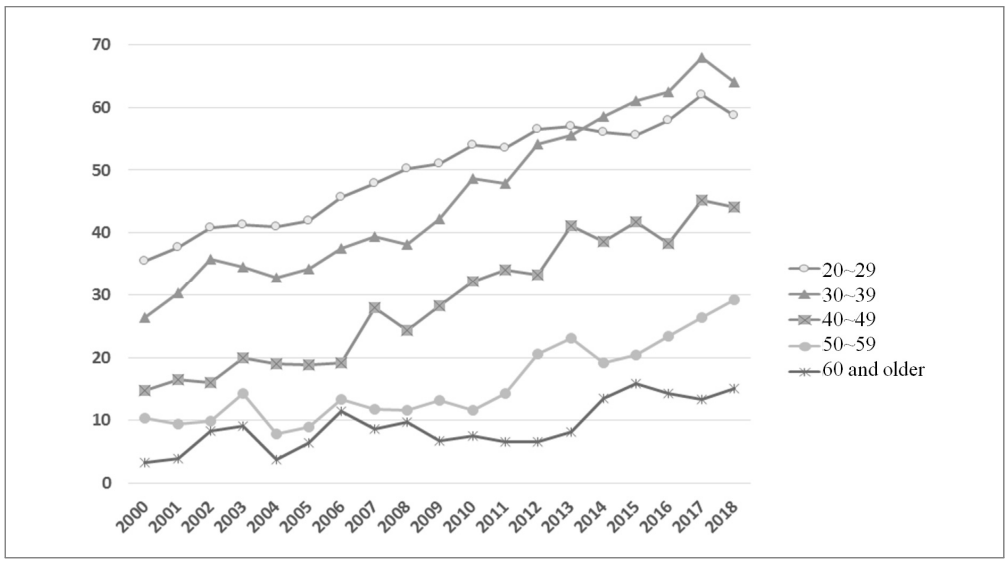
Figure 3_Education Level Composition of the Unemployed Population

(unit: %)

(A) Composition of the Unemployed Population By Education Level



(B) Percentage of Unemployed College Graduates By Age Group



Source: KOSIS, http://kosis.kr/index/index.do The Unemployed By Age/Education Level 2000–2018 (accessed on: September 2, 2019) (source data: Statistics Korea, Economically Active Population Survey)

3. Job-Seeking Period of the Unemployed Population

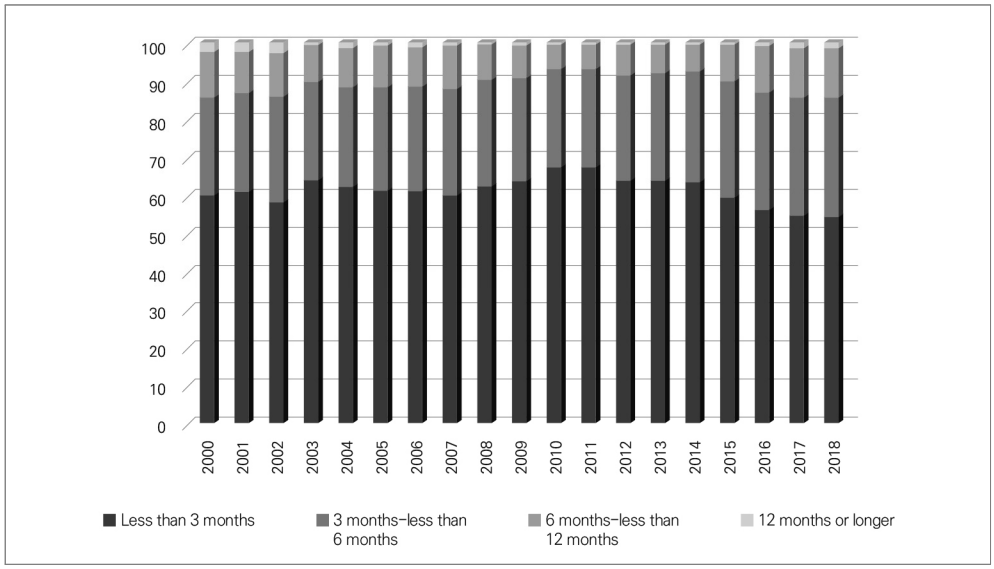
Figure 4 shows the job-seeking period of the unemployed population. Each bar shows the percentage of the unemployed who sought a job for less than three months, three months to less than six months, six months to less than twelve months, and twelve months or longer. The percentage of the unemployed with the shortest job-seeking period decreased during the Global Financial Crisis. In the same period, the percentages of the unemployed with job-seeking periods of three months to less than six months and six months to less than twelve months increased, as did the percentage of the unemployed who sought a job for twelve months or longer, albeit only slightly.

In other words, the time during which the unemployed sought a job increased. Figure 1 (B) shows that the number of unemployed people increased greatly between the Global Financial Crisis and 2013 and then continued to rise steadily, though more slowly. On the other hand, as shown in Figure 4, the percentage of unemployed people with job-seeking periods of less than 3 months declined steadily regardless of how well the economy was doing, suggesting that this trend is likely to persist in the future.

The increased percentage of unemployed people with longer job-seeking periods is neither positive nor negative in itself. If job seekers can find suitable jobs given sufficiently long job-seeking periods and the high percentage of unemployed people with less than three-month job-seeking periods in the past is largely attributable to a lack of liquidity, the increased percentage of unemployed people with longer job-seeking periods could be a positive signal for the economy. On the other hand, if the percentage of unemployed people with longer job-seeking periods has increased because the possibility of finding jobs has decreased, even after long job-seeking periods, that increased percentage would be a cause for concern.

Figure 4_Job-Seeking Period of the Unemployed Population

(unit: %)



Source: KOSIS, http://kosis.kr/index/index.do Unemployment By Job-Seeking Period (accessed on: September 2, 2019)(source data: Statistics Korea, Economically Active Population Survey)

Another important issue is the source of income for unemployed people with job-seeking periods of longer than three months. Particularly given the high percentage of unemployed people in their 20s and 30s, most of whom do not have previous employment experience, the decreased percentage of unemployed people who spend less than three months seeking a job does not seem to be the result of expanded coverage of the unemployment safety net

(unemployment benefits). The increased job-seeking periods of unemployed youths could indicate that they are working part-time jobs, participating in other income-earning activities, or receiving assistance from their parents or other family members. The official number of the unemployed has been increasing since 2014, and it is difficult to assume that the opportunities for part-time jobs (which are not accounted for in the official statistics) increased by that much in the same period. Therefore, I infer that the major source of income for unemployed youths is financial assistance from their parents and other older family members.

Such a private unemployment safety net has a positive function in serving as a type of private 'insurance.' However, relying on that private safety net could mean that the ability of unemployed youths to endure unemployment and secure sufficient job-seeking periods would be determined by the financial status of their households, which could result in wider income gaps over time.

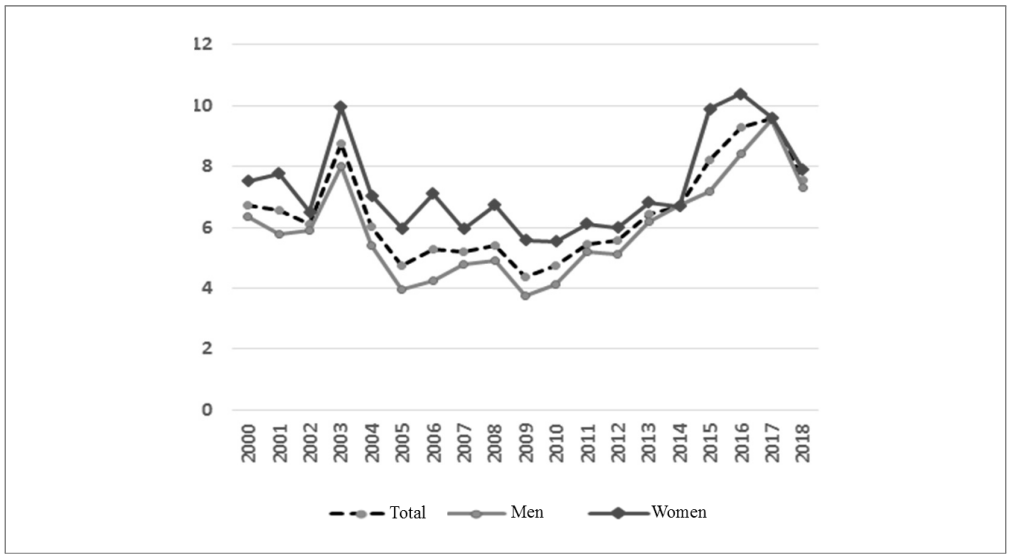
4. Percentage of the Unemployed Without Prior Employment

Figure 5 shows the percentage of unemployed people without prior employment, i.e., workers aged 15 to 30 years who are entering the labor market for the first time. The percentages of unemployed people without prior employment are overwhelmingly high among people 15~19 years old and 20~29 years old [Figure 5 (B)). In addition, the percentage of unemployed people 30~39 years old without prior employment increased rapidly, which can be attributed to workers in their late 20s and early 30s who are entering the labor market later than usual due to military service or other reasons, such as preparing for state examinations. The mass entry of young workers into the labor market might be attributable to fiscal policies for young workers enacted in the second half of 2017 and the first half of 2018.

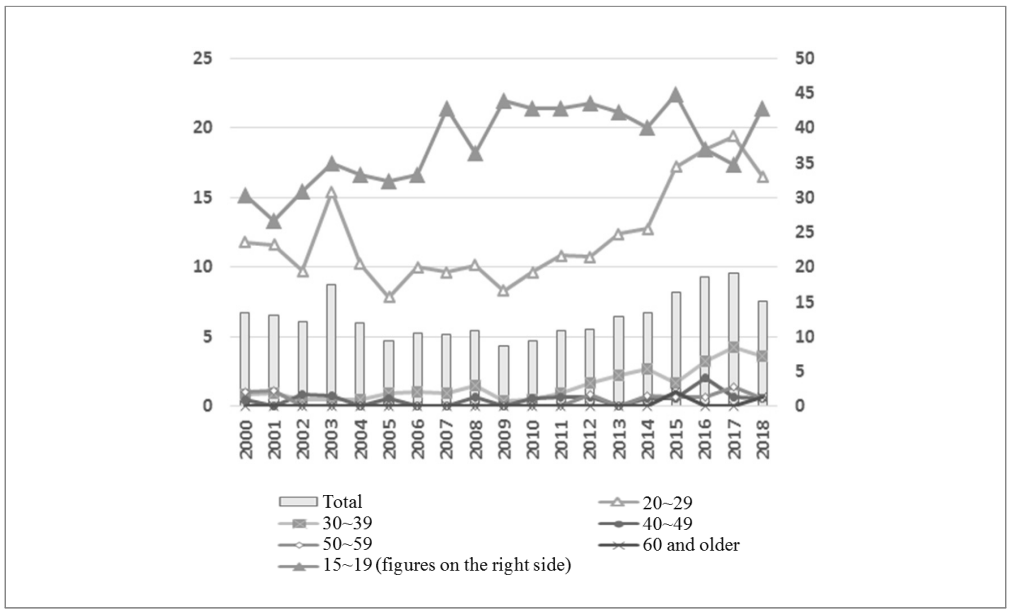
Figure 5 (A) shows the percentages of unemployed people without prior employment by gender. The percentages of unemployed people without prior employment were high in both genders in 2003, followed by a decline during the Global Financial Crisis and a significant increase between 2015 and 2017. These changes were influenced by the size of the youth population, their education level, and the economic status in each period. For example, the significant increase in the percentage of unemployed people without prior employment during the Global Financial Crisis seems to have been caused by undergraduates intentionally postponing graduation in response to the economic recession at that time.

Figure 5_Percentage of the Unemployed Without Prior Employment

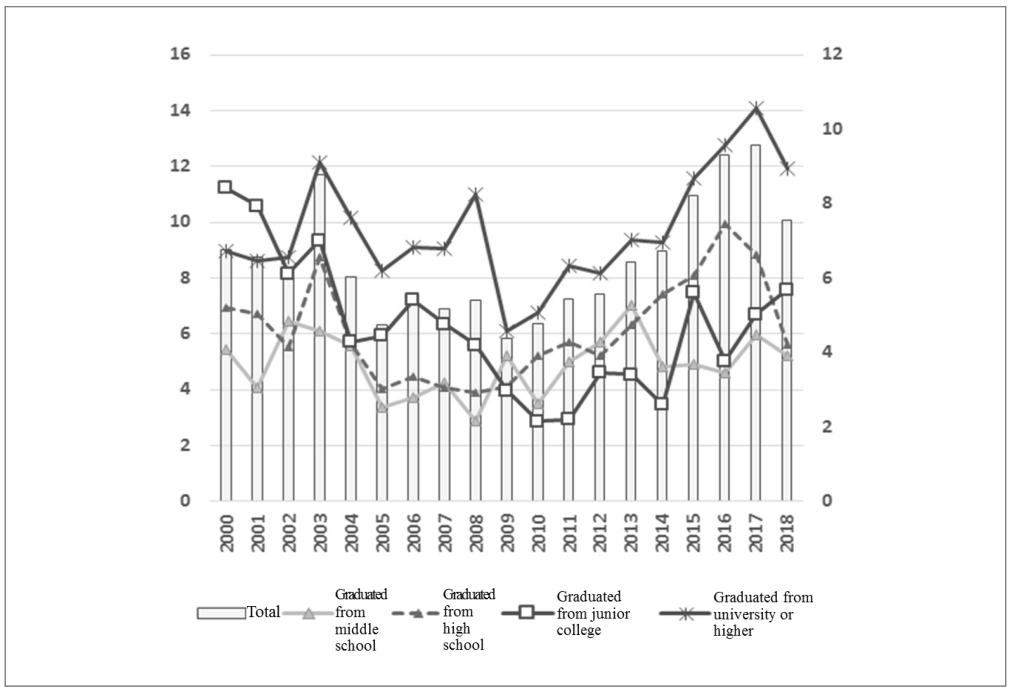
(A) Percentage of the Unemployed Without Prior Employment By Gender



(B) Percentage of the Unemployed Without Prior Employment By Age



(C) Percentage of the Unemployed Without Prior Employment By Education Level



Source: KOSIS, http://kosis.kr/index/index.do Unemployment By Gender/Prior Employment, Age/Prior Employment, and Education Level/Prior Employment (accessed on: September 2, 2019)(source data: Statistics Korea, Economically Active Population Survey)

Among the unemployed without prior employment, comparisons between men and women show that the percentage is invariably higher among women, possibly because women who marry without prior employment enter the labor market later on.

Figure 5 (C) shows the percentage of unemployed people without prior employment by education level. The percentage of unemployed junior college graduates and university or higher graduates without prior employment has been rising steadily since the Global Financial Crisis, perhaps because young workers postponed graduation during the recession and then entered the labor market at the same time as younger people who graduated as expected.

5. Income Bracket Composition of the Unemployed Population

This section looks into the unemployment statistics by household income brackets. Figure 6 shows the economic activity of men who head households by income bracket with three levels of economic activity: employed (A), unemployed (B), and economically inactive (C). Each graph shows the statistics on the three activity levels in 2001 (dotted lines), 2008 (thin solid lines), and 2015 (bold solid lines).

The graphs show that a man in a higher income bracket is more likely to be employed than a man in a lower income bracket. These findings have some noteworthy features. First, in 2015, the percentages of employed men who were breadwinners in the 9th and 10th income brackets were the same as or lower than the percentage of employed men who were heads of households in the 8th income bracket. This finding seems to be related to the fact that, although the percentage of economically inactive heads of households decreases in higher income brackets, the percentages increase in the 9th and 10th income brackets. In 2015, the percentages of unemployed men were markedly lower in the 5th to 7th brackets than in the other brackets.

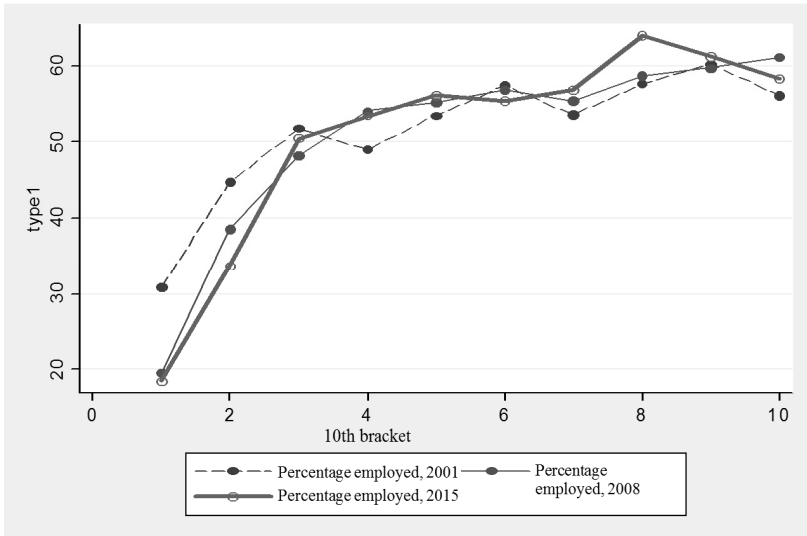
In addition, the first income bracket reported a decline in the likelihood that men who are heads of households would be employed between 2001 (30 percent) and 2008 and 2015 (20 percent). Given that the percentage of unemployed men who are heads of households in the first bracket decreased from 3 percent in 2001 and 2008 to less than 1 percent in 2015 and that the percentage of economically inactive persons increased over time, many employed men who are heads of households in the first bracket seem to have become inactive. This finding seems to be linked to the high percentage of elderly households that cannot engage in economic activities in that income bracket.

To control for the age effect, I revised the graphs to focus on men aged 30 to 55, as shown in Figure 7. The new graphs clearly show that the percentage of employed men who are heads of households increased in the higher income brackets, and the 8th to 10th brackets show the same patterns.

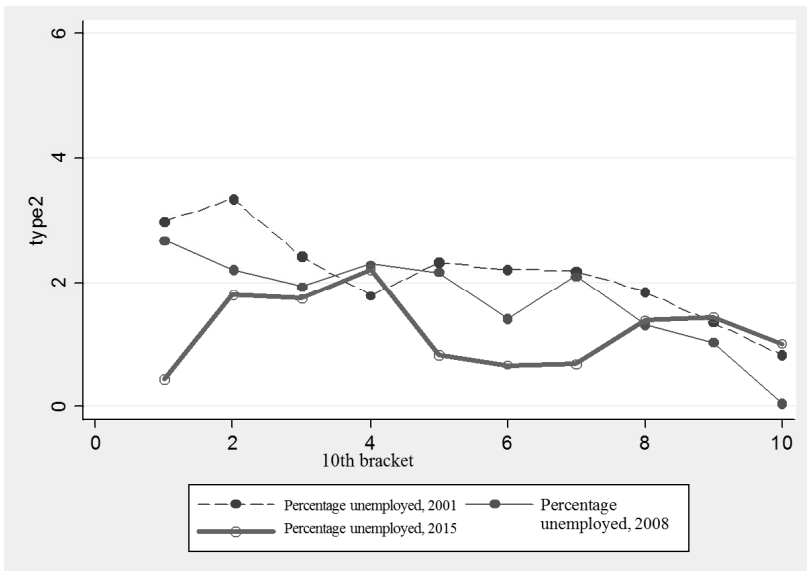
The percentage of employed men who are heads of households also conspicuously increased in the lower brackets, as exemplified by the 4th bracket in 2008 and the 3rd bracket in 2015.

Figure 6_Economic Activity of Men Who Are Householders By Household Income Bracket

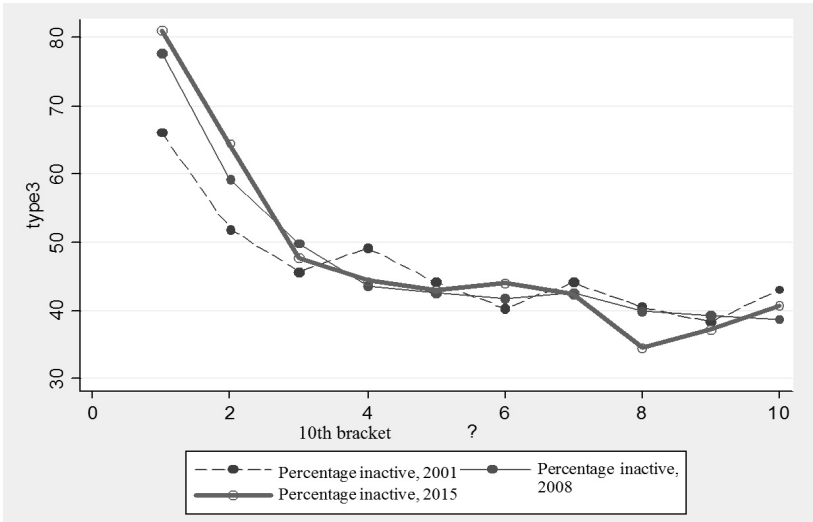
(A) Percentage of Employed Householders By Household Income Bracket



(B) Percentage of Unemployed Householders By Household Income Bracket



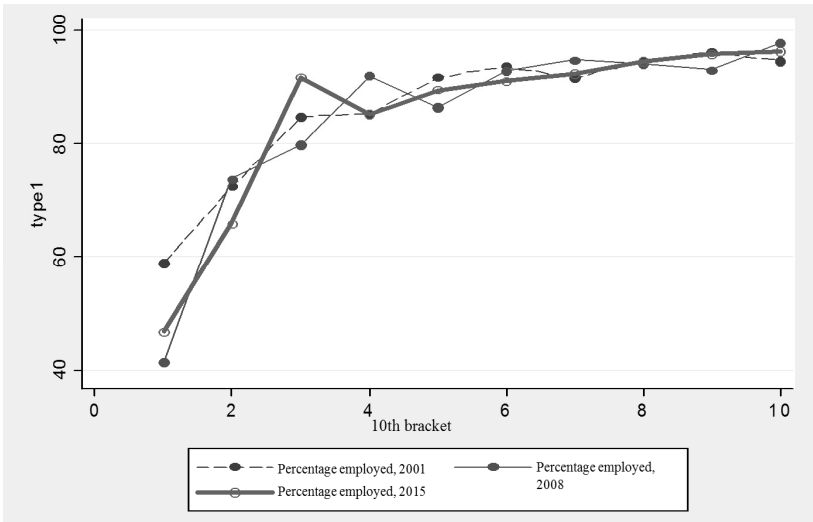
(C) Percentage of Economically Inactive Householders By Household Income Bracket



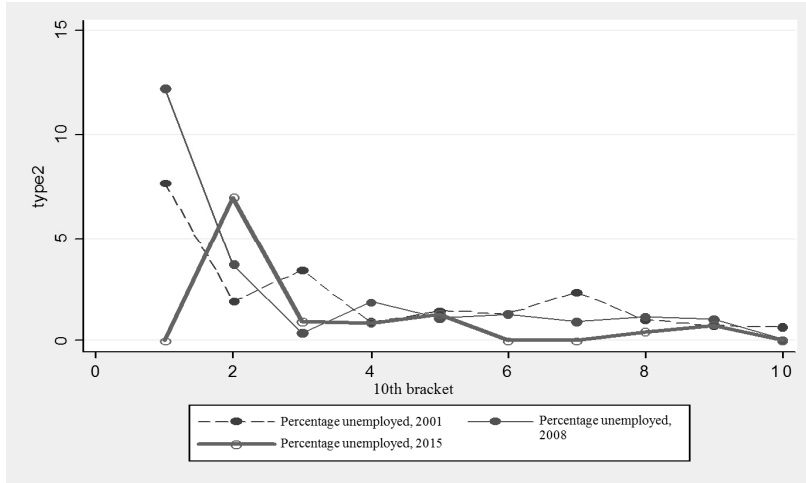
Source: present study, based on Korea Labor Institute, Korean Labor & Income Panel Study

Figure 7_Economic Activity of Men Who Are Householders (Aged 30~55) By Household Income Bracket

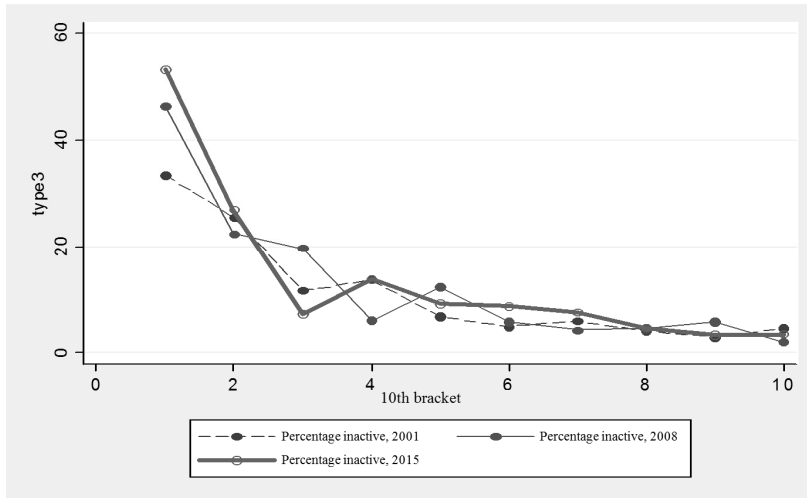
(A) Percentage of Employed Householders By Household Income Bracket



(B) Percentage of Unemployed Householders By Household Income Bracket



(C) Percentage of Economically Inactive Householders By Household Income Bracket



Source: present study, based on Korea Labor Institute, Korean Labor & Income Panel Study

This pattern could be related to the tax credits provided to households with a gross income of KRW 25 million or less in 2015.[2] However, caution is required in linking the findings to tax credits because tax credits and a willingness to find a job do not necessarily translate into successful employment. In fact, some findings do not seem attributable to tax credits. For example, the percentage of unemployed heads of households in the 2nd bracket was unusually high in 2015.

The data in Figures 7 have the following policy implications. Among 30~55 year-olds, employment constitutes the major source of income in households with higher incomes. In the older and younger high-income groups, on the other hand, income composition varies greatly among households, with some households receiving more income from non-employment sources or having no earned income. These findings suggest the need to use different techniques for unemployment policies depending on the intended beneficiaries' economic capabilities, willingness to find jobs, and potential for receiving welfare support. For example, economically incapable households should be excluded as targets of unemployment policies. For economically capable households that are classified as economically inactive, policymakers need to look further into whether they are economically inactive because they do not intend to look for jobs, their income from non-employment sources is sufficiently high, or they receive welfare benefits such as the Basic Livelihood Guarantee.

6. Chapter Conclusion

This section summarizes the findings of this chapter and discusses their policy implications.

First, the number of unemployed people increased at higher rates among people in their 20s and 60s than among people of other ages. The size of the unemployed population holds great significance for unemployment policies because a larger unemployed population means potentially greater fiscal needs. People in their 20s and older than 60 are likely to be in institutional blind spots in the current unemployment safety net, the former being first entrants into the labor market and the latter being cut off by the eligibility requirements for unemployment benefits.

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2 For reference, in 2015, the percentage of employed heads of households in the 3rd bracket was higher than in the 2nd and 4th brackets only among junior college or higher graduates. The percentage of employed men who are heads of households who are high school or lower graduates monotonically increases in higher income brackets.

Second, the percentage of women in the unemployed population is on the rise. This trend can be attributed to the increasing economic participation rate among women, rather than a change in the number of men and women. Because women are more likely than men to find short-term or non-regular jobs, they are more likely than men to fall into the population uncovered by Employment Insurance. In addition, the higher likelihood that women will lose their jobs during a recession means that those who need the unemployment safety net more than others also have a higher risk of falling through it.

Third, the percentage of college graduates who are unemployed has increased markedly across all age groups. Current policies and supports that promote higher education have not resolved unemployment. Instead, those policies might be exacerbating unemployment. Without sufficient demand for high-skill labor, college graduates could end up with longer job-seeking periods, and their unemployment rate could continue to increase.

Fourth, the percentage of unemployed people spending periods of three months or longer looking for a job is increasing. Given the high percentage of unemployed people in their 20s who are not eligible for unemployment benefits, the longer job-seeking periods can hardly be attributed to the abuse of unemployment benefits. Furthermore, the main source of income for unemployed or job-seeking persons in their 20s is probably financial assistance from their families and relatives. In other words, a large number of unemployed youths with long job-seeking periods likely indicates an increased burden on private unemployment safety nets. In addition, when young job seekers whose families can provide income during employment have better chances of finding good jobs in the labor market because they can afford to wait for a good job rather than take any job, it could result in wider income gaps and inheritance of poverty.

Fifth, a review of the economic activity of men aged 30 to 55 who are heads of households shows that the percentage of employed heads of households increases in higher income brackets, and the percentage of economically inactive heads of households declines. Thus, the income earned by men is the determinant factor for the income bracket of the household. Furthermore, when a head of household loses his job, the effect on the financial situation of the household is significant, and the unemployment safety net plays a crucial role in preventing households from falling into poverty.

III. Key Issues Related to the Unemployment Safety Net

This chapter reviews some of the key issues related to the unemployment safety net in South Korea: gaps in Employment Insurance, the income replacement rate of unemployment benefits, non-standard economic activities such as self-employment or platform employment, and the fiscal sustainability of unemployment benefit accounts.

1. Employment Insurance Blind Spots

One of the most serious issues regarding Employment Insurance is that a significant number of workers are not covered by it.[3]

Figure 8 shows changes in the Employment Insurance coverage rates among all workers, regular workers, and non-regular workers between 2006 and 2018, according to the Survey Report on Labor Conditions By Employment Type. The samples do not include workers in special employment types. The Employment Insurance coverage rate for regular workers increased steadily from 92.2 percent in 2006 to 95.7 percent in 2010, followed by slight fluctuations in the years that followed. Between 2016 and 2018, the Employment Insurance coverage rate for regular workers decreased from 95.7 percent to 94.6 percent. On the other hand, the Employment Insurance coverage rate for non-regular workers increased sharply. Other than a slight decline during the Global Financial Crisis, the Employment Insurance coverage rate for non-regular workers increased from 48.7 percent in 2006 to 72.1 percent in 2016, by 23.4 percent points, but then it declined to 68.7 percent in 2017 before rising again in 2018 to 70.8 percent. The coverage rate in the samples including both regular and non-regular workers increased from 83.5 percent in 2006 to 89.6 percent in 2016, by 6.1 percent points. In sum, the Employment Insurance coverage rate for regular workers exceeds 90 percent, and the coverage rate for non-regular workers has increased to 72.1 percent, indicating that some of the gaps have seemingly been resolved.

However, Statistics Korea's Economically Active Population Survey data convey a different story. In those data, the coverage rate for regular workers was 64.7 percent in 2006 and increased to 87.0 percent by 2018, and the coverage rate for non-regular workers began at 36.6 percent in 2006 and increased to only 43.6 percent in 2018. Because most workers are regular workers, the overall coverage rate was found to have increased significantly between

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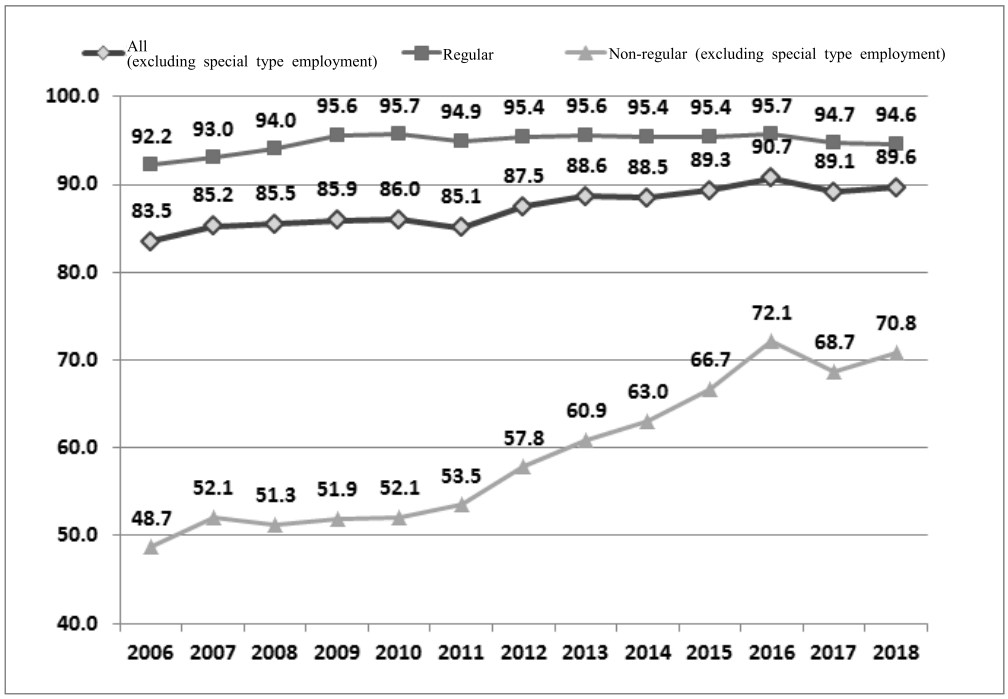
3 For Employment Insurance coverage issues, see Park (2012) or Park *et al.* (2014).

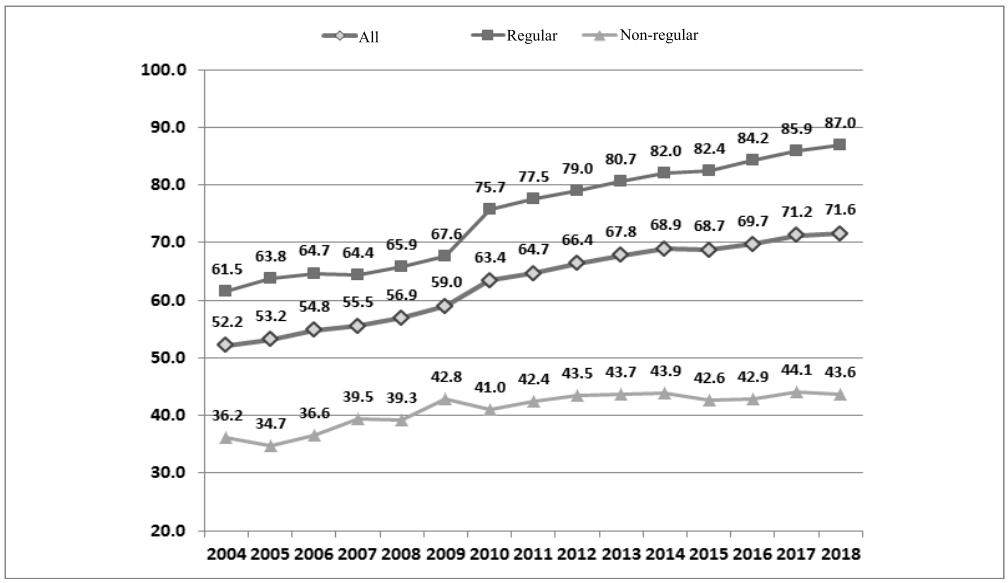
2006 and 2016, from 54.8 percent to 71.6 percent. These findings paint a fundamentally different picture than the data from the Survey Report on Labor Conditions By Employment Type.

Figure 8_Employment Insurance Subscription Rate: Survey Report on Labor Conditions By Employment Type



Source: KOSIS, Social Insurance Subscription Rates, Bonus and Retirement (Pension) Benefits Application (Subscription) Rates, and Unionization Rates (accessed on: September 3, 2019)(source data: Survey Report on Labor Conditions By Employment Type)

Figure 9_Employment Insurance Subscription Rate: Economically Active Population Survey(Employed Policyholders)



Note: The survey targeted all wage workers regardless of their eligibility for Employment Insurance. Therefore, the coverage rate is lower than the coverage rate of eligible persons. The statistics consider only coverage rates among the employed and do not include non-employed persons covered by insurance, beneficiaries, or dependents.

Source: KOSIS, Percentages and Changes in Social Insurance Policyholders By Type of Employment, http://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1DE7081S&conn_path=I3 (accessed on: September 3, 2019)(source data: Economically Active Population Survey)

The difference in the datasets comes from the fact that the Survey Report on Labor Conditions By Employment Type was prepared using payrolls. Employers are required to enroll in the Employment Insurance scheme, and the survey is likely to exclude business establishments that have not enrolled. Some information regarding Employment Insurance coverage could be false as well. The Economically Active Population Survey is also exposed to the possibility of distortion. Because the survey data were based on responses from household members, respondents without knowledge about Employment Insurance might have answered that they were not covered when they actually were.

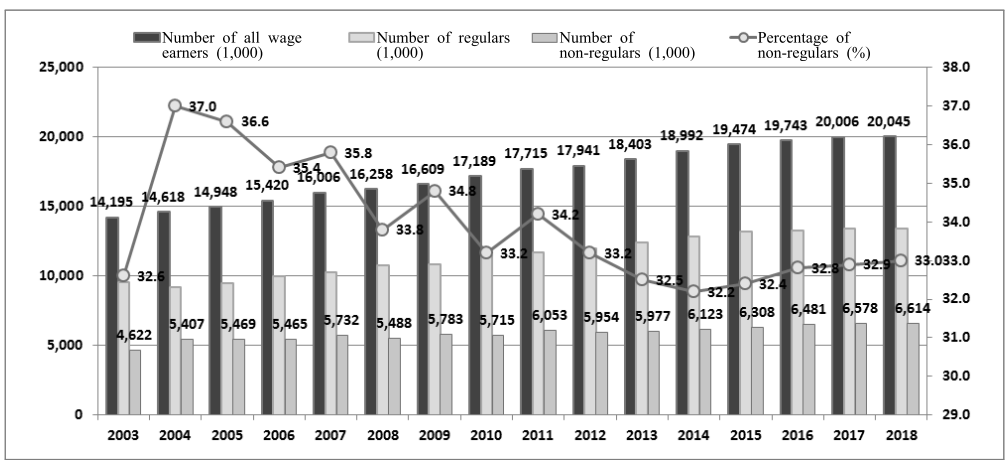
However, both surveys report that at least 87.0 percent of regular workers are covered by Employment Insurance. On the other hand, it seems difficult to ascertain the degree to which the coverage rate of non-regular workers has increased. The Survey Report on Labor Conditions By Employment Type reports a significant increase, whereas the Economically Active Population Survey reports that non-regular workers remain largely uncovered by

Employment Insurance.

The latter survey also shows that the percentage of non-regular workers among wage workers declined between 2004 and 2014 and increased steadily between 2014 and 2018 (Figure 10). Given the stagnant level of Employment Insurance coverage among non-regular workers shown in Figure 9, the number of non-regular workers who are not covered by Employment Insurance has increased gradually between 2014 and the present.

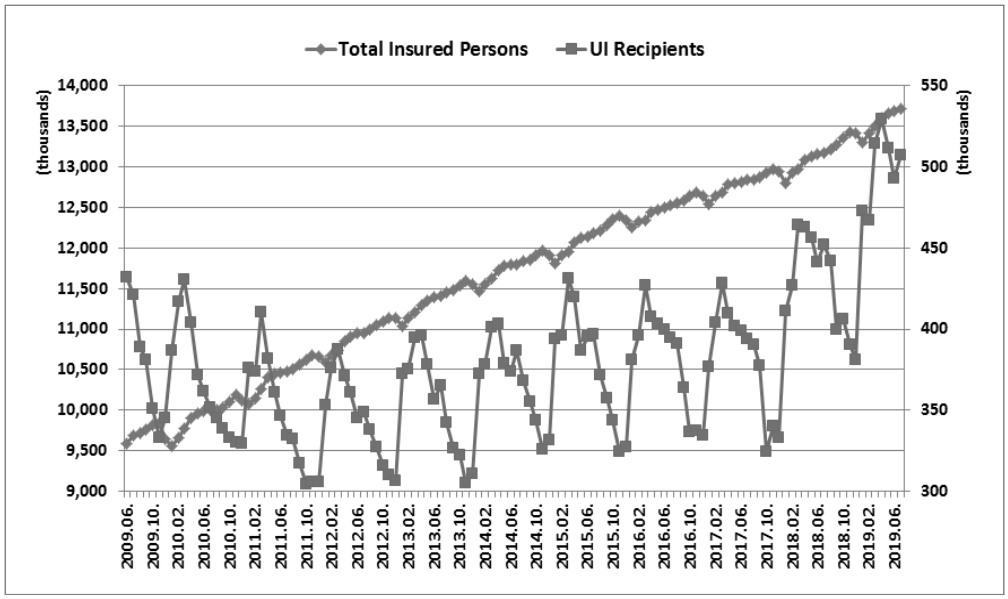
Figure 11 shows the number of wage workers insured by Employment Insurance and the number of unemployment benefit beneficiaries. The figure shows some discernable trends. First, the number of insured workers has increased steadily. Second, each year, the number of insured workers and the number of unemployment benefit beneficiaries decline in the first quarter and recover by the fourth quarter. This pattern can be attributed to the fact that many temporary workers lose their jobs early each year, thereby losing their insured status and becoming eligible for unemployment benefits (as long as they satisfy the prescribed requirements, including involuntary termination). Third, if we do not consider monthly fluctuations, the number of unemployment benefit beneficiaries declined slightly between 2009 and 2013 and began to increase slightly in 2014. The growth rate was particularly high in the 2018~2019 period.

Figure 10_Number and Percentage of Workers By Type of Employment: Economically Active Population Survey (Employed Policyholders)



Source: KOSIS, Number and Percentage of Workers By Gender and Type of Employment (Overall), http://kosis.kr/statHtml/statHtml.do?orgId=101&tblId=DT_1DE7106S&conn_path=I3 (accessed on: September 3, 2019)(source data: Statistics Korea, Economically Active Population Survey)

Figure 11_Insured Workers and Unemployment Benefit Beneficiaries: Wage Earners



Source: compiled by the author based on Korea Employment Information Service, Employment Insurance Statistics Website (Wage Earners), https://eis.work.go.kr/sys01012.do?autoRptSrch=Y&tranId=sys01012_00&menuId=061020030(accessed on: September 3, 2019)

To summarize the discussion about gaps in Employment Insurance, the rate of coverage by Employment Insurance among wage workers has clearly increased. Between June 2009 and June 2018, the number of wage workers covered by Employment Insurance increased by 37 percent from 9.59 million to 13.14 million. That steady increase can be largely attributed to the scale effect from an increased number of wage workers. Between 2009 and 2018, the number of wage workers increased by 20 percent from 16.6 million to 20.04 million. The number of wage workers covered by Employment Insurance thus increased at a higher rate than the number of wage workers as a whole, resulting in a higher likelihood that an individual wage worker would hold an Employment Insurance policy (57 percent in 2006 → 65 percent in 2018).[4] Despite the clear resolution of some gaps, only 65 percent of all wage workers are

4 The Employment Insurance coverage rates in 2006 (57 percent) and 2018 (65 percent) were calculated by dividing the number of persons covered by the Employment Insurance from the Employment Insurance Statistics by the number of wage earners from the Economically Active Population Survey and multiplying the result by 100.

covered by Employment Insurance. Therefore, sizable gaps persist. In addition, according to the findings of the Economically Active Population Survey, the coverage rate of regular workers increased significantly, whereas the coverage rate of non-regular workers changed little, which indicates that most non-regular workers remain in employment insurance blind spots.

2. Income Replacement Rates of Unemployment Benefits

Even if Employment Insurance had few to no gaps, it cannot be deemed to work properly as an unemployment safety net if the benefits do not provide sufficient income.

Figure 12 compares the income replacement rate of unemployment benefits for childless single-person households among the member states of the Organisation for Economic Co-operation and Development (OECD). Income replacement rates were calculated based on average wages. Korea's replacement rates are represented by bar graphs, and those of other OECD member states are represented by dotted or solid lines. The figure compares Canada, Denmark, France, Germany, Japan, the average rate of 29 European Union countries, and the overall average rate of all OECD member states. Unemployment benefits are provided for set periods of time. When unemployment lasts for a long time, beneficiaries can lose their unemployment benefits. Figure 12 shows the income replacement rates of unemployment benefits for unemployed periods of six, twelve, and 24 months.

For people unemployed for six months, the replacement rates of unemployment benefits are shown in Figure 12 (A). In Korea, the income replacement rate was 55 percent in 2002, which decreased between 2002 and 2017 to 43 percent in 2018, despite year-over-year rate increases in 2006, 2011, 2015, and 2017.

Unlike Korea, the income replacement rates in the other countries included in the graphs changed little. For example, in France, the annual change in the income replacement rate did not exceed 5 percent between 2002 and 2017. That difference explains the widening gap in the income replacement rates between Korea and the other countries in Figure 12 (A). The steady decline in the average rates among European Union countries and OECD member states suggest a decline in the income replacement rates in countries other than those in the graph. In other words, like Korea, the replacement rates of some members of the European Union and the OECD are below the European or OECD average.

For persons unemployed for twelve months (Figure 12 (B)), Korea reports an income replacement rate between 14 and 16 percent without significant changes. The same

consistency can be observed among persons unemployed for twelve months in other countries, though the replacement rates are scattered over a wide spectrum between 16 and 70 percent.

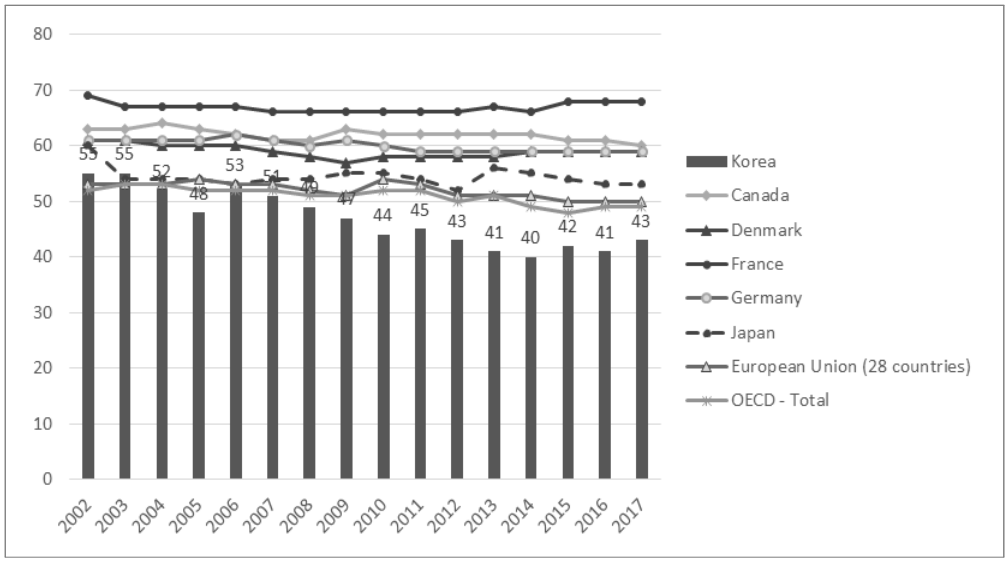
The income replacement rates for persons unemployed for 24 months (Figure 12 (C)) were distributed between 16 and 40 percent in 2002, indicating that the job-seeking period is negatively correlated with income replacement rates. Unlike the income replacement rates for persons unemployed for twelve months, which changed little between 2002 and 2017, the income replacement rates for persons unemployed for 24 months gradually declined in all the countries compared.

Thus, the income replacement rate of unemployment benefits in Korea has declined gradually, which is highly correlated with the fact that the lower limits of unemployment benefits are linked with minimum wages that increase over time, whereas the upper limits are separately defined and tend to remain unchanged. Although not covered in detail in this section, when calculated in terms of the minimum wage, Korea reports a significantly high income replacement rate.

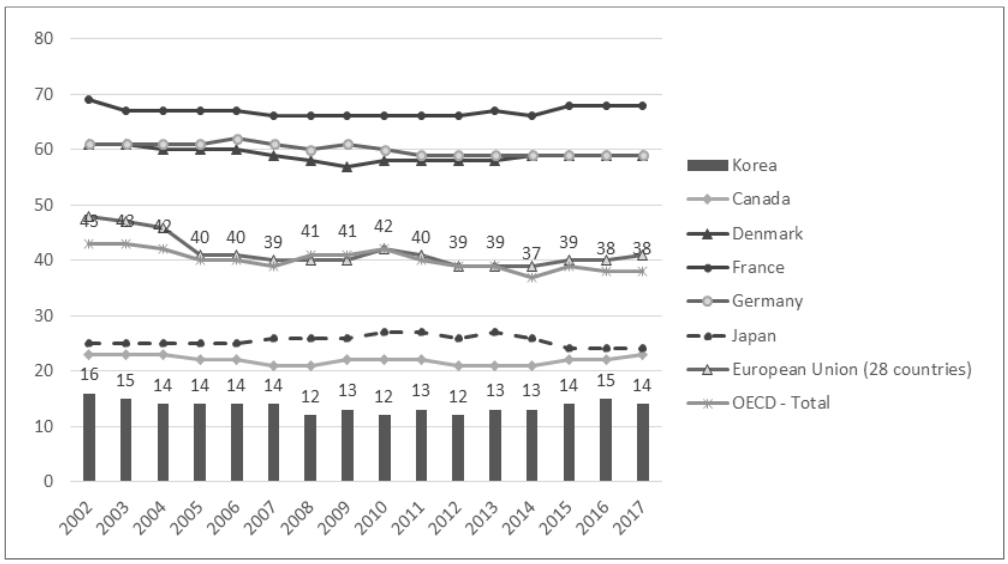
Because most of the workers contributing to the unemployment benefit account earn minimum or higher wages, the low income replacement rate reported by Korea suggests that the current unemployment benefit programs fail to provide sufficient unearned income for people covered by Employment Insurance. Although the replacement rate is higher for low-wage workers, the scope of low-wage workers receiving unemployment benefits under the current system is expected to be quite small because those vulnerable workers are likely ineligible for Employment Insurance.

Figure 12_Income Replacement Rates of Unemployment Benefits: Childless Single-person Households

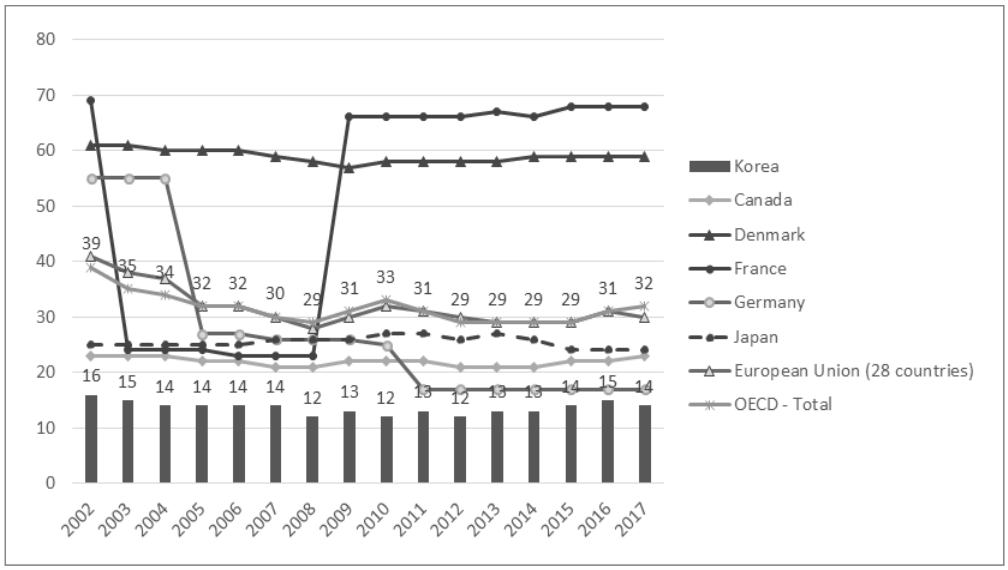
(A) Unemployed period = 6 months



(B) Unemployed period = 12 months (1 year)



(C) Unemployed period = 24 months (2 years)



Note: includes only childless single-person households; shows the income replacement rates compared with the average wages of the surveyed households.
Source: OECD, Stat Replacement Rate (single person without children), (accessed on: September 3, 2019)

3. Self-Employers

In many cases, self-employers receive government fiscal support because they are considered to be a vulnerable group in the economy. Only a low percentage of eligible self-employers are covered by Employment Insurance, which is a cause for concern. In this section, I analyze the coverage rate among self-employers and review some related policy issues.

Table 1 lists the number of economically active persons (wage workers and self-employers) between 2008 and 2018, according to the Economically Active Population Survey. The number of employed persons increased by 12.81 percent between 2008 and 2018, and the number of self-employers declined by 6.11 percent. As a result, the percentage of self-employers in the overall employed population decreased by 4.3 percent points, from 25.3 percent to 21.0 percent.

Table 1_The Share of Self-Employment

(unit: thousand persons, %)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Employed persons	23,775	23,688	24,033	24,527	24,955	25,299	25,897	26,178	26,409	26,725	26,822
Self-Employers	6,005	5,749	5,643	5,657	5,768	5,703	5,720	5,622	5,614	5,682	5,638
Percentage	25.3	24.3	23.5	23.1	23.1	22.5	22.1	21.5	21.3	21.3	21

Source: e-National Indicators, http://www.index.go.kr/potal/main/EachDtlPageDetail.do?idx_cd=2779(accessed on: September 3, 2019) (source data: Statistics Korea, Economically Active Population Survey)

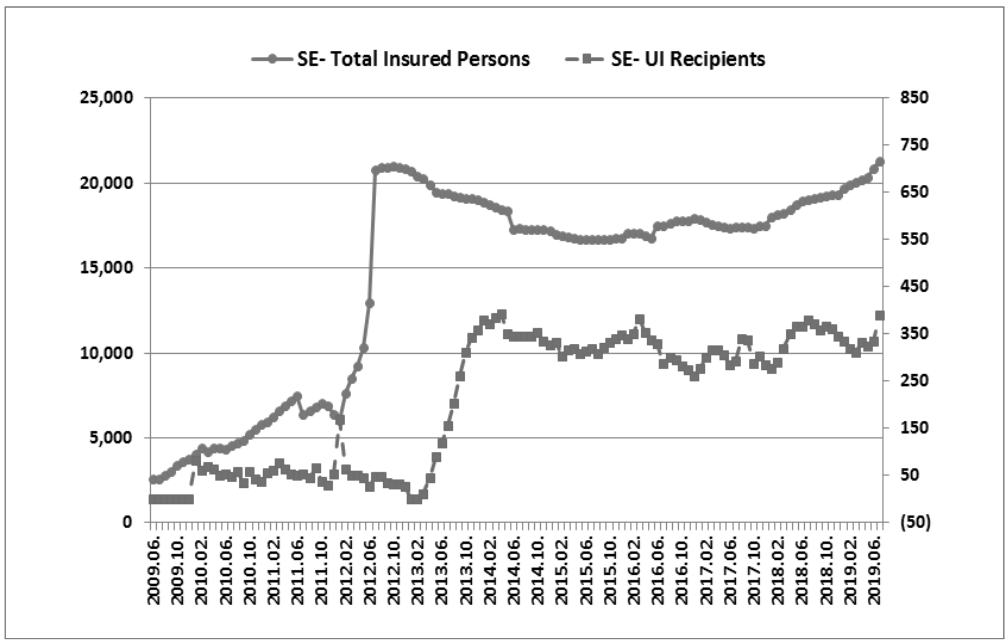
Figure 13 shows the number of self-employers covered by Employment Insurance, and those receiving unemployment benefits between June 2009 and July 2019. The government launched Employment Insurance for self-employers in 2012 to provide them with a social safety net against risks of closure. Around that year, the number of people covered by Employment Insurance among self-employers increased significantly. However, the number declined between 2012 and 2016, which can be explained by self-employers who dropped Employment Insurance, self-employers who closed their businesses, and new self-employers who chose not to purchase insurance policies.

Starting in 2016, the number of self-employers began to increase again. The rapid growth of insured self-employers in recent years seems to be attributable to a reform in 2018 that expanded the eligible period for enrolling in the scheme from one year to five years after launching a business and increased the period of delinquency required for automatic termination from three months to six months.

Despite these changes, fewer than 0.5 percent of self-employers are insured, which indicates that the vast majority of self-employers have no working unemployment safety net under the Employment Insurance scheme.

Figure 13_Insured Workers and Unemployment Benefit Beneficiaries: Self-Employers

(unit: no. of self-employers)



Source: compiled by the author based on Korea Employment Information Service, Employment Insurance Statistics Website (self-employers), https://eis.work.go.kr/sys01012.do?autoRptSrch=Y&tranId=sys01012_00&menuId=061020030(accessed on: September 3, 2019)

In fact, several factors make it difficult to encourage self-employers to enroll in the Employment Insurance program and provide them with an unemployment safety net.[5] First, self-employers have low incentives for purchasing and maintaining Employment Insurance policies. Self-employers are free to enter or exit the market, and each business lasts for a relatively short time, which makes it difficult for them to justify purchasing and maintaining Employment Insurance policies based on the long-term link between premium payments and benefits.[6] For example, a self-employer needs to maintain insurance status for at least a year

5 Kim *et al.* (2015) investigate how to lengthen the duration for which self-employers are covered by Employment Insurance. Also, see Park *et al.* (2017a).

6 Between 2012 and 2014, the Employment Insurance policy maintenance rate of self-employers was 30 percent (Kim et al., 2015).

to be eligible for unemployment benefits. Thus, a self-employer who purchased an Employment Insurance policy and closed his/her business in eight months would be ineligible for unemployment benefits despite the premiums that s/he paid. For this reason, a self-employer does not have any reason to purchase an Employment Insurance policy unless s/he is certain that the business will last for at least a year.

Second, before the reform, a self-employer who developed a long-term vision after running a business for a year or more was not allowed to enroll in the scheme. That issue was resolved by increasing the application window to five years in 2018.[7]

Third, self-employers with older and more sustainable businesses might still have a low incentive to enroll in the Employment Insurance scheme. One drawback of enrolling in the scheme is the exposure of business information, including sales. For example, a self-employer who hires wage workers without providing them with the four major insurances, in violation of the Employment Insurance Act, is unlikely to voluntarily expose his/her business information by enrolling in the insurance system. For the same reason, self-employers who avoid taxes or try to lower their tax burden in other ways might be reluctant to enroll in the scheme.[8] In sum, for self-employers, enrolling in the Employment Insurance scheme is a complicated decision.

Thus, self-employers' coverage rate of the Employment Insurance could be sensitive to tax and fiscal policies that target themselves. If the government launched large-scale fiscal support programs, such as the Job Security Fund, self-employers might be motivated to provide their employees with social insurance coverage and purchase Employment Insurance policies for themselves. However, the effects of such programs might still be small because many small self-employers covered by Employment Insurance would require continuous policy and fiscal supports.

Moreover, Employment Insurance revitalization policies for self-employers might conflict with the fiscal stabilization policies for the Self-Employer Employment Insurance. For example, lowering the premiums paid by self-employers to promote enrollment undermines the fiscal sustainability of Self-Employment Proprietor Employment Insurance. On the other hand, cutting the unemployment benefits received by self-employers covered by Employment

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7 The reform itself is a source of controversy because the longer application period can result in moral hazards for self-employers.

8 The Compliant Tax Reporting Confirmation program was launched in 2011 to encourage high-income self-employers to disclose their tax bases, which suggests that self-employers tend to falsely report their income.

Insurance would lower the motivation of self-employers to enroll in the scheme at all.

By extending the application period for Employment Insurance from one to five years, the government boosted the coverage rate among the self-employed. However, the issue of adverse selection could negatively affect the fiscal sustainability of Employment Insurance by allowing self-employers to enroll in the scheme even when they expect to close their businesses in one or two years.

The design of Self-Employer Employment Insurance could pose similar issues. For example, current practice allows self-employers to determine their premiums by selecting their own baseline remuneration, i.e., the amount used to calculate the Employment Insurance premiums for self-employers, as specified by the Ministry of Employment and Labor.[9] As of 2019, there are seven grades of baseline remuneration for self-employers ranging from KRW 1.82 million to KRW 3.38 million. Baseline remunerations apply for a year and are used to calculate the insurance premiums for unemployment benefits, employment security, and vocational skill development programs

When self-employers purchase Employment Insurance policies, they can reduce their premium payments by choosing a low grade of baseline remunerations. However, that also lowers the amount of unemployment benefits for which they are eligible.[10] Self-employers who are about to close their businesses are likely to exaggerate their remunerations because they can receive benefits despite paying premiums for only a short time.[11]

4. Workers in Special Employment Types

Workers in special employment types (WSET) are in a gray area between workers and employers and are not eligible for Employment Insurance, leaving them outside the unemployment safety net.[12] WSET include caddies, home-study instructors, couriers, credit

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9 Public Announcement on Support for Employment Insurance Premiums Paid by Micro Enterprises, National Legislative Information Center (accessed on: October 8, 2019).

10 According to Article 69-4 (1) of the Employment Insurance Act, the daily wage is computed by dividing the aggregated amount of remuneration, which forms the basis for computing the insurance premium paid by the self-employer, by the total number of days in the applicable period.

11 For example, as of 2019, the grade 6 baseline remuneration is KRW 2.5 million, and a self-employer who reports the grade 6 baseline remuneration pays a monthly premium of KRW 70,200. If the proprietor maintains the policy for a year, s/he could receive total benefits of KRW 3,698,100.

12 Several policy papers and studies have considered the issues of workers in special employment types. For

card solicitors, loan solicitors, quick service drivers, auto salespersons, and insurance planners. The number of such workers seems to be on the rise.

WSET are ineligible for Employment Insurance because many of the laws designed to protect "workers" are not readily applicable to them. Experts continue to argue over exactly which individuals in special employment types are workers and which are employers under the Labor Standards Act.

In recent years, the government has proposed several reforms and policy proposals for WSET. Starting in 2020, visiting teachers, technicians who deliver and install small electric appliances, and truck drivers exclusively working for specific companies are eligible for Workers' Compensation. The Korea Fair Trade Commission (KFTC) also announced that it would expand the scope of WSET that it protects by revising the Guidelines on the Examination of Abuse of Transactional Positions Against Workers in Special Employment Types. In the past, the KFTC protected only WSET who were protected by the Industrial Accident Compensation Insurance Act. However, under the revised guidelines, the KFTC can impose sanctions against business establishments that employ WSET or are their main transaction partners.

The unemployment safety nets for WSET could be improved so that benefits would ultimately be provided in ways similar to existing programs. However, those improvements might take a considerable amount of time. For one thing, it is difficult to define WSET and incorporate them into the government's official administrative computer network for reasons such as the absence of systemic investigative tools to count them and the fact that they perceive themselves as self-employers or wage workers rather than WSET (Jung, 2019).[13]

5. Financing Unemployment Benefits

A stable unemployment safety net requires a stable financing system for its programs.[14] Therefore, this section considers statistical indicators related to the fiscal status of the unemployment benefit account (related to wage workers).

Figure 14 (A) shows changes in insurance premiums for unemployment benefits (squares),

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instance, see Do (2013) or Park (2018a; 2018b).

13 Jung, Heung-jun, "A New Approach to Estimation of the Number of Workers in Special Employment Types", Employment and Labor Brief, Issue 88.

14 Kim *et al.* (2016) construct a model to improve fiscal sustainability relating to Employment Insurance.

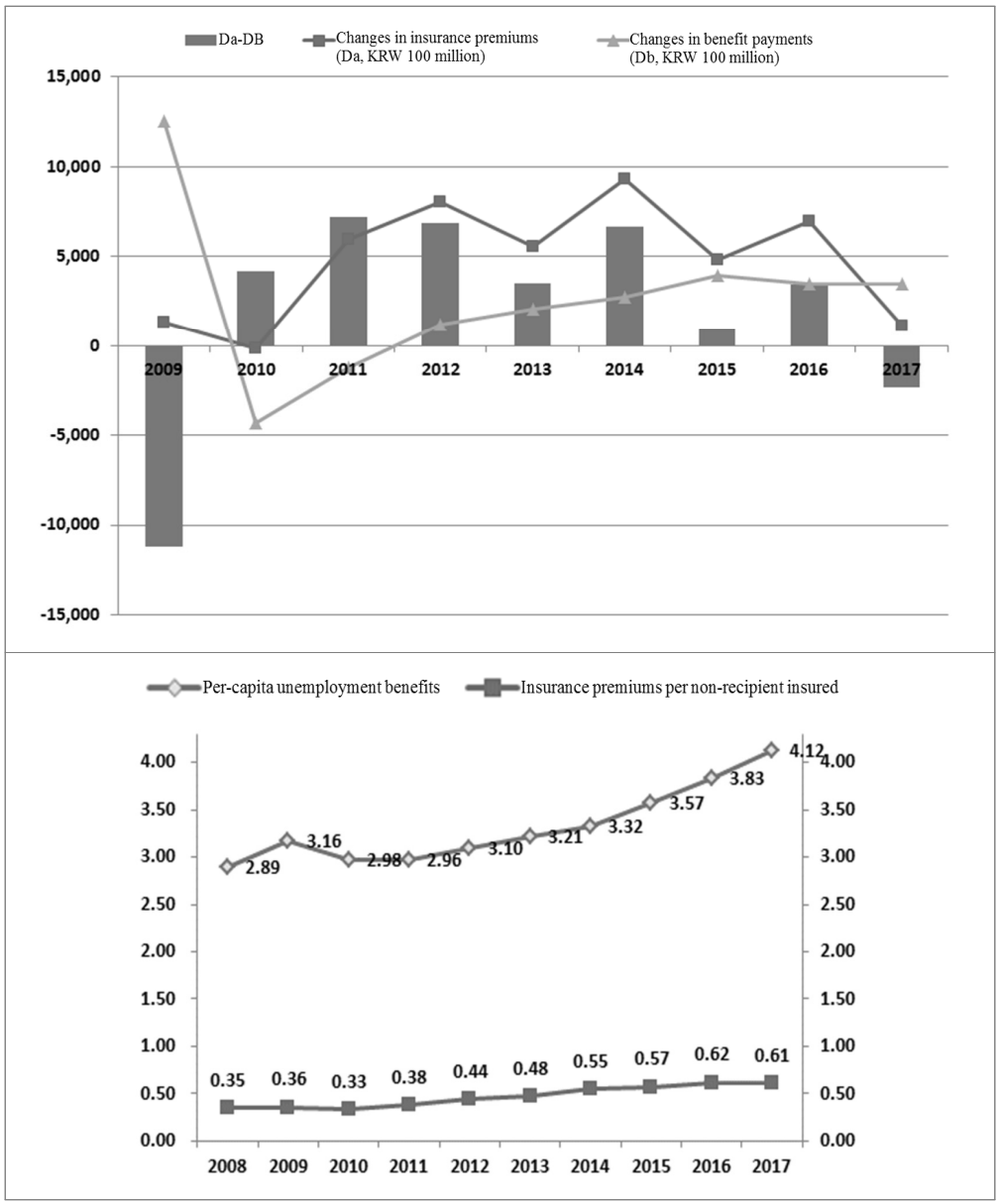
changes in unemployment benefit payments (triangles), and the differences between them (bar graphs). The amount paid as unemployment benefits increased every year except 2010 and 2011. The amount paid in insurance premiums, on the other hand, fluctuated widely each year, generally increasing between 2010 and 2014 and then declining. In 2017, the change in insurance premiums declined sharply, dipping below the change in unemployment benefit payments.

Figure 14 (B) shows the per-capita unemployment benefits, calculated by dividing the total unemployment benefit payments by the number of recipients, and the insurance premiums per non-recipient insured, calculated by dividing the insurance premiums for unemployment benefits by the number of insureds other than the recipients of unemployment benefits. As the figure shows, the growth rate of the per-capita unemployment benefits is lower than the growth rate of the insurance premiums per non-recipient insured.

Those statistics do not indicate any serious issue with the fiscal stability of the unemployment benefit account. However, they do suggest difficulties in stable operation of the account without raising the Employment Insurance premium rates unless overall employment in the Korean economy improves greatly. Therefore, the fiscal stability of the account could hinge on whether the high unemployment rate seen in recent years continues into the future.

Figure 14_Changes in Unemployment Benefit Insurance Premiums and Payments

(unit: KRW 100 million, KRW 1 million)



Source: present study, based on data provided by Employment Insurance White Paper.

6. Chapter Conclusion

In this chapter, I reviewed several issues with unemployment benefits (Employment Insurance) and the unemployment safety net. First, I looked at gaps in Employment Insurance coverage, which are both institutional (not eligible in the first place) and substantive (eligible, but not enrolled). From 2006~2018, both the Survey Report on Labor Conditions By Employment Type and the Economically Active Population Survey reported increased percentages of wage workers covered by Employment Insurance. Those findings can be reasonably understood to indicate that gaps in Employment Insurance coverage have been dwindling.

However, the two surveys report different findings regarding changes in Employment Insurance coverage across different types of employment. According to the Economically Active Population Survey, the coverage rate among non-regular workers changed little during the aforementioned period. Workers in vulnerable groups are still not protected by the unemployment safety net.

Even with smaller gaps, unemployment benefits cannot provide a sufficient unemployment safety net unless they provide sufficient income. In Korea, the income replacement rate of unemployment benefits for workers with average income who have been unemployed for six months or less has been declining, though the income replacement rate for workers making minimum wage has increased. In other words, unemployment benefits provide sufficient replacement income for workers receiving minimum wage, but they do not sufficiently replace the previous income of workers receiving average wages or above. The gap stems from the current system in which the lower limit of unemployment benefits is linked with the minimum wage, and the upper limit is separately determined through a review procedure. Under the current system, unemployment benefits do not provide meaningful replacement income for most wage workers.

The absence of an unemployment safety net for self-employers is another long-standing issue. Self-Employer Employment Insurance is constantly exposed to risks caused by adverse selection and moral hazards on the part of self-employers. The current coverage rate of Employment Insurance among self-employers is below 0.5 percent, which is not likely to improve because many self-employers do not feel the need for an unemployment safety net due to the uncertainty of their businesses and the vesting period required to receive benefits, or they are reluctant to purchase Employment Insurance due to the disclosure requirements. In addition, self-employers could change their positions in accordance with changes in fiscal and taxation policies and other institutional circumstances. These factors substantially restrict

the effectiveness of Employment Insurance as an unemployment safety net for self-employers.

As for WSET, it is difficult to provide them with an unemployment safety net because they are not readily identifiable by government authorities. In addition, because these workers occupy a space between workers and employers under labor laws such as the Labor Standards Act, existing laws are not readily applicable to them. These factors make it difficult to provide them with an unemployment safety net. This issue is particularly prominent in programs implemented by the Ministry of Employment and Labor, which requires clearly defined categories of workers and employers. The KFTC recently promulgated guidelines to enable sanctions against business entities that engage in unfair trade practices by focusing on the relationship between business entities and WSET. Those guidelines have significant implications for the current issue. Another possibility would be departing from the legal framework and providing meaningful unearned income through tax credits and other programs that focus on indicators such as household income rather than whether the beneficiaries are workers.

IV. Policy Directions for the Unemployment Safety Net

1. Limitations of the Current Unemployment Safety Net

This section summarizes the limitations of the current unemployment safety net in Korea based on the discussions in Chapters II and III and previous studies. Those limitations can be grouped into four categories.

First, the coverage rate is fairly low. Wage earners are required to be covered by Employment Insurance, but many of them are not enrolled in the scheme. In addition, the majority of self-employers do not maintain Employment Insurance policies, even though they can voluntarily purchase them. Despite the recent increase in Employment Insurance coverage, the data from the Economically Active Population Survey indicate stagnant growth among non-regular workers. The current coverage rate among self-employers is less than 1 percent.

Second, the voluntarily unemployed do not receive unemployment benefits, even when they are enrolled in the scheme. According to Bang and Nam (2016), 53.6~63.2 percent of unemployed workers between 2005 and 2013 were voluntarily unemployed. Those workers pay Employment Insurance premiums, but they do not receive benefits during their

unemployment.

Third, workers do not receive unemployment benefits if they have not paid contributions for a set period or if their beneficiary period lapses. Bang and Nam (2016) point out that 65 percent of potential beneficiaries do not receive benefits because they have exhausted their beneficiary periods, and they argue that the current beneficiary period does not reflect the reality of the Korean labor market.

Fourth, even when unemployment benefits are provided, they do not provide sufficient income for middle- and high-income wage workers. The income replacement rate of unemployment benefits for workers with an average wage decreased sharply between 2002 and 2017 from 55 to 43 percent. Some might argue that the low replacement rate is not a serious issue for middle- and high-wage workers because they are likely to use their higher wages to save money and prepare other sources of income during their employment. However, given that unemployment benefits are provided through a contribution-based insurance scheme, it is morally questionable to argue that middle- and high-wage workers should not receive benefits corresponding to their pre-unemployment income. The low income replacement rate is also problematic because middle- and high-wage workers are more likely than low-wage workers to be supporting family members.[15]

2. Policies To Improve the Unemployment Safety Net

Means to reduce the gaps in Employment Insurance include the Durunuri Social Insurance Subsidy Program, the expansion of self-employers covered by Employment Insurance, and 'Korean Unemployment Aid.' The Durunuri Social Insurance Subsidy Program aims to raise Employment Insurance coverage rates by providing subsidies for social insurance premiums. In 2018, the government also extended the required period for self-employers to apply for Employment Insurance benefits from one year to five years, along with other institutional reforms aimed at raising the coverage rate. 'Korean Unemployment Aid' expands the unemployment safety net beyond the Employment Insurance program through programs such as the Employment Success Package that was launched in 2009, the Job Seeking Promotion Allowances for Youth launched in 2017, and the National

15 In addition, the recent minimum wage increase is expected to raise the income replacement rate for low-wage earners. However, due to the low coverage rate among low-wage earners, the percentage of low-wage earners receiving benefits will be quite restricted, even at a high income replacement rate.

Employment Support Program in 2020.[16]

Despite ongoing criticism about the need to apply Employment Insurance to WSET, the proposed revision to the Employment Insurance Act was not approved by the National Assembly at the plenary session on August 2, 2019. That proposal also included provisions to provide unemployment benefits to the voluntarily unemployed.

The 2019 amendment to the Employment Insurance Act raised the unemployment benefit rate (50 percent of average wage → 60 percent of average wage) and extended the payment period (by 30 days). On the other hand, the lower limit of unemployment benefits was lowered from 90 percent of the minimum wage to 80 percent. The age grouping for job-seeking benefits has been simplified from three groups (under 30, 30 to 49, and 50 and older) to two groups (under 50 and 50 and older), which effectively extended the unemployment benefit payment periods for unemployed people younger than 30 by up to 60 days. The amendment also lowered the requirements for job-seeking benefits received by part-time workers with a 15-hour work week. Under the old Act, the number of paid work days had to be at least 180 over 18 months leading up to termination of employment. The amendment extended the period from 18 months to 24 months.

Table 2_Limitations of and Policy Improvements for the Unemployment Safety Net

Limitations of the Unemployment Safety Net	Policy Attempts and Current Status
Employment Insurance blind spots	- Durunuri Social Insurance Subsidy Program - Extension of required period for self-employers - Application of Employment Insurance to workers in special employment types (not approved by the National Assembly)
Exclusion of the voluntarily unemployed	- Amendment including provisions to provide unemployment benefits to the voluntarily unemployed (not approved by the National Assembly)
No eligibility without sufficient period of contribution	- Extension of period for calculation of paid work days for part-time workers(18 months →24 months)
No eligibility after end of payment period	- Payment period extended by 30 days - Payment period for young workers extended by up to 60 days due to changed age grouping (3 groups: under 30, 30 to 49, and 50 and older → 2 groups: under 50 and 50 and older)
Low income replacement rate	- Benefit rate increased: 50% → 60% of average wage - Upper limit of unemployment benefit raised: (April–December 2017: KRW 50,000 → 2018: KRW 60,000 → 2019: KRW 66,000) - Lower limit of unemployment benefit lowered: 90% → 80% of minimum wage

16 See the appendix for further details about the National Employment Support Program.

3. Long-Term and Short-Term Improvements in the Unemployment Safety Net

The Korean government has repeatedly proposed policies to improve the unemployment safety net. However, Employment Insurance has persistent gaps: the low coverage rate among self-employers; the institutional exclusion of WSET from Employment Insurance, workers not covered by Employment Insurance despite mandatory enrollment, and the exclusion of some unemployed from unemployment benefits. This section discusses options for the long-term and short-term improvement of the unemployment safety net.

The low coverage rate among self-employers will be difficult to address unless all self-employers are required to purchase Employment Insurance policies. As mentioned above, extending the period in which self-employers can apply for Employment Insurance from one year to five years allows self-employers nearing the closure of their businesses to enroll in the scheme. A similar issue could be caused by the current practice of using indirect indicators to determine the premiums paid by self-employers due to difficulties in identifying their sales.

The low coverage rate issue is difficult to resolve because enrollment is voluntary, which means that self-employers compare the benefits of the government's taxation and fiscal policies for them with the Employment Insurance premiums and other expenses (including taxes) required for enrollment in the scheme. Expanding subsidies for self-employers, such as the Job Security Fund, might temporarily boost enrollment in the Employment Insurance scheme. However, the coverage rate for Employment Insurance among self-employers might decline as soon as the size of those subsidies decreases. Given that self-employers can enroll and withdraw from the scheme at any time, spending government resources to boost the coverage rate could result in substantial losses.

WSET would ideally be included in the unemployment safety net within the framework of Employment Insurance, but that might not be viable due to the statutory definition of 'workers.' Jun (2019) proposes universal employment insurance linked to economic dependency rather than the definition of workers, which seems reasonable.[17] Until the relevant systems are revised, however, I suggest interim measures, including tax credits, to support WSET.

The government also needs to implement more unemployment assistance programs because it is difficult to build a sufficient unemployment safety net with Employment

17 For related issues, see also Gu (2019).

Insurance alone. Given the acceptance of its policies and current fiscal position, the Korean government needs to take a more gradual approach through programs such as Job Seeking Promotion Allowances and the National Employment Support Program, despite their limitations in achieving the intended goals of unemployment assistance.

It remains unclear whether the government should improve the National Employment Support Program into a 'Korean Unemployment Aid' program or develop a separate 'Korean Unemployment Aid.' However, given the current situation, it seems necessary to link unemployment assistance with other programs and ensure the appropriate selection of beneficiaries for unemployment assistance.

The government needs to review unemployment assistance programs for possible overlap and links for several reasons. First, local governments provide various benefits, including local vouchers, which might overlap with cash allowances provided by the central government. If unemployment assistance benefits are paid on an application basis, the benefits should be distributed to the areas and groups that need government supports the most. If the administrative computer network is integrated between local governments and the central government and a beneficiary is found to be eligible for cash support from local governments in a given year, the central government could consider paying unemployment assistance after deducting the amount of that local cash support.

When selecting beneficiaries for unemployment assistance, the government naturally needs to consider links with other income support programs, such as tax credits and the Basic Livelihood Guarantee.[18] To provide unemployment assistance to people who have exhausted their unemployment benefit payment periods, the government needs to investigate the times at which they exhausted those payment periods. Tax credits and the Basic Livelihood Guarantee are provided based on household incomes, unlike unemployment benefits and unemployment assistance, which are provided to individuals. However, the loss of a job and its income affects each individual's family as well. Therefore, unemployment benefits, unemployment assistance, tax credits, and the Basic Livelihood Guarantee need to be considered together.[19]

When introducing unemployment assistance and reinforcing the coverage of unemployment benefits, the government also needs to implement policies that enhance the motivation of beneficiaries to find jobs. The government should aim for economic efficiency

18 It will be important to look at each policy that can determine income support for the unemployed in detail.
19 See OECD (2018) for related discussions.

while preventing moral hazards and adverse selection. This task requires that public employment services be backed up with highly skilled vocational consultants and advanced administrative computer networks. As previously mentioned, given the high percentage of unemployed college graduates, only a small part of current unemployment is caused by a lack of skills and education. The current situation also suggests that it is difficult for a vocational consultant to provide advice regarding the skill levels required by employers, which is another reason to call for skilled consultants and advanced infrastructure.

In this paper, I have discussed the need for mandatory Employment Insurance enrollment for self-employers, the application of Employment Insurance to WSET, the provision of tax credits, and other policy tasks required in connection with unemployment assistance.

To ensure the stable operation of unemployment benefits and unemployment assistance and achieve universal effects by programs financed with the Employment Insurance Fund, the government ultimately needs to build and manage a Job Fund (tentative title) that combines the Employment Insurance Fund with national tax revenues. A business establishment must be covered by Employment Insurance to benefit from the programs financed by the Employment Insurance Fund, which has restricted the effectiveness of fiscal policies for self-employers and small and middle scale enterprises vulnerable to recessions. In fact, the government has been providing universal employment services financed by the Employment Insurance Fund, but cash transfer policies have benefited only business establishments and workers covered by Employment Insurance. By merging the Employment Insurance Fund with the general account through a 'Job Fund,' more universal fiscal policies could be implemented.

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Appendix

I. Korean Government's Efforts To Build Unemployment Safety Nets

The discussions above clearly show the limitations of an unemployment safety net model that relies on unemployment benefits. To address that issue, the government has launched unemployment assistance policies tailored to Korea, such as the Youth Job Seeking Promotion Allowances. In 2020, the government plans to introduce an upgraded version of that policy, called the "National Employment Support Program," which will combine the Employment Success Package and the Youth Job Seeking Activity Grant. It will provide vulnerable groups with employment and income support. The program addresses the shortcomings of the Employment Success Package, which did not provide sufficient support for low-income job seekers. Labor representatives, business representatives, and the government reached an agreement on the early adoption of the program and its basic framework through discussions at the Economic, Social and Labor Council.[1] According to the Agreement on Enhancement of Employment Safety Nets (March 5, 2019), labor representatives, business representatives, and the government reached an agreement on the following matters as follow-up measures to the Agreement on Income Guarantee for Vulnerable Groups and Reinforcement of Social Services.[2]

1. Improvement of the Employment Insurance Scheme

1-1. Rationalize unemployment benefits to that end; seek ways to ensure fiscal soundness.

1-2. Pursue institutional reforms to eliminate blind spots, including self-employers who do not benefit from Employment Insurance.

1-3. To ensure stable and appropriate protection, expand the support for maternity benefits from the general account and begin discussions on the expansion of maternity protection to those not covered by Employment Insurance.

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1) Republic of Korea Policy Briefing, "The government to launch the National Employment Support Program next July ... completing the country's employment safety net", http://www.korea.kr/news/policyNewsView.do?newsId=148861348 (accessed on: October 8, 2019).

2) Economic, Social and Labor Council Agreement and Recommendation, http://www.eslc.go.kr/bbs/data/view.do?pageIndex=1&SC_KEY=&SC_KEYWORD=&bbs_mst_idx=BM0000000195&menu_idx=2178&tabCnt=0&per_menu_idx=&submenu_idx=&data_idx=BD0000000132&memberAuth=Y&stype=&root_yn=Y (accessed on: October 18, 2019).

1-4. Change the Employment Insurance Scheme in the medium and long term to provide benefits based on income rather than hours worked or workplace. To that end, begin discussions on matters such as income calculation, and build a system of cooperation with related institutions such as the National Tax Service.

2. Korean Unemployment Assistance

2-1. To protect low-income job seekers not covered by Employment Insurance, launch an unemployment assistance program that combines employment services and livelihood support.

2-2. Legislate the unemployment assistance program so that the program covers all low-income job seekers who meet the age and income criteria and actively carry out job-seeking activities.

Table 1_Key Elements of the National Employment Support Program

Previous Programs (until 2019)	National Employment Support Program (2020)	Notes
Youth Job-Seeking Activity Grant Grants KRW 500,000 per month (for six months) to job-seeking youths	**Type I: Job-Seeking Promotion Allowances** For eligible job-seekers (mandatory expenditure): groups below 50% of median income* * Prior employment requirement: for six months or longer within the past two years For selected job-seekers (discretionary expenditure): Special Youth Grant for selected group of economically inactive youths with income between 50 and 120% of median income	Youth Job-Seeking Activity Grant to be merged with the Special Youth Grant
Employment Success Package - Low income groups: below 60% of median income + specific vulnerable groups* * Homeless, North Korean defectors, immigrants by marriage, juveniles in distress, etc. Youths: no income criteria Middle-aged: 60–100% of median income	**Type II: Job-Seeking Promotion Allowance** - Low income groups: 50–60% of median income + specific vulnerable groups* * Homeless, North Korean defectors, immigrants by marriage, juveniles in distress, etc. - Youths: same as before - Middle-aged: same as before	An improved version of the Employment Success Package to be merged with Type II

Source: Republic of Korea Policy Briefing, "The government to launch the National Employment Support Program next July ... completing the country's employment safety net", http://www.korea.kr/news/policyNewsView.do?newsId=148861348 (accessed on: October 8, 2019).

2-3. Launch a program for low-income groups (below 50% of the median income) and expand coverage in increments. Provide fixed amounts to guarantee minimum livelihood for six months, with the details to be determined consistently with other support programs.

2-4. Provide unemployment assistance beneficiaries with active and effective employment services during job-seeking periods, along with meaningful vocational training opportunities if necessary.

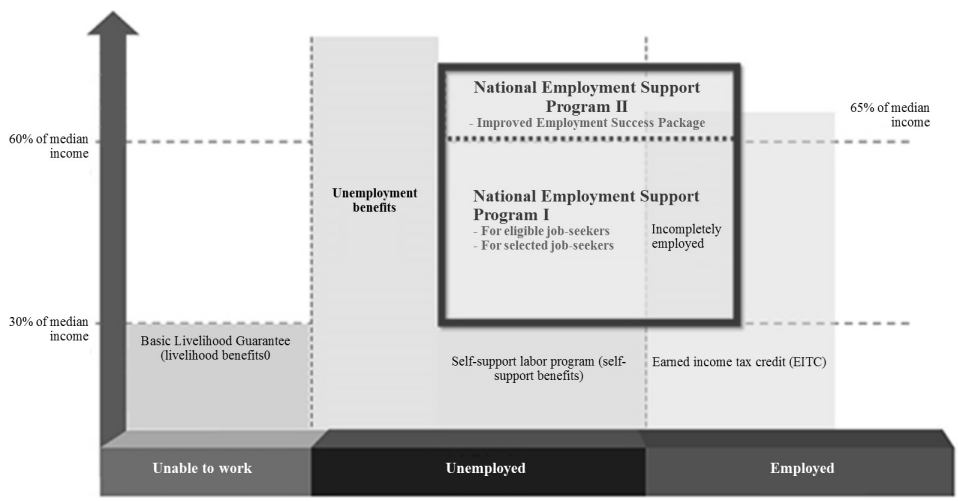
3. Expansion of Employment Service Infrastructure

3-1. Use the reform of the Employment Insurance Scheme and the adoption of Korean Unemployment Aid as an opportunity to enhance Korea's employment service infrastructure so that people receive high-quality job-seeking services and enterprises receive employment support services catering to their needs.

3-2. Enhance job seekers' online/offline access to employment services and strengthen the networks among related institutions, such as the Employment Welfare Plus Center, the New Job Center, local governments, and employment service providers in the private sector.

3-4. Minimize formal job-seeking verification so that job counselors can focus on finding jobs for job seekers and identifying employers; work toward improving the quality and effectiveness of employment services.

Figure 1_Employment Safety Net in 2022



Source: Republic of Korea Policy Briefing, "The government to launch the National Employment Support Program next July ... completing the country's employment safety net", http://www.korea.kr/news/policyNewsView.do?newsId=148861348 (accessed on: October 8, 2019).

Figure 1 shows specific ideas for building a better employment safety net. Type I benefits provide low-income job-seekers with employment support and income support (job-seeking promotion allowances), and Type II benefits focus on employment support. Type I benefits are for job seekers aged 18–64 with prior employment whose household income is below 50% of the median income and exclude job-seekers with large assets. Type II benefits are for youths (above 120% of the median income) and self-employers who closed their businesses.

Employment support is provided based on the activities and skills of job seekers. On the other hand, job seeking promotion allowances are provided to vulnerable groups in financial distress. Job seekers below 50% of the median income become eligible for benefits if they satisfy the statutory requirements (prior employment, etc.) within two years after the application date. Benefits are also provided to a selected group of job-seekers and youths without prior employment in the past two years, who are selected considering the budget and their level of vulnerability and need for support.

The government plans to integrate the relevant programs under the National Employment Support Program and increase the number of beneficiaries to 300,000 by 2020 and 600,000 by 2022. The government will propose an amendment to the National Employment Support Program to the National Assembly, with a target enforcement date of July 2020.

A Comparative International Analysis of Constitutional Directives on Budgeting*

John M. Kim**

This report is the result of a comparative international analysis that aims to shed light on current issues in the Korean legal framework for budgeting. Unlike most other countries, in Korea[1] the annual budget does not have the formal status of law. Due to this peculiarity of the Korean legal framework for budgeting, a heated debate over the merits of switching to a "budget-as-law" system has dominated both academic and policy discourse in pertinent areas during the last decade. The stakes of this debate are higher than one might imagine at first glance, for redefining the legal status of the annual budget is not a trivial exercise such as a simple restatement of an article in the organic law, but requires that the Korean constitution be amended. Therefore, the budget-as-law debate has necessarily taken place within the context of constitutional revision. Our report therefore also focuses on the constitutional aspects of the legal framework for budgeting, as opposed to issues that can be handled adequately within the organic budget law or other statutes.

In this article, we summarize the existing arguments for switching to a budget-as-law system and offer both theoretical and empirical bases for refuting each of these arguments.

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* This paper is an abridged summary of Kim and Chang (2018).

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1 To the best of the author's knowledge, only Korea, Japan, Sweden, Norway, and Switzerland do not recognize the annual budget as a law, but only as an annual government proposal that has been reviewed and approved by a resolution of the legislature.

We also highlight constitutional issues in budgeting that previous discussions have omitted but are of critical importance should Korea consider adopting a budget-as-law system. These include topics such as the line-item veto for the budget, provisional budgets, and the right to designate and amend the budget classification system.

I. Historical Analysis: Budgeting and Democracy

Comparative approaches to law mostly rely on cross-sectional analysis of different countries during the same or similar time periods, as does this report. We augment the discussion with historical and longitudinal evidence to demonstrate how budget systems have evolved to have similar features that are commonly shared across countries, and to reveal the key principles that govern the dynamics embodied in these common features. This historical narration is relevant here because we focus on constitutional factors — that is, how powers are allocated between the legislative and the executive branches, and how this allocation (or separation) of powers and the resulting checks-and-balances define the overall decision-making process for the state. Over the past decade, most arguments in the budget-as-law debate in Korea have focused on how the specifics of power distribution ought to be changed without clear criteria for judging the pros and cons of doing so. Too often the criterion that are implicitly applied relate to whether a particular proposal favors the legislature or the government. This tends to produce circular, partisan arguments that assume the conclusion: a particular proposal is endorsed solely because it favors one particular branch and not the other.

A more objective and fair perspective is clearly in order. It is in this vein that we pursue a historical inquiry into the origins of budget systems, which reveals that its fundamental principles are not different from the fundamental principles of democracy. It follows that assessments of changes proposed to the budget system should be anchored by whether the resulting budget serves the people's interests, and emphatically not by whether the budget system favors the parliament or the government.

England was the first to develop a budget system, which has evolved over some five centuries since the Magna Carta in the early 13th century. Universal adoption of a budget system by other European countries came much later, only in the 19th century, with the United States adopting a budget system even more belatedly in the early 20th century. We focus on the Magna Carta because, like other rights included in the historic document, the fundamental

significance and purpose of the tax (scutage) clause was to restrict the power of the monarch. To this day, the essence of a budget system continues to lie in separating powers effectively so that no single entity has unilateral control. Optimally, a budget system reflects the ideal that decisions should be made fairly and in the people's best interests when a monarch and the parliament are able to keep each other in check and maintain a balance of powers. From this perspective, the significance and principles of modern budgeting are not merely similar, but are in fact identical to, those that anchor democracy. As one of the most significant powers entrusted to the state, budgeting itself is an integral, and arguably one of the most crucial, elements of democracy. Therefore, while the organic law for budgeting tends to focus on efficiency and other similar, practical purposes, in a constitutional context the discourse surrounding the legal framework for budgeting should ultimately refer to the principles of democracy to assess the merits of different alternatives. This is the tenet proposed by and continually observed within this report.

Kim and Chang (2018) explain how the Magna Carta introduced a limit on the monarch's power to levy taxes under the principle of "no taxation without representation." This initial foothold led subsequently to stronger interventions by parliament, and explicitly came to include restrictions on the Crown's expenditures. In other words, this was the formation of a nascent budget system. These restrictions were legislated with the development of the institution of parliament over the next five or six centuries, until a more modern budget system had firmly taken shape in Great Britain by the early 18th century.

Although the Magna Carta mandated that the monarch must obtain the consent of parliament regarding taxation, thus restricting the monarch's rights regarding *revenues*, parliament gained and gradually strengthened its right to intervene as well in the Crown's *expenditures*. This occurred because most taxes at the time were special taxes designated to be spent on specific short-term purposes. Under the feudal system, the monarch was also the leading feudal lord with the largest fief and the greatest wealth, which generated revenues that usually sufficed for the routine expenditures of the Crown. Therefore, when a monarch requested the consent of parliament on taxation, the additional taxes were mostly designated for war or for other emergencies that required special funding beyond what the monarch's own income could meet.[2] Thus the newly-gained parliamentary power to intervene in taxation through the right of approval also gave parliament the right to question the monarch's reasons for requesting the new tax. That is, parliament now found itself in a position to able to question

2 Willoughby et al. (1917, p. 29) provides this explanation based on Maitland (1908, p. 182).

whether the monarch's intended expenditures out of the tax revenues were justifiable. In some cases, parliament even obtained the monarch's pledge, orally and later in writing, that revenues from the new tax would be used solely for the intended purpose.[3] This level of control, however, did not develop into a budget system that would be recognizable to the modern reader insofar as it lacked formal and procedural structure and clearly articulated principles.

In fact, it was about four centuries after the Magna Carta that something resembling a modern budget system began to take distinct shape. The change was propelled by two developments during the reigns of Charles I and his son, Charles II, respectively. The two developments formalized and institutionalized budgetary procedures and principles in England by stipulating parliamentary control over the budget and establishing practices that were permanent in the sense that they were recognized and observed continually thereafter. In both cases, the parliament was able to leverage its advantageous position against a monarch pressed for funds to finance his wars to introduce new precedents.[4] Immediately upon taking the throne in 1625, Charles I had dismissed parliament for refusing his request to fund his war plan. Barely a year later in 1626, he had to reconvene parliament to request financial support for the ongoing war with Spain. Fully aware of a rare advantage, parliament adopted a precedent-setting resolution. In exchange for granting the king's request, parliament resolved that it would pass an (annual) appropriation bill on the last day of its session, which would officially and finally approve all authorizations and appropriations, including any that had been previously passed during the year. In other words, the resolution granted parliament itself the right to approve the king's expenditures, which, by definition, is a statement of parliament's power to approve the budget. The resolution also specified the meaning and timing of appropriation (annuality), thus forming the world's first explicitly formulated and stipulated

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3 Based on Maitland (1908, p. 184), Willoughby et al. (1917, p. 29) cites taxes levied for the war with Scotland in 1348 and 1353 as the first taxes to be introduced under such an agreement between a monarch and the parliament.

4 These developments occurred in the 17th century. In fact, in British history, the king's power peaked in the late 16th century, during the reign of Henry VIII. However, after Henry VIII created the Anglican Church following his falling out with the Catholic Church, followers of the old religion and of the new religion constantly clashed with each other for money and power. These conflicts weakened the king's control over the kingdom. In particular, after Queen Elizabeth, the last Tudor monarch, kings and nobles mostly supported the Catholics, while some nobles and commoners supported the new religion. When the latter took control of the parliament, it deepened the conflict between the Crown and parliament. As discussed above, religion served as a core factor in the development of democracy. For obvious reasons, the current report does not discuss this aspect any further.

budget system (Stourm, 1917, p. 11).

The purpose behind the resolution of 1626 was to increase the share of spending in total expenditures financed by the Crown's own revenue as much as possible. By deferring approval of the use of public funds until the last day of the legislative session, the parliament thereby forced the Crown to spend as much of its own money for as long as possible.[5] With this resolution, the parliament sought to minimize expenditures financed by taxes levied on the people. In the United Kingdom, appropriation bills are still submitted and passed after the beginning of each fiscal year,[6] pursuant to the 1626 parliamentary resolution.

The next development in the budget system occurred after the Restoration, during the reign of Charles II. In 1665, the king requested that the parliament approve the use of taxes to fund his war with the Netherlands. In exchange for its consent, parliament demanded that the king put his agreement in writing as a provision in the new tax law that its revenue may not be used for any purpose other than that originally specified by the king. In the following years, this restriction of purpose became an essential principle (specificity) of budgeting that is firmly binding (Willoughby et al., 1917, p. 29; Maitland, 1908, p. 433). These restrictions on the king's budgetary power were irrevocably consolidated into the kingdom's budget system during the Glorious Revolution in 1688, as parliament solidified its hegemony.[7]

In 1688, as a result of the increase in its powers, parliament came to gain more control over the Crown's expenditures. Most importantly, parliament imposed limits on routine expenditures even if they were paid for out of the Crown's own income.[8] Restrictions on the expenditures of the Crown continued to grow until the late 18th century. In exchange for the Crown relinquishing non-tax sources of revenue, the parliament granted it rights to special taxes, such

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5 The ban on the proposal of expenditure-incurring bills by parliament members, which took effect in 1706, was also aimed at reinforcing the purpose of the 1626 resolution. Specifically, the ban was designed to prevent parliament members from requesting expenditures not demanded by the royal palace, thereby maximizing the use of the royal treasury and reducing the need for public funds collected from taxes.

6 In the United Kingdom, the due date for budget proposals is flexible. On average, the budget is proposed four months after the beginning of the fiscal year, with only three days allowed for reviewing the proposed budget.

7 As a result of the Glorious Revolution, the English parliament adopted laws that reaffirmed its absolute legislative power. These laws represent a declaration of parliamentary sovereignty, which the United Kingdom maintains to this day. Although usually expressed in written code dispersed through various statutes, parliamentary sovereignty and other features of the UK's constitution remain uncodified as a separate written document.

8 The list of these expenditures is called the Civil List, and it includes wages for positions requiring independence, wages of royal servants, and routine expenses at the palace. It does not include wages for public servants.

as a liquor tax.[9] In other words, in exchange for the king's relinquishing of revenue from properties and authorities inherited from previous monarchs, the parliament granted the monarch control of certain taxes (which, practically speaking, the parliament still managed). However, because these taxes were not inheritable, parliament had stronger control over the revenues and expenditures of newly crowned monarchs. The parliament also separated the royal palace's expenses from those of the state with the creation of separate funds, thereby establishing the foundation for controlling royal expenditures by allowing the parliament to set limits on usage of royal funds (Maitland, pp. 434~435).

In 1706, the parliament adopted a resolution that embodied one of the most crucial rules for budgeting and enacted it as a Standing Order of the House of Commons in 1713.[10] The Standing Order banned parliament members from proposing any bill that stood to incur expenditures from the national treasury without the consent of the royal palace. This ban prohibited parliament members from proposing any bills involving the formulation, submission, or even revision of the budget and represented a restriction far more powerful than the requirement of governmental consent to budget increases by the legislature under Article 57 of the Korean Constitution, in that the former also prohibited the proposal of expense-incurring bills other than appropriation bills. As will be discussed in further detail in the section about the parliament's power to amend the budget, this provision in the Standing Orders was the first prohibition on budget increases by the parliament,[11] a key principle of

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9 Originally, a king was allowed to appropriate such specific-purpose taxes during his reign. However, to reinforce the parliament's control over the royal palace, the parliament required a king to have these taxes reapproved on a regular basis or, in most cases, annually. In the process, annuality became an essential budgetary principle.

10 According to the Standing Orders of the House of Commons (2016) and the House of Commons Minutes of Proceedings (Volume 15, 1803, p. 211), the resolution was adopted on December 11, 1706. In 1702, Queen Anne had succeeded to the throne following William III and Mary II, whom the parliament had recognized as monarchs after the Glorious Revolution. This meant significant weakening of the royal power. The resolution was included in the Standing Orders (SO) in 1713, after Queen Anne's death in 1707 (House of Commons Minutes of Proceedings, Volume 17, p. 417), and revised four times. The key terms and purpose of the resolution still apply today, save for some clarifying expressions. After the House of Commons assigned numbers to the standing orders in 1884, the resolution came to be widely known as SO66. It was later redesignated as SO48 during a reorganization of the Standing Orders of the House of Commons.

11 As is the case in the United Kingdom, France and Germany constitutionally prohibit parliament members from proposing any expenditure-incurring bills without the government's consent. The United States has similar provisions in the Rules of the House of Representatives and the Senate. However, the American provisions have less influence on actual proceedings. Most constitutional laws across the world similarly restrict budget increases by legislative bodies, albeit at differing levels. For greater detail, see the section

budgeting that is often stipulated in the constitutions or laws of many countries around the world.

In 1787, the parliament took actions that completed the British budget system for all practical purposes. The development of the budget system by the British parliament can be understood as a process of separation between the royal treasury and public sources of revenue. It was not until the 18th century that the separation was completed in the form of the Consolidated Fund. As originally conceived, and to this day, all national revenues and expenditures go through the Consolidated Fund.[12] In addition, expenditures are divided into Consolidated Fund Services and Supply Services. Even though both should be included in the Appropriations Acts (budgets) approved at the end of parliamentary sessions, the former includes expenditures directly paid for by the Consolidated Fund without a separate review by the parliament, as is done for mandatory expenditures in the United States. However, the Consolidated Fund Services mostly consist of interest costs and the wages of judicial officials, which distinguishes the Consolidated Fund from mandatory expenditures in the United States or rigid expenses in Korea. In particular, the Consolidated Fund does not include the wages of public servants.[13] Consistent with a structure more familiar to Koreans, the Supply Services consist of discretionary expenditures.

In summary, England grew and maintained stipulated restrictions on royal power for centuries following the Magna Carta in the early 13th century. By the 17th century, the restrictions had gradually evolved to create a more or less modern budget system with features that served as a model for budget systems worldwide. Here, rather than focusing on the specifics, we would like to highlight the principle that guided the development of the budget system—namely, the principle of separation of powers. The budget system that developed over centuries in Britain spread to other European countries in the 18th century, as the concept of separation of powers as proposed by Hobbes (1982) and later by Locke (2016) greatly influenced the political landscape in Europe.[14] Lastly, even though Britain was the first

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regarding the parliamentary power of budget revision.

12 See Willoughby et al., 1917, pp. 34~35 and Maitland, 1908, p. 440.

13 See Willoughby et al., 1917, pp. 40~46 and Maitland, 1908, p. 444.

14 As previously discussed, Locke's separation of powers referred to separation between legislative and administrative (monarchical) powers, which informs the nature of the British political system to date. The British judiciary branch had been subsidiary to the executive branch. However, the judiciary has gained greater independence as exemplified by the establishment of the Supreme Court of the United Kingdom in 2009. Countries other than the United Kingdom and the Commonwealth countries, including Korea, mostly follow Montesquieu's separation of three powers.

country to develop key features of a budget system, the country stopped short of developing a formal system with precisely defined features, with development of the budget system peaking in the early 19th century. Thereafter, refinement of the budget system and the theoretical and conceptual development of rationales for the system were carried out by France in the 19th century.

The United States and France built their systems of government at almost the same time during the late 18th century, following revolutions in both countries. These developments took place before the concepts and features of what we now understand to be budgeting became established and widely understood a century later in the late 1800s. The United States and France were the first countries to incorporate Montesquieu's (1914) separation of three powers in their constitutions. Without any precedent to rely on, the United States created a system of separation of powers that is stricter than that of any other country. The US constitution of the late 18th century, however, was unable to accommodate the principles and concepts of budgeting, which required another century to evolve and be adopted by governments in Europe during the late 19th century. Therefore, many commentators (including those from the United States) have pointed out that the American budget system is unique and may not be an ideal model for others to emulate. On the other hand, France improved its constitution and budget system through processes of trial and error as the country alternated between monarchy and republicanism. Our search for implications for the Korean budget system naturally leads us to the historical experiences of these two countries. Accordingly, we need to be mindful of the differences in historic contexts between the two countries. The United States is widely seen as a primary example of democracy and the presidential system. France is also an important example of the development of democracy. As a country that adopted the civil law system and finalized the modern budget system, France must be credited with having developed the budget principles and policies employed by numerous countries worldwide.

In the latter part of their historical review, Kim and Chang (2019) analyzed the Prussian Constitution of 1850 and Japan's Meiji Constitution of 1889 because Korea's first constitution is known to have referenced these documents heavily during its conception. Indeed, a frequently advanced criticism of the Korean constitution is that it inherently and implicitly abets an imperial presidency because it is not free of heavy influence from the Prussian and Meiji constitutions, which were designed to support the rules of absolute monarchs. Indeed, the Prussian Constitution and the Meiji Constitution recognize the monarch's sovereignty and the somewhat ambiguous separation of powers resulting therefrom. The notorious Constitutional

Conflict in the early 1860s in Prussia can be attributed to constitutional ambiguity on the right of legislation, budget laws in particular, which were defined by the Prussian constitution to belong to both the monarch and the legislature without any clear separation of powers. On the other hand, the Korean Constitution clearly declares the sovereignty of the people and defines an unambiguous separation of powers. Therefore, the distribution of power in Korea is distinctly different from the distribution of power in Prussia or Meiji Japan, with no conflict or incongruity between the seat of sovereignty and the separation of powers. In other words, it is our conclusion that the experiences of Prussia and Meiji Japan do not provide immediate implications for the Korean Constitution.

II. Review of Rationales for the Adoption of an Annual Budget Law

Discussions over the last decade regarding the Korean constitution's provisions on budgeting encompass a wide variety of issues related to the budget-as-law debate, which makes a systemic, orderly review more difficult. For this reason, in this report, we separate issues directly impacting the decision whether or not the budget is to be accorded the status of law from other issues that are subsidiary in the sense that they can be influenced by the primary, budget-as-law decision but ought not to influence the outcome of that primary question. Specifically, we propose that the weakening or removal of the government's power to consent to budget increases and the transfer of budget formulation power to the National Assembly are not relevant to the question of whether the budget should be considered a law. Therefore, these issues are separately analyzed in another chapter. Our review of the rationales put forth so far for the budget-as-law position can be summarized as follows.

First, some scholars maintain that recognizing the budget as a law protects the rights of the people by opening the possibility for them to file constitutional appeals against a budget law. However, we argue that any benefit accruing to private citizens will remain only symbolic without real gain. Even were the budget to become law in Korea, it is not clear that private citizens would be entitled to file lawsuits regarding the annual budget law since it applies to state bodies rather than private individuals. Besides, the proper target for a constitutional appeal would be the legislation authorizing a particular kind of spending, which is separate and different from the budget law, which is the decision to actually allocate a specific amount of funds to a purpose recognized by the authorizing legislation. Moreover, even should a suit be filed against the budget law, three years are usually required for the court to render final and

conclusive judgment. This renders it practically impossible to seek corrective action for budget laws that are each effective for only one year.

Second, some proponents of the budget-as-law position have argued that it has the benefit of eliminating the possibility of conflicts between appropriation and legislation. However, we must point out that this hypothesis is based on a misguided understanding of the differences between appropriation and legislation. The typical argument is that while legislation authorizes the use of public resources for certain purposes, the annual budget law often conflicts with (and is therefore a problem with) authorizing legislation because it does not appropriate suitable amounts of spending to achieve that purpose. This argument, however, stands in clear violation of basic legal doctrines and the experiences of other countries. Indeed, the systems of virtually all countries agree that appropriation and legislation ought to be kept separate and should not be mixed within the same act of law, since they are related but fundamentally different in the nature of the decisions involved. For instance, allowing permanent legislation to be inserted in the annual appropriation act, whether to enact new laws or revise existing ones, can severely undermine the integrity of the entire legal system itself. Given the importance of this issue, we return to it in the next section for a more detailed review.

Third, some argue that setting forth the budget in a law will reinforce the binding power of the budget. While this argument has some merit, it should be noted that the binding force of a budget does not differ significantly whether or not the budget is set forth in a law. Even though the budget is not currently a law in Korea, once approved by the National Assembly, the budget carries the same binding force against the government as a law. The government is not allowed to make expenditures which are not included in the budget or which exceed allocated amounts. Note also that, even if Korea adopts an annual budget law, the government is not obligated to expend the full amounts in the budget as determined by the parliament.

Fourth, the adoption of an annual budget law is sometimes proposed as a remedy against the allegedly excessive concentration of fiscal power in the executive branch. Specifically, this line of argument advocates the right to formulate or propose that the budget be transferred to the National Assembly or that the government's constitutional right to object to budget increases (even for individual items) proposed by the legislature be relaxed or altogether eliminated. However, these arguments concern themselves with varying the limits of the legislature's authority to amend the proposed budget, and therefore logically have no bearing on the issue of whether the budget should be recognized as a law. Therefore, they will be taken up again in a later section.

Fifth, others support the annual budget law by arguing that, because Korea has a presidential system, its budget system should be aligned with the budget system of the United States, a country widely recognized as the model case for the presidential system. However, as explained above, the unique budget system of the United States may not conform to the best democratic principles, if for no other reason than the fact that the US constitution preceded the emergence of budgeting principles and systems by well over a century. In addition, through comparative analysis, in this report we show that the American system has features that are unique to the country, and therefore these features should be understood as strictly American, irrelevant and unrelated to the fact that the country has a presidential system. Therefore, the characteristics of the American system should be assessed on their own merits, independently of type of political system. Further research is required for conclusive assessment, but given the problems with the American system discussed herein, it is highly doubtful whether it is wise for Korea to adopt the American system.

III. Separation between Legislation (Authorization) and Appropriation

Chapter IV of Kim and Chang (2018) provides a detailed review of the issue of separation vs. mixing of legislation and appropriation, as briefly explained above. In principle, laws authorizing the use of public funds are abstract and permanent in nature, their main purpose being to recognize that certain government functions, organizations, programs, or projects merit use of public funds. In contrast, appropriation laws are specific and temporary laws that provide for the spending of specific amounts of government funds for specific organizations, policies, or programs for a specific period (one year). The two types of laws are fundamentally different in terms of their nature and purpose. Therefore, in principle, appropriation and authorization should not be mixed by including them in a single act of law. In addition, if legislation can be included in an appropriation act in order to bypass this principle, as frequently occurs in the United States, appropriation bills (which remain effective only for one year) can be misused to enact legislation that is permanent in nature. The existence of this type of loophole stands to seriously undermine the foundation of our legal system. For this reason, the Constitutions or organic budget laws of France, Germany, and many other countries strictly prohibit mixing appropriation and legislation. The United Kingdom enforces the same principle in the Standing Orders of the House of Lords.

Article 85 (3) of the Weimar Constitution, enacted in 1919, stipulates that expenditures

should be voted on for one year, and that the national budget law should not contain provisions unrelated to the revenues and expenditures of the state.[15] Article 110 (4) of the Basic Law of Germany[16] includes the same prohibition.

In addition to the annual Budget Act, every year Germany enacts the Budget Companion Act (Haushaltsbegleitgesetz), the purpose of which is to maintain the separation of appropriation and legislation, as stipulated in Article 110 (3) of the Basic Law. The Budget Companion Act contains amendments to other acts regarding fiscal issues in the relevant fiscal year. In other words, amendments to tax laws and social security systems that may affect the budget (tax rates, eligibility requirements, fee rates, and others) are grouped into a separate act apart from the Budget Act.

In addition, the Budget Act may contain only such provisions as related to federal revenues and expenditures, and to the period for which these provisions are enacted (Article 110 (4), Basic Law).[17] Unlike the Budget Act, which is effective for one year, the Budget Companion Act is regular legislation that remains effective indefinitely until further amendment. In sum, Germany's Budget Act concerns only the allocation of government funds, and does not include any legislative (authorization) provisions on matters that are indefinitely effective.

Article 16 (2) of the French Constitution of 1946 stipulates that an appropriation law may include only provisions that are strictly financial. Currently, Article 34 II of the Budget Organization Act (LOLF) lists provisions on expenditures that may be included in annual appropriation laws. Item 7 on the list, a change of authorization, may be included in an appropriation law only if it impacts the expenditures of the relevant year. As is the case in Germany, France prohibits indefinitely changing authorization matters through appropriation law.

Thus Germany and France, two leading civil law countries, prohibit using appropriation laws to indefinitely amend the provisions of regular laws. This prohibition is clearly provided for in their constitutions or in organic budget laws, which bind legislation and appropriation laws in strict separation.

Reflecting the prominence of unwritten customs and traditions found in the British

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15 As for the other paragraphs of Article 85, Paragraph (1) stipulates that all revenues and expenditures should be included in the budget. Paragraphs (2) and (3) stipulate the annuality of the budget, Paragraph (4) defines the power of the Reichsrat to consent to item increases, and Paragraph (5) grants presidential power to demand discontinuation of deliberation in accordance with Article 74.

16 See Basic Law of Germany (1949).

17 Article 110 of the Basic Law is similar to Article 85 of the Weimar Constitution.

Common Law, there exists no specific statute regarding the separation of appropriation and legislation in the United Kingdom. Nevertheless, this separation is a long-standing, unwritten custom in the United Kingdom and other Commonwealth countries (Schick, 1984, p. CRS-9[18]). For example, in 1702, the House of Lords adopted a resolution stating that "the annexing of any clause or clauses to a Bill of Aid or Supply, the matter of which is foreign to and different from the matter of the said Bill of Aid or Supply, is unparliamentary and tends to the destruction of constitutional Government" (Luce, 1935, p. 422). The resolution survives today as Clause 52 of the Standing Orders of the House of Lords.[19]

During the first 200 years after independence, the United States Congress was aware of the difference between appropriation and legislation, and honored the distinction between the two.[20] These unwritten customs were stipulated in Rule XXI of the Rules of the House of Representatives in 1837 and in Rule XVI of the Rules of the Senate in 1850.[21] More specifically, Rule XXI, Clause 2, of the Rules of the House of Representatives stipulates that a provision changing existing law may not be reported in an appropriation bill or an amendment to an appropriation bill. Clause 4 of the same Rule prohibits a committee without jurisdiction to report appropriations in a bill or amendment proposing an appropriation. Rule XVI, Clause 2, of the Rules of the Senate prohibits the Committee on Appropriations from reporting an appropriation bill containing amendments to a bill proposing new or general legislation. Clause 4 of the same Rule stipulates that no amendment offered by any other Senator, which proposes general legislation, may be received in any general appropriation bill.[22]

So far, we have reviewed the distinction between appropriation and legislation in both civil law and common law countries including Germany and France, and the United Kingdom and the United States, respectively. The review confirms that appropriation laws are not allowed

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18 A report by the United States Congressional Research Service mentions that the separation of appropriation and legislation has been a long-standing principle under the British legal system (see Saturno and Yeh, 2016).

19 UK House of Lords, 2009.

20 Schick (1984).

21 Schick (1984, pp. 16~18). Saturno and Yeh (2016) also review relevant provisions in the Rules of the House of Representatives and the Rules of the Senate. For a more detailed explanation of separation between legislation and appropriation in the American budget process, see Fisher (1979). Fisher is a leading expert on the actual workings of the American budget process.

22 Clause 4 is the most effective clause in Rule XVI. The provision was added in 1877 (Schick, 1984, p. CRS-18). The amendment mentioned in Rule XVI of the Rules of the Senate refers to a bill reviewed by the House of Representatives and proposed to the Senate.

to contain legislative (authorization) provisions. In civil law countries, this separation is accorded such great significance that it is stipulated in national constitutions or in organic budget laws that carry constitutional authority. On the other hand, in Common Law countries, the separation is so fundamental that it existed tacitly in the form of unwritten customs, even before being written into parliamentary rules or SOs.

If Korea decides to adopt an annual budget law, then the budget will gain the status of law. This will open up the possibility of using appropriation laws to enact or amend authorizing provisions. Such a change, according to the British House of Lords, may be "unparliamentary and tend to the destruction of constitutional Government."[23] Therefore, if Korea decides to adopt appropriation laws following the examples of civil law countries such as France and Germany, Korea should clearly stipulate the separation between legislation and appropriation in its Constitution (unlike the way the issue is handled in the United States).[24]

IV. Parliamentary Powers of Amendment

As is widely known, some proponents favoring the adoption of an annual budget law have argued that Korea should augment the authority of the National Assembly to amend and, specifically to increase, the budget. In particular, some argue that the provision on the government's right to consent to budget increases (Article 57 of the Constitution) should be minimized or removed altogether. In response, we attempt to prevent unnecessary confusion

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23 As previously mentioned, such a change makes it possible to use annual appropriation laws to enact or amend permanent legislations. In addition, allowing appropriation laws to contain legislative matters causes issues of transparency. Drafting budget laws in full sentences makes it difficult to detect provisions amending legislations that get "sneaked" into the law, thereby undermining the people's right to know by obscuring key information in the law.

24 As previously explained, Germany and France specifically mention the separation between appropriation laws and legislation in their Constitutions and budget organization laws. In contrast, historically, the Congress of the United States tried to ensure such separation by working it into the rules of the House of Representatives and the Senate. However, in practice, the separation rule is rarely honored in the United States. In the United Kingdom, the country's legislative tradition and the Standing Orders of the House of Lords provide for the separation of appropriation laws and legislation. Although not set forth in the Constitution, the Standing Orders carry effects comparable to that of the Constitution due to the strict internal regulation of the ruling party. The experiences of the United States, however, show us that it is extremely difficult for decision makers to regulate themselves. It seems that Korea needs to stipulate the separation between appropriation and legislation in the Constitution, rather than leaving the matter to internal regulation by the National Assembly.

in future discussions of the fiscal constitution by clearly pointing out that the parliament's power to amend the budget is a completely separate issue from the issue of the annual budget as law. Then, we move on to a review of the theoretical justification of the government's ex ante and ex post constraints against the parliament's authority to adjust or increase the budget, by comparing the experiences and laws of different countries. We focus on countries with a presidential system of government, because the legislatures in parliamentary systems already have implicit constraints that limit their ability to adjust the budget against the executive's will. Through this analysis, we find that most countries have ex ante constraints that are similar to the Korean government's power to consent to budget increases, albeit differing in terms of strength. As for ex post constraints, one of the most common forms of constraint is the president's power to veto appropriation bills. Some countries, such as the United States, only allow for full vetos of appropriation acts. Most countries with a presidential system of government, however, allow for line-item veto power. In Korea, the president cannot veto a budget in the first place, as the budget is not set forth in a law. However, if the country adopts annual budget laws, then Korea will need to decide what form the government's ex post constraints — including veto power — should take.

Given the fact that line-item veto power has the same effect as ex ante consent to item increases, we argue that, rather than separately considering the two types of constraints, it would be more reasonable and meaningful to consider the combined total effect of all ex post and ex ante constraints to determine their actual effectiveness in limiting budget amendments by the legislature. A comparison of laws and experiences in different countries indicates that this approach is reasonable. A review of the experiences of presidential countries shows that in countries with stronger ex ante constraints, where budget increases by the parliament are constitutionally prohibited, the government only has full veto power. Full veto power is not as effective as line-item veto power, since the former exposes the president to much greater political pressure than when he/she can selectively object to problematic items in the final budget. On the other hand, in countries with weaker ex ante constraints, the parliament is allowed to adjust or increase specific items or launch new projects within a total budget cap. In this case, ex post constraints almost invariably take the form of line-item vetoes, a process which is more effective for screening parliamentary increases that the government finds problematic. In other words, our comparison shows that countries seek to achieve balance between the parliament and the government by choosing a combination of ex post and ex ante constraints that effectively and meaningfully restrain, to the required extent, the parliament's power to amend the budget. Other than a few countries, including the United States, most

governments have the power to object to and restrain item increases proposed by the legislature. In Korea, although some commentators beg to differ, it follows that the government's power to consent to parliamentary budgetary amendment under Article 57 of the Constitution is an essential "check" for the executive against the National Assembly.[25]

Restraints of parliamentary amendment of government-proposed budget drafts by the government can be grouped into types, as shown in Table 1.

Table 1_Parliamentary Powers to Amend the Budget

Power	No. of countries
• Unlimited restrictions	32
• Reductions to existing items only	17
• May reduce expenditures, but can make increases only with permission of the government	4
• Increases must be balanced by commensurate cuts elsewhere	13
• Rights not specified	15
Total no. of countries	**81**

Source: Wehner (2004), p.10, Table 2. Wehner cites IPU (1986), 38A as the source.

In the table above, the countries in shaded boxes are those in which the government has the same or stronger constraints against the parliament's power to amend the budget than in Korea. Twenty-one of the 81 countries fall into this category, which may indicate that Korea has strong constraints against parliament in terms of making amendments to the budget. In addition, as mentioned earlier, many previous studies compared the parliament's power to amend budgets across different countries by taking similar approaches as Wehner (2004). The World Bank (WBI, 2008, p. 56) cites Wehner (2004). As shown in Table 2, a recent report commissioned by the National Assembly Budget Office (Ju, 2017) similarly classifies the parliament's right to amend the budget based on a survey on budgeting from the Organisation for Economic Co-operation and Development (OECD).

25 Currently the budget as finally approved by the National Assembly is not subject to presidential veto since it is not an act of law in Korea. The constitutional guarantee that gives the government the right to object or consent to increases by the legislature is the only means to prevent unilateral propose-and-decide outcomes from the legislature.

Table 2_Parliamentary Powers to Amend the Budget

Classification	Frequency	Countries
Unlimited power to amend the budget	17	Austria, Belgium, Denmark, Finland, Germany, Hungary, Iceland, Japan, Luxemburg, Mexico, New Zealand, Norway, Portugal, Slovakia, Sweden, Swiss, United States
Can amend budget within a total surplus/ deficit cap proposed by the executive branch	7	Czech Republic, Israel, Italy, Netherlands, Poland, Slovenia, Spain
Can only decrease existing expenditures/ revenue items; no power to increase or create items	2	Chile, United Kingdom
No power to amend budget; can only approve or reject budget as a whole	2	Greece, Ireland
Other powers of amendment	6	Australia, Canada, Estonia, France, Korea, Turkey

Source: Ju (2017), p. 73, Table 33.

Comparative analyses regarding parliamentary powers of amendment in previous studies provide a starting point for discussions by presenting a global overview (not to mention the effort required to investigate the systems of numerous countries). However, for the purpose of understanding the essence of a parliament's powers of amendment, existing approaches are crucially limited in two ways. In this report, we identify the two limitations and attempt to improve on previous analyses.

First, previous studies concern themselves only with constraints on parliamentary amendments in the course of parliamentary review and adoption of budget drafts. In other words, these studies deal only with ex ante constraints on parliamentary amendments. However, in most countries, particularly in those with presidential system, the executive branch has ex post means of constraint against parliamentary amendments—that is, veto power. Accordingly, it would be more reasonable to determine a parliament's ability to effect its budgetary amendments based on reviews of the ex post as well as ex ante constraints exercised by the executive branch. It is not reasonable to exclude ex post restraints when executive branches do in fact exercise them.

Wehner (2006) is aware of the fact that, in a presidential government, ex post line-item vetoes may work as constraints against the parliament's powers of amendment. However, he does not consider line-item vetoes in his analysis for a number of reasons, covered therein in a single paragraph. One is that, according to Shugart and Haggart (2001), Argentina and the Philippines are the only countries among 23 countries with presidential governments to grant line-item veto power to the executive branch. In this analysis, however, we report a starkly different overview of veto powers in countries with presidential governments, which renders

our findings quite different from the results reported by Wehner (2006). Specifically, we argue that ex post constraints are meaningful in countries where the government can veto parliamentary resolutions.

Whether a government can effectively restrain a parliament's powers of amendment should be assessed based on a full consideration of both ex post and ex ante constraints. It is also necessary to compare the constraints exercised by the government and the parliament's powers of amendment, and to determine whether balance is achieved between the parliament and the government. When thus analyzed, most presidential governments (other than that of the United States)[26] seem to exercise appropriate constraints against parliamentary amendments to budgets.

Among Latin American countries, five grant only full veto powers to the government. Except for Guatemala, these countries have strong ex ante constraints in place such as limitations on item increases and restrictions on new programs. Of the remaining four countries, the Columbian and Peruvian parliaments need the government's consent to increase budget items or to launch new programs. On the other hand, in Uruguay and Peru, parliament is not allowed to amend the budget in the first place.

Most governments with line-item veto powers exert weaker ex ante constraints against parliamentary amendment. In most of these countries, the parliament can adjust the budget as long as the adjustment remains balance-neutral — that is, any change does not increase the total budgetary amount. In the Philippines, where the Constitution is similar to that of the United States, the government can strike certain provisions in draft budgets, unlike in legislation. The Constitution of the Philippines also prohibits the parliament from increasing appropriations recommended by the president [Constitution, Article XI, Section 25 (1)].[27]

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26 In the United States, the government does not have any means to restrain budget amendments by the Congress. The Congress controls its own process in accordance with its own rules. However, lawmakers often utilize loopholes between the Rules of the House of Representatives and the Rules of the Senate to increase budget items (for greater detail, see the discussion on the American budget system in Kim and Jang (2018), Chapter V, Section 3). In other words, while each branch of Congress exerts partial control over the process, when taken together, the controls are not effective.

27 Another noteworthy fact is that paragraph 2 of the same section prohibits provision or enactment from being included in a general appropriations bill unless it relates specifically to some particular appropriation therein.

Table 3_Ex Ante and Ex Post Veto Powers in Latin American Countries

Country	President's veto power			Item increases or creation by parliament (constitutions, organization laws, and other laws)
	Full veto	Line item veto	Notes	
Argentina	○	○		Can increase or create items, but required to maintain balance-neutrality (reduce other items, identify new funding); cannot create new programs
Bolivia	○	○	Can veto legislative bills and appropriation bills; seems to be able to exercise line-item veto power, although this is somewhat unclear	No restrictions
Brazil	○	○		Allows increase or new items, but required to maintain balance-neutrality (reduce other items, identify new funding)
Chile (OECD)	○	○		No
Columbia	○			No (item increases or new items require government consent)
Costa Rica	Cannot veto appropriation bills			No
Ecuador	○	○	Can partially veto legislative and appropriation bills	No
Guatemala	○			No restrictions
Mexico (OECD)	○	○		Can increase or create new items, but required to maintain balance-neutrality (reduce other items, identify new funding); cannot increase or create new items in legislative bills unless a new source of funding is specified in the law
Nicaragua	○	○	Can partially veto legislative and appropriation bills	"Can amend"; 2005 Constitution stipulates fiscal balance requirement and sources of funding. For line-item vetoes, the president can propose alternative provisions
Panama	○			No (item increases or new items require government consent)
Paraguay	○	○	Can partially veto legislative and appropriation bills	Can increase or create items, but required to maintain balance-neutrality (reduce other items, identify new funding)
Peru	○			Parliament members cannot increase or create new items in legislative bills (no possibility of government consent); parliament members can propose items for parliamentary budget
Uruguay	○			No (no government consent requirement)
Venezuela	Cannot veto legislative or appropriation bills (can only challenge their constitutionality at the level of the Supreme Court)			Can make adjustments within the revenue cap

Source: Kim and Chang (2018) (compiled by author from constitutions of countries included in the table. Where the constitution does not provide relevant information, refer to Blondal et al., Blondal & Curristine, Curristine & Bas, Curristine et al., Santixo, and Vammalle and Rivadeneira.). Countries in the shaded boxes are OECD members.

We first focus on Latin American countries, most of which have presidential governments. In Table 4, we compare the full gamut of the governments' ex post and ex ante constraints to see if they are balanced with the parliaments' powers of amendment. The following table lists the constraints exercised by each government.

Table 4_Ex Ante and Ex Post Restraints in Latin American Countries

Country	Ex post constraint		Ex ante constraint
	President's veto power		Item increases or creation by parliament (constitutions, organization laws, and other laws)
	Full veto	Line-item veto	
Argentina	○	○	Possible if balance-neutral; cannot create new programs
Bolivia	○	○	No restrictions
Brazil	○	○	Possible if balance-neutral
Chile (OECD)	○	○	No
Columbia	○		No (item increases or creation require government consent)
Costa Rica	No veto power		No
Ecuador	○	○	No
Guatemala	○		No restrictions
Mexico (OECD)	○	○	Possible if balance-neutral
Nicaragua	○	○	Possible if balance-neutral
Panama	○		No (item increases or creation require government consent)
Paraguay	○	○	Possible if balance-neutral
Peru	○		No
Uruguay	○		No
Venezuela	No veto power (can only challenge their constitutionality at the level of the Supreme Court)		Can make adjustments within the revenue cap

Source: Kim and Chang (2018), originally as stylized simplifications by author from the preceding table. The shaded boxes represent countries in which the government does not have any constraints against parliamentary powers of amendment, or where the constraints are not effective.

Table 4 is a simplified version of Table 3. The shaded boxes represent countries in which the government does not have any ex post or ex ante constraints against parliamentary powers of amendment, or where the constraints are not effective. Most Latin American countries have line-item veto power stipulated in their constitutions. Line-item veto power is an ex post constraint, but has the same effect as ex ante prohibitions of budget increases or the

government's power to consent to budget increases. Therefore, countries in which the government has line-item veto power may allow budget increases or the creation of new programs within a total budget cap, which is a weaker restriction than restrictions of item increases or the creation of new programs. In other words, when we consider ex post and ex ante constraints together, ex ante prohibition of budget increases (or the government's power to consent to budget increases) has almost the same effect as line-item veto power, which is an ex post constraint. Even if a government has both powers, it does not necessarily mean that governmental effectiveness increases. In fact, most Latin American governments exercise powerful ex post constraints in the form of line-item veto power. Regardless, most of the countries have weaker forms of constraint against budget increases, such as budget adjustment within a total budget cap.

In contrast, a few countries only recognize full veto power. In such cases, in order to achieve balance between the government and the parliament, the parliament should not be allowed to increase specific items or the total budgetary amount. Alternatively, the government should have ex ante constraints against item increases or the creation of new programs. The latter approach is taken by Columbia and Panama. Peru and Uruguay prohibit budget increases by the parliament altogether in order to strike a balance with the government's ex post full veto power.

The other three countries show highly unique combinations. First, the government of Costa Rica does not have veto power against the budget, while the parliament is prohibited from increasing the budget altogether. While this approach achieves a certain level of balance between the powers of both the government and the parliament to amend the budget, the inflexibility of the approach prevents budget adjustments that may be necessary.

On the other hand, the Venezuelan parliament may adjust the budget within a revenue cap. However, the government does not have veto power, which makes it difficult to challenge any wrongful exercise by the parliament of its powers of amendment. It is not clear whether balance is achieved between the government and the parliament. However, the government may challenge a bill at the level of the Supreme Court for violating a principle or priority specified in the Constitution of the Bolivarian Republic of Venezuela. This option provides at least a minimum constraint against any unreasonable budget adjustment on the part of parliament.

Finally, in Guatemala, the government has only full veto power, which has no practical meaning. In contrast, the parliament may adjust the budget without restriction. This disparity represents a lack of checks and balances with regard to the power of budgetary adjustment. Neither the Constitution of Guatemala nor budget organization laws provide the government

with any means of constraint against the parliament's power of unilateral decision making.[28]

In sum, when considering ex ante and ex post constraints separately, Table 4 suggests that approximately half of the Latin American countries with presidential governments may have weak constraints against parliamentary powers of budgetary amendment. However, both ex ante and ex post constraints are weak only in two countries (Guatemala and Venezuela). In other words, ex post and ex ante constraints complement each other, and a government only has to be effective in one of them to appropriately mitigate the budgetary powers of the parliament. The right strategy is to enhance the total effectiveness of both ex post and ex ante constraints by combining the two in different ways. The effectiveness of either constraint has limited significance in and of itself.

Table 5 shows constraints in countries with presidential governments outside of Latin America. In the United States, the Congress exercises powerful authority when it comes to the budget. It may be surmised that the country does not have any institutional means by which the government is able to constrain Congress from making budgetary adjustments. On the other hand, in Korea, France, and the Philippines, the government can veto specific parts of the parliament's demand for budget increases. In addition, the Constitution of France has powerful provisions, which the government may use to modulate the budgetary decisions of parliament.[29] The Constitution of the Philippines is quite similar to the Constitution of the United States. In the area of governmental budget, however, the Constitution prohibits the parliament from increasing specific items and grants line-item veto power to the government. The Constitutions of Indonesia and East Timor clearly state that legislation and budget amendments require agreement between the government and the parliament. This suggests an obscure separation of powers, despite the fact that the countries have presidential governments. This obscurity stems from Indonesia and East Timor having based their constitutions on an outdated constitution of the Netherlands, a country with a constitutional

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28 As is the case in France, Guatemala has its budget system stipulated in budget organization laws. Neither the Constitution nor the laws provide for constraint against parliamentary budget adjustment.

29 The Fifth Republic Constitution of France enhanced the powers of the executive branch and restricted the National Assembly's powers of amendment. Article 40 restricts the National Assembly's powers of amendment, and the effectiveness of the Article is supported by two other provisions. Article 46 allows the government to demand that the National Assembly discontinue discussion of a bill and put it to vote immediately, with the government selecting the bill to be voted on (le vote bloqué). According to Article 49 (3), the Prime Minister may make the passing of an appropriations bill an issue of a vote of confidence before the National Assembly. In that event, the bill is considered passed unless the National Assembly adopts a resolution of no-confidence, thereby tabling the bill within the subsequent 24 hours.

monarchy. In these countries, the government and the parliament enjoy parity in terms of veto powers against one another. While the government's power to constrain parliamentary budget adjustment is limited, the parliament does not hold a monopoly over budgetary powers, as in the United States.

Table 5_Ex Ante and Ex Post Restraints in Other Countries with Presidential Governments

Country	Ex post constraint		Ex ante constraint
	President's veto power		Item increases or creation by parliament (constitutions, organization laws, and other laws)
	Full veto	Line-item veto	
United States	○		No restrictions
France (before 2005)	○	○	No
France (after 2005)	○	○	Can adjust within a mission-specific cap (mission is equivalent to area/section in Korea)
Korea	Not applicable (no annual budget law)		No (item increases or creation require government consent)
Philippines	○	○	No
Indonesia	Requires agreement between the government and the parliament (de facto mutual veto powers)		No restrictions
East Timor	Requires agreement between the government and the parliament (de facto mutual veto powers)		No restrictions

Source: Present study.

The above discussion suggests that it is not meaningful to compare ex ante prohibition (or consent) and ex post veto power in the context of parliamentary budget increases. Separating the two types of constraints may lead us to miss the real issue, which is how countries combine the two types of constraints, and whether the combination strikes an effective balance with parliamentary powers of budgetary amendment. In other words, the important issue is whether a government has the power to challenge any unreasonable budgetary adjustment on the part of parliament. Specifically, it is crucial that a government has institutional power to challenge any (unreasonable) budgetary amendment by parliament on a selective basis—that is, item by item.[30] A country lacking such institutional scaffolding cannot satisfy the

30 In cases where a government can only veto an entire bill amended by the parliament, the government is effectively kept from exercising veto power for fear of political backlash. For all practical purposes, this

requirements for third party justice and separation of powers. This allows the parliament to make unilateral decisions and possibly abuse the powers conferred upon it by the sovereign people.

Governments may challenge adjustments to budgets either before or after parliaments adopt their resolutions. We usually refer to ex ante constraints as "prohibition of" or "the government's power to consent to" budget increases, and we refer to ex post constraint as "veto power." This difference in terminology may create the impression that the two types of government powers are different from each other. In fact, these constraints are similar — practically the same — in terms of their effects. The government can challenge parliamentary budgetary amendments and maintain a balanced and democratic separation of powers as long as the government has either ex ante prohibition/consent or ex post line-item veto power. Because Korea does not set forth its budget in the form of laws, the government does not have the power to veto the budget in the first place. Accordingly, we believe all would agree that the government's power to consent to budget increases under Article 57 of the Constitution is the minimum requirement to maintain a democratic separation of powers in Korea.

Granted, at least some budget amendments or increases proposed by the National Assembly do in fact help the people and are objectively reasonable. In such cases, if the National Assembly disagrees with the government, then the opinion of the former should supersede the opinion of the government because the National Assembly protects the people's will in a representative government. However, when the budget is not set forth in a law, formal restrictions exist around the National Assembly's ability to increase, create, or modify budgetary items. On the other hand, when the budget is set forth in a law, a country can minimize unreasonable budget increases and ensure reasonable budget amendments on the part of parliament by granting the government line-item veto power. Under this arrangement, parliament is subsequently allowed to review the veto. Therefore, it is a flexible and reasonable distribution of fiscal powers to adopt annual budget laws, to reasonably expand the National Assembly's powers of amendment, and to grant line-item veto power to the government. This may be considered new, important grounds for adopting an annual budget law.

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prevents the government from challenging parliamentary budgetary adjustments even when the adjustments are unreasonable. Therefore, line-item veto power or the power to consent to budget increases are required for governments to challenge unreasonable budgetary amendments by the parliament.

V. Other Powers

Chapter VI of Kim and Chang (2018) discusses other fiscal powers, including budget formulation power, provisional budgets, and the power to establish a budget classification system. In the context of Korea, it has been continuously argued that budget formulation power should be transferred to the National Assembly. Such a transfer, however, is not supported by any theory, historical precedence, or law in other countries. We seriously doubt that this issue requires any further discussion. To lend credibility to this perspective, those who support the transfer should provide clearly defined justifications and grounds. In particular, contrary to the belief of some commentators on the situation in Korea, budget formulation in the United States is carried out by the executive administration. Even though Congress formally proposes appropriation bills due to the strict separation of powers in the country, the bills themselves are drafted by the administration. Budgetary processes at the Congressional level involve only the amendment of bills. On the other hand, as emphasized herein, the American budget system is unique in that the Congress can make budgetary amendments without any meaningful restrictions. It is a matter of controversy whether such a process is democratic and benefits the people in terms of the separation of powers and checks and balances among government branches.

Finally, Chapter VI discusses provisional budgets and budget classification systems. Commonwealth countries allow provisional budgets, while most other countries have provisions for quasi-budgets. These budgets allow the government to temporarily spend money in cases where a formal budget is not adopted before the beginning of a new fiscal year due to disagreements between the parliament and the government. While the issue is not complicated, it should be noted that in countries without provisional budgets (such as the United States), the political burden is greater on the government than on the parliament. This means provisional budgets may affect the balance of power between the parliament and the government. The Korean quasi-budget system is similar to systems in many other countries, and does not seem to require any specific line of reform.

Budget classification systems hold significance outside the area of government accounting. The boundaries between the fiscal powers of the parliament and the government, such as the binding power of appropriation laws and governments' discretionary powers in budget execution, are discussed on the basis of a budget classification system. Therefore, the system affects the binding force of parliamentary decisions and the scope of government discretion. The budget classification system of Korea has not posed any particular problems since it was reformed in the mid-2000s. Nevertheless, in this report, we point out that the power to

establish or change the budget classification system may surface as a crucial issue regarding the parliament-government relationship, as experienced by some other countries, including France.

VI. Implications

This report exposes weaknesses in the rationales for the adoption of an annual budget law in Korea, which has dominated academic and policy discourse in budgeting over the last ten years. We believe that this weakness stems from challenges in understanding and assessing the complicated web of mutually connected elements of budgetary systems, as well as a lack of established criteria for making neutral and objective judgments on each issue. Through comprehensive historical review, this report confirms that discussions on the future direction of the budget system should focus on whether the system benefits the sovereign people. The budgeting developed commensurate with the development of democracy as parliaments used their resolutions to restrict the expenditures of the monarch in order to constrain the monarch's power. By the late 19th century, modern budgeting practices had spread all across Europe. In other words, it is important to find a balance that most greatly benefits the people by distributing powers between the parliament and the government to ensure checks and balances between them. This is a fundamental principle of democracy, and we have shown that fiscal democracy arises by adhering to this principle. A comparison of laws across numerous countries shows that the distribution of power conforms to this structure in most developed countries worldwide. Discussions about budgeting should focus on finding the right combinations of laws and constraints to maintain checks and balances between parliaments and governments, rather than on technical aspects of budgetary systems.

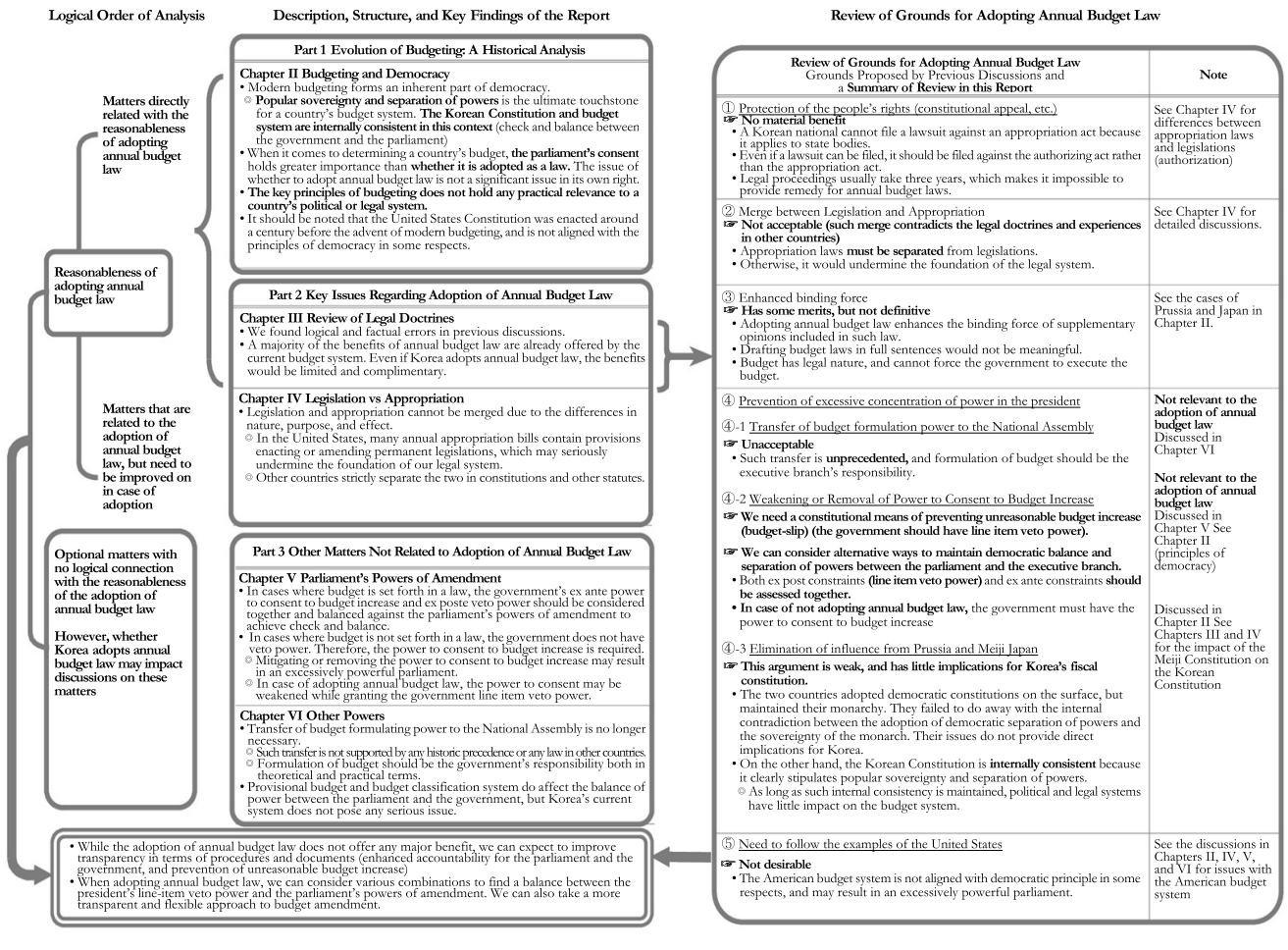
More specifically, with regard to parliamentary powers of amendment, we argue that it is important to discuss how ex ante constraints and ex post constraints should be combined in order to ensure meaningful and effective restriction of parliamentary powers of amendment. As the budget is not set forth as a law in Korea, there are no ex post constraints against the actions of the National Assembly. Accordingly, the government's power to provide consent under Article 57 of the Constitution is an essential means of preventing unreasonable budget increases on the part of parliament. Looking forward, however, if Korea adopts an annual budget law, it must be possible to point out that at least some of the budget amendments by the National Assembly are reasonable. Thus a reasonable and flexible approach would be to grant the president line-item veto power to prevent questionable or unjustifiable budget

increases, while protecting the consideration of reasonable demands for amendment from the National Assembly.

We also believe that the benefits of adopting an annual budget law lie in transparency, as all discussions and decision-making processes would have to be documented and published for public consumption. To align our budget system with the principles of democracy, the Korean government and the National Assembly should clearly document and publish the details of deliberations, the justifications and grounds for proposed amendments, and the decision-making procedures and processes involved therein. Such transparency is one of the important benefits — arguably the very grounds for — adopting appropriation laws.[31]

31 Refer to Figure 1 for a schematic summary of the themes and implications of this report.

Figure 1_Research Structure and Summary of Key Findings



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