

Yellow Envelope Act: A Causal-Comparative Analysis on the Effects of Subcontracting Regulatory Policies

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ABSTRACT

To investigate the potential effects of the Yellow Envelope Act on the job security of young construction workers in South Korea, a causal-comparative analysis of unemployment-risk trends surrounding the implementation of similar subcontracting regulations was conducted using OECD Data Explorer data. The analysis found that most subcontracting regulations were associated with a decline in unemployment-risk trends. Combined with the findings of Guers et al. (2014), these results suggest a previously unexplored outcome of subcontracting regulation. They indicate that the Yellow Envelope Act may improve job security for young construction workers in South Korea, filling a gap in the literature regarding its effects on labor-intensive sectors beyond manufacturing and automobiles. The study also contributes to growing evidence, consistent with Yang and Parodi (2025), that the Act may reduce inequitable treatment of workers within subcontracting systems. Finally, it identifies directions for future research.

INTRODUCTION

According to the Ministry of Data and Statistics' Korean Statistical Information Service, in October and November 2025, 35,000 young adults with a four-year university degree or higher were unemployed for more than six months despite actively seeking work, marking the highest since September 2024 (Korea JoongAng Daily, 2025). Such an increase in unemployment rate underscores the growing challenge of sustaining jobs among younger generations, particularly in labor-intensive sectors like construction (Kgwale et al., 2010). Although youth unemployment has remained a challenge in many developing economies (Tleppayev & Zeinolla, 2025), what brings this more into concern is the phenomenon of 'scarring', where prolonged periods of unemployment early in a career make it harder to secure employment later in life, reducing productivity (Margaux, 2024). Meanwhile, in South Korea, concerns are rising about the significant disparity between large companies and SMEs, with inequitable subcontracting transaction practices prevalent in the market (Kim, 2024). According to data released by the Small Business Administration, 43.2 percent of medium and small-sized companies were involved in subcontract transactions (Woo & Cho, 2016). These statistics indicate issues of labor rights and inequitable practices that degrade original working conditions in the labor-focused industries of South Korea. However, the Yellow Envelope Act, a recent amendment to the Union Act, might address these situations.

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Yellow Envelope Act

“The origin of the Yellow Envelope dates back to 2014, when labor union members facing crippling damage suits appealed to the public for support. Citizens donated small sums, often tucked into yellow envelopes, to cover legal costs. The symbolism endured, and “Yellow Envelope” became shorthand for reforms intended to shield workers from punitive liability” (South Korea Passes..., 2025). This amendment of the Union Act:

- Expands the definition of who counts as an “employer.”
- Broadens lawful industrial action
- Limits damages claims against unions and members

“Legal reforms like the Yellow Envelope Act are more than regulatory changes; they create opportunities to strengthen accountability and give workers a stronger voice” (Parodi, 2025). Given the decreasing job employment of young workers in South Korea, exploring the effects of the Yellow Envelope Act through a unique combination of parameters – the construction sector, the youth labor proportion, and job security – could lead to significant benefits to the young people in South Korea. The Yellow Envelope Act was enforced in March 2026, so there are not enough data for direct examinations of the policy effect (*“Yellow Envelope Act” Passes National...*, 2025). Therefore, the predictions made by this study may meaningfully address concerns about the effect of the amendment on the country’s economy.

Subcontracting Regulation

One purpose of the Act is to reduce inequitable practices in subcontracting systems. “The subcontracting system is usually described as the contractual process in which a main contractor subcontracts parts of the job to another contractor, who may also subcontract to another firm” (Tam et al., 2010).

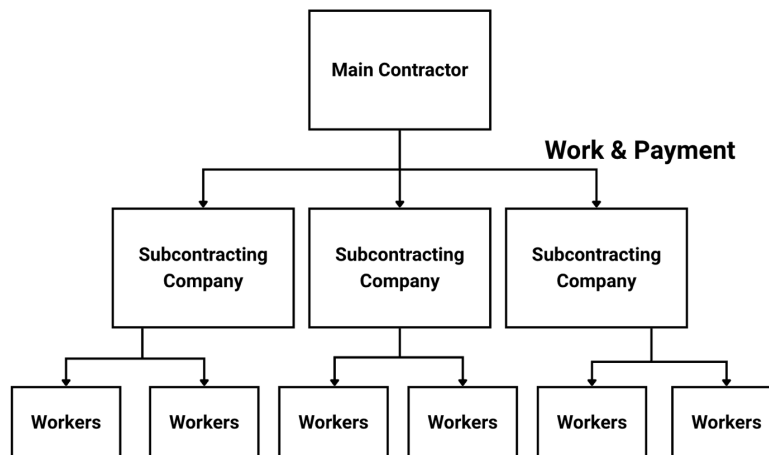


Figure 1: Structure Diagram of Subcontracting System

However, it has been reported that the “subcontracted workers face low wages, unstable employment, and inadequate safety protections, contributing to the concentration of industrial accidents and rights violations among them” (Korean Alliance..., n.d.). Therefore, the Yellow Envelope Act expands the concept of employer, and makes firms above the system collectively accountable for worker treatment.

Key Terms

- Yellow Envelope Act: An amendment to the Trade Union and the Labor Relations Adjustment Act (TULRAA / 노동조합 및 노동관계조정법 개정안) by Korea’s National Assembly in August 2025 (*Korea’s Pro-Union...*, 2025)
- $U_{C,20s}$: Index of sector-age-specific risk for young (around 20s) construction workers of country X in a given year to be unemployed + Indicator of job security
- Least Squares Method: A statistical method that creates regression lines, which minimizes regression to predict a response variable (*The Method of Least Squares...*, n.d.).
- Causal-Comparative Approach: A research design that involves the use of pre-existing or derived groups to explore differences between or among those groups on dependent variables (Schenker et al., 2004).
- T-test for difference in regression slopes: A statistical test that is used to compare the difference in the slopes of two regression lines (Andrade & Estévez-Pérez, 2014).

Literature Review

Surrounding the effect of the Yellow Envelope Act, significant portions of the Koreans disagree on whether it will benefit the economy. A survey of 1,000 respondents found that 42% believed the Yellow Envelope Act would negatively impact the economy, 31% believed it would be positive, and the rest were neutral (Gallup, 2025).

Because the Yellow Envelope Act was enacted very recently, research on its effects has not been conducted; yet, some articles predicted its positive outcomes. *The Korean Herald* predicts that this adjustment will allow subcontracting workers to demand negotiations with employers and increase the number of strikes by labor unions in opposition to management decisions that were previously not subject to legitimate strikes (Jeong-Yoon, 2025; *Key Implications of the...*, n.d.). Such changes may mitigate the inequitable treatment of workers of small and mid-sized firms in Korea, who have faced low pay, weak representation, and little legal protection (Jeong-Yoon, 2025).

Conversely, research on the impact of pro-labor policies that create joint liability of employees raises concerns about the potential effect of the Act. An analysis of the European Union’s legal frameworks reveals that limiting subcontracting chains with blunt measures for identifying inequitable practices unexpectedly disadvantaged small and medium-sized enterprises (Sinander, 2025). Meanwhile, it also

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conflicted with the freedom of contract, which safeguards subcontracting practices (Sinander, 2025). In Korea, there exists a similar transaction protecting subcontracting practices for economic development (Korean Legislation Research Institute, 2020), so conflicts may occur when new boundaries of illegal subcontracting practices disagree with existing laws. Therefore, a unanimous agreement over the degree of the prohibition on inequitable subcontracting behaviors is needed (Yang, 2025).

While Jeong-Yoon 2025 expects increased job security from strengthened legal force of labor unions, Sinander's 2025 article concerns the potential side effects and conflicting policies. As the Act may reduce subcontracting inequity, which improves workers' well-being and potentially increases job security. This study intends to examine whether the Yellow Envelope Act may increase job security for young workers through multiple indicators.

Construction Sector

An examination of the Korean construction industry in 2019 reveals that the subcontracting nature of construction companies enables them to circumvent existing laws and regulations, resulting in degraded job quality and employment violations (Yi & Chun, 2019). As the Act originates from the manufacturing sector, current interest is focused on the potential effect of the Yellow Envelope Act on the manufacturing industry. However, the construction sector is also a labor-intensive sector that has inequitable subcontracting practices (Kgwale et al., 2010). Consequently, a study on the policy's impact on construction industries may contribute to fair subcontracting practices by filling in the gap of the Act's effect on other labor-intensive industries.

Unemployment Rate of Young Adults

Youth unemployment rate is associated with numerous factors, including rural-to-urban migration, quick population growth, and inadequate school curricula (Sharma et al., 2025). According to a March 2025 survey, the number of employed youth aged 15–29 decreased by 206,000, while the youth unemployment rate rose to 7.5%, higher than the national average of 3.1% (Jung & Kim, 2025). This trend shows the challenges of sustaining jobs among youth. "Most of the losses came from manufacturing, wholesale, and retail sectors, where many young Koreans work. ... More young people are stepping away from the labor market altogether" (Jung & Kim, 2025). To investigate whether the Yellow Envelope Act could address this trend, this study focused on the young labor population.

Job Security

Among the current trends in the study of the subcontracting regulations, the most used indicator is the unemployment rate, as it is the primary outcome linking regulation changes to market outcomes (Liotti, 2021). While these studies reveal the direct effects of the policy on the economy, it does not delve into

working conditions, job satisfaction, and long-term outcomes. According to Artz and Kaya's 2014 article, job security reflects how policies affect workers' sense of stability and is strongly associated with well-being, job satisfaction, and engagement—dimensions missed by unemployment rates. Therefore, this study used job security, calculated from economic data, to capture the broader effect and worker well-being.

Research Gap

As noted, there remains limited exploration of how the Yellow Envelope Act influences young workers, a demographic significantly impacted by employment volatility, and the construction sector, with labor-intensive characteristics and reliance on subcontracting (Jung & Kim, 2025; Kgwale et al., 2010). This study on the effect of the Act addresses the gap in potential impacts on the unstudied worker groups by using the indicator of job security, assessing the deeper aspects of the demographic. These parameters—policy reform, labor market structure, youth unemployment, and job insecurity—allow a quantitative analysis to study the Act's impact on young construction workers, leading to a research question:

“What are the possible effects of the Yellow Envelope Act on the job security of young laborers in South Korea's construction sector between 2026 and 2030?”

APA Format and Deductive Reasoning

For most of the related academic articles used the APA citation format, this study adopted the same citation style (Tleppayev & Zeinolla, 2025; Woo & Cho, 2016; Schenker et al., 2004; Andrade & Estévez-Pérez, 2014). This study hypothesizes that the Yellow Envelope Act will positively influence South Korea's workers. For analysis, tests were performed on a collection of data. Thus, this study uses a deductive research approach, where general cases are used to understand a specific case.

Ethical Concerns

This study involved minimal risk as it was using the collection of data from open-access organizational websites, which do not involve any human participants, animal subjects, hazardous materials, or microorganisms (Latkovikj & Popovska, 2020). There was no conflict of interest or circumstances in which the research regards a primary interest, and the researcher has no political affiliation (Romain, 2015). For the research was approved by the Institutional Review Board IRB00014457, potential ethical issues have been addressed.

METHOD

Online Research

Online research enables faster data collection, larger and geographically diverse samples, and gathers a great amount of representative data (Latkovikj & Popovska, 2020). This study required many samples of economic data from distant countries. Access to numerous government websites enabled the gathering of the key components used to calculate the job security indices, which are used to evaluate 28 foreign policies on the job security of the population.

Job Security Index, $U_{C,20s}$

An Organisation for Economic Co-operation and Development report provides three formulas to calculate the national unemployment risk of a country in a given year by using the unemployment inflow and outflow of that country (Hijzen & Menyhért, 2016). These formulas were employed to define $U_{C,20s}$ – the job security of workers of the studied countries.

Alignment with Research Question

The $U_{C,20s}$ operationally defines job security for young construction workers, measuring unemployment risk within this group in a given year. The online research method is well-suited to the goal of predicting the effects of the Act on Korea's young construction workers, for it enables the collection of data from distant countries and allows the comparison of multiple policy outcomes (Latkovikj & Popovska, 2020). According to Andrade's 2020 article, the greater the sample size, the more reliable the statistical outcomes. Therefore, a large sample size increased confidence in this study's inferences of the potential impact of the Act on South Korea's labor market.

Materials

The materials in this study include official statistical websites from the government and international organizations:

- Job Security formula (Hijzen & Menyhért, 2016)
- OECD Data Explorer (OECD, n.d.)

These sources provided indicators for analyzing unemployment trends in the studied countries in Table 1. In addition, Microsoft Excel was used for performing the t-test on the collected $U_{C,20s}$ trends.

#	Country	Policy Implemented/Reforms made	Year Implemented
1	Netherlands	<i>Terms of Employment Posted Workers in the European Union Act (WagwEU)</i>	2016
2	Poland	<i>Act on the Posting of Workers in the Framework of Provision of Services</i>	2016
3	France	Transposition of Enforcement Directive for posted workers	2016
4	Germany	National transposition of Enforcement Directive	2014
5	Austria	National law implementing Article 12 of Directive 2014/67	2016
6	Spain	Legislation limiting subcontracting tiers (max 4 in construction) + liability rules for posted workers	2016
7	Hungary	Liability rules in Labour Code (transposing Enforcement Directive)	2014
8	Croatia	Liability under national implementation of Directive 2014/67	2016
9	Slovakia	National liability legislation per Enforcement Directive	2016
10	Luxembourg	Subcontracting liability + due diligence criteria	2016
11	Sweden	Subcontracting liability under national interpretation of Directive 2014/67	2016
12	Greece	National rules for subcontracting liability	2016
13	Belgium	Liability + limits on subcontracting levels	2016
14	Türkiye	Labor Law No. 4857	2003
15	Bulgaria	Joint liability in subcontracting chains (Labour Code, Art. 357 para.4)	2023
16	Norway	Proposal / model for joint liability across full subcontracting chain	2009
17	Lithuania	Subsidiary liability of main contractor in construction	2021

18	Germany	Chain liability for posted workers under Enforcement Directive	2016
19	Italy	Full-chain liability for subcontracting / posted workers	2016
20	France	Subcontracting liability in the chain	2014
21	Austria	Possibility of multi-tier liability under national law transposing EU directive	2016
22	Netherlands	“Wet aanpak schijnconstructies (WAS)” – Law to Tackle Sham Contracts	2015
23	Spain	Subcontracting chain liability + limits on subcontracting levels in construction; client liability	2014
24	Hungary	National chain liability under Labour Code / transposition of Directive	2016
25	Slovakia	National chain liability when transposing Directive 2014/67	2016
26	Luxembourg	Contractor due diligence and full chain liability in posted worker context	2016
27	Czech Republic	Proposed amendment to Labour Code to introduce subcontractor wage-claim liability up the chain	2023
28	Bulgaria	Joint liability in subcontracting, per Labour Code, also covering domestic workers (not only posted)	2023

Table 1: The country and the Year that the studied subcontracting regulations are implemented

$U_{C,20s}$ Formula

During data collection, the variables below were collected from OECD Data Explorer:

- e_t : Employed population at the year t
- u_t : Unemployed population at the year t
- u_{t+1} : Unemployed population at the year $(t+1)$
- $u_{t+1}^{<1}$: Newly unemployed workers during the year t
- $P_{t,C}$: Composition of the construction sector out of the total labour population at the end of the year t

- $P_{t,C,20s-30s}$: Composition of the given age group out of the construction sector at the end of the given year t

Next, four formulas were used to calculate $U_{C,20s}$. The first two formulas calculate the unemployment inflow X_t and outflow probabilities F_t , which are combined into the overall risk of unemployment, U_t , using the third formula:

$$X_t = \frac{u_{t+1}^{<1}}{e_t} \text{ and } F_t = \frac{u_{t+1} - u_{t+1}^{<1}}{u_t}$$

$$U_t = \frac{X_t}{F_t}$$

Finally, the sector-age-specific index of unemployment risk, $U_{C,20s}$, by using the last formula:

$$U_{C,20s} = U_t * P_{t,C} * P_{t,C,20s}$$

DATA ANALYSIS

Least Squares Method

To model the current trend of youth job security in South Korea, the least squares method was used to plot and analyze the sample $U_{C,20s}$ of South Korea, from ten years before to 2025, the implementation year of the Yellow Envelope Act. This creates a linear model that models regression lines to predict the response variable, $U_{C,20s}$ of South Korea, for the following 5 years (*The Method of Least Squares...*, n.d.).

Causal-Comparative Approach

Usually, plausible causal assumptions can be made when the variable of study is manipulated; but when factors such as unemployment and labor conditions cannot be manipulated because of practical and ethical constraints, a causal-comparative design is used (Brannon, 2020). By using the causal-comparative design, this study infers potential effects based on similar policies (Schenker et al., 2004).

Alignment with Research Goal

The model, consisting of $U_{C,20s}$ data points from 10 years before to the year of implementation of the Yellow Envelope Act, helped to analyze the recent trend in $U_{C,20s}$, and extrapolate the data points for the following five years after the implementation (2026-2030). The prediction based on the model provides insights into the likely $U_{C,20s}$ values of Korea if the Yellow Envelope Act were now applied, and it can be a default value of the predicted values for the null hypothesis. If the statistical tests reveal that the Yellow

Envelope Act is likely to be ineffective in changing the $U_{C,20s}$ trend, then this default model would be the answer to the research question.

Meanwhile, while the Yellow Envelope Act is a unique, unprecedented policy in South Korea's political history, similar pro-labor policies that regulate subcontracting practices and strengthen labor unions have been implemented globally. The studied countries, including countries of the European Union, are selected based on past policy implementation, in which they all once passed subcontracting regulations (Sinander, 2025). Causal-comparative research examines differences between variables without manipulating the independent variables and infers causality within the constraints of the study (Schenker et al., 2004). The primary goal of this study is to investigate the potential impact of South Korea's Yellow Envelope Act on $U_{C,20s}$ trend from 2026 to 2030. This was achieved with this research design that compares trend changes in foreign countries after the implementation of their subcontracting regulatory policies. Similar to how the Yellow Envelope Act does, all foreign policies studied in this study, such as the 2014 Directive of the European Union, have functionally established liability upon contracting firms to protect subcontracted workers. This design is well-suited to the goal of predicting the potential effects of the Yellow Envelope Act on South Korea's young construction workers, as it provides a comparison across multiple cases of policy implementation.

Procedure

First, using a graphic calculator, create two line-of-best-fit models: one based on $U_{C, 20s}$ from 5 years before to the year of policy implementation, and another based on $U_{C, 20s}$ of 5 years after the policy was implemented. Second, compare the slopes of the two models by subtracting the before-model's slope from the after-model's slope. This procedure matches the slope of the $U_{C,20s}$ line of the implemented country before the policy year to that of the same country after policy implementation. Third, calculate the mean difference in $U_{C, 20s}$ slopes, which would describe the potential outcome of the implementation of subcontracting regulation on young construction workers of Korea. If the mean difference is positive, then the Yellow Envelope Act will increase the slope of the future linear model for South Korea, and vice versa. Last, perform a two-tailed matched t-test for the difference in slopes of $U_{C,20s}$ trend lines.

Hypothesis

For this study, the null hypothesis is that the difference in $U_{C,20s}$ slopes is not statistically significant under the significance level of 0.05. The most expected result from this calculation is that the t-test supports the alternative hypothesis. If the resulting p-value from the paired t-test is greater than 5%, then the mean effect of the similar pro-labor policies is more likely to be caused by chance. If not, then the mean is statistically significant, and pro-labor policies like the Yellow Envelope Act may make the same change as the calculated mean.

RESULT

The following are the results of the paired t-test for two samples for mean slopes in one tail.

Matched t-Test for difference in Slopes			
	<i>Slope__(-5~0)</i>	<i>Slope__(0~5)</i>	<i>Slope_{Diff}</i>
Mean	0.002991434	0.00021296	-0.0027785
Variance	0.00012443	1.08148E-05	
Observations	28	28	
Pearson Correlation	0.127649468		
Hypothesized Mean Difference	0		
df	27		
t Stat	1.310410588		
One-tailed P(T<=t)	0.100547756		
t Critical	1.703288446		

Table 2: Statistical Result of Matched t-test for Difference in Slopes

Key Findings

There are four key findings of the present research. First, the slope of the $U_{C, 20s}$ line of Korea is -0.00000709049. It reveals that the $U_{C, 20s}$ of Korea is decreasing in small value annually. The $U_{C, 20s}$ represents the sector-age-specific unemployment risk, and the greater its value, the higher the chance that a young construction worker may lose their job in Korea; therefore, the negative slope indicates that the job security of young workers in Korea will improve over time, given that the Yellow Envelope Act was not implemented or has no effect.

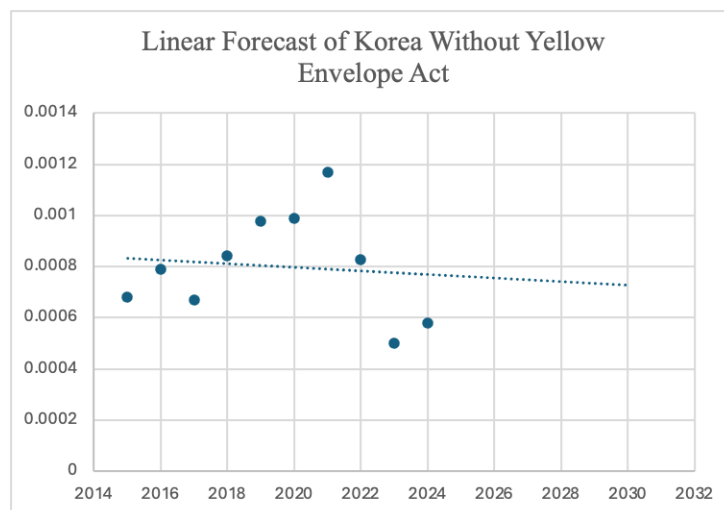


Figure 2: Linear Graph of $U_{C, 20s}$ of Korea from 2015 to 2024 and A Regression Model for Extrapolation

Second, out of the 28 available foreign policy cases, 21 showed a decrease in the slope of their $U_{C, 20s}$ lines. This shows that the policies generally reduced unemployment risks in these countries. In other words, this raises the possibility that the Yellow Envelope Act may also cause the slope of the $U_{C, 20s}$ line of Korea to decrease.

Third, the mean of $\text{Slope}_{\text{Diff}}$ is -0.0027785. This means that the slope of lines, which represents the $U_{C, 20s}$ trend, generally decreases for the following 5 years after policy implementation. Taken together, the general trend in slope decrease and the negative mean value support this hypothesis that the slope of $U_{C, 20s}$ lines will decrease for 5 years after policy implementation.

However, the last finding, from the one-tailed paired t-test, gives ambiguity to this statistic. In the first table above, the one-tailed $P(T \leq t)$ value represents the probability associated with the paired t-Test with a one-tailed distribution. If the value is less than 0.05, the significance value of the one-tailed test, then the mean of the t-Test has a low probability of having appeared by random chance. So a one-tailed $P(T \leq t)$ value of 0.100547756, far greater than 0.05, indicates that the results are statistically inconclusive and cannot fully refute the null hypothesis, which claims that there is no effect in policies of subcontracting regulation.

Link to Literature

The World Employment Confederation in Europe claims that the act of subcontracting benefits the labour market and the EU Single Market as they respond to economic and market needs, contributing to a more efficient allocation of labour in these times of labour and skills shortages (Bart, 2025). Similarly, according to an article by Francisca Pérez, allowing firms to subcontract workers increases output, employment, and productivity. Yet, this study's t-test results are inconsistent with these claims (Pérez, 2019). One interpretation of this finding is that, by regulating subcontracting practice, the reduction in

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subcontracting costs causes improvement in permanent job positions, decreasing the slope (European Labour Authority, 2025).

DISCUSSION

The results of this research provide supporting evidence that the job security trend of the young construction workers in Korea after policy implementation would improve for the following 5 years, as the unemployment risk (measured in $U_{C,20s}$) decreases. However, the results cannot confirm this hypothesis. The negative value of the mean slope difference is supporting evidence for this hypothesis, but the lack of statistical significance makes this data insufficient to become the evidence for refuting the null hypothesis. Thus, the result remains statistically inconclusive.

Nevertheless, the negative mean may indicate a possible trend that subcontracting regulation correlates with improved job security trends, and this can be applied to the Yellow Envelope Act. Since this research question simply asks for the possible impact of the Yellow Envelope Act on sector-age-specific job security in Korea; thus, the research question can be answered by stating that the policy may improve the job security of young construction workers in Korea.

The lack of statistical significance may be explained by two elements of the research process: limitations in sample size and the unavailability of certain data points. Due to the limited number of policy cases similar to the Yellow Envelope Act, this study chose 30 policies that have been proposed and implemented in recent times, so that their data can be easily accessible. But as the statistical significance of a statistical test depends on a greater sample size, these samples were not sufficient to reduce the possibility that the mean had appeared by random chance (Bangdiwala, 2016). Taken together, the findings suggest a need for further research on the potential effect of the Yellow Envelope Act.

LIMITATION

Challenges

Throughout the process, there were challenges for data collection. The initial goal was to collect statistics from governmental websites. However, due to language barriers, most data were collected from the OECD data explorer (OECD, n.d.). In this website, the employed/unemployed workers are estimated in thousands, potentially decreasing the accuracy of the study. In addition, initially, I chose 30 policies similar to the Yellow Envelope Act, but the data for the two policies that were implemented in the United Kingdom during the twentieth century were unavailable in resources like the OECD data explorer. The Trades Dispute Act was implemented in 1906, and the Trade Union and Labour Relations Act was implemented in 1992 (King's Printer of Acts of Parliament, n.d.; Participation, n.d.), and the lack of 2 data sets potentially affected the sample statistics. The next challenge that I encountered was the limited indicators available on this website. While the available indicators within the infra-annual labour statistics include construction, the age range cannot be specified as 20-30s. Therefore, I used 15 – 24, the

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alternative age range that could most represent young labor, though this may hinder the representativeness of the collected data for workers of the initially intended age range. These were the key indicators I used to search for the variables of each category.

1. L_t : Total Labour force of the country at time t (in thousands)

Measure: | Unit of measure: |
 Adjustment: | Sex: | Age: |
 Frequency of observation: | Time period:

2. r_t : Unemployment rate of the labour force in the country at time t (in %)

Measure: | Unit of measure: |
 Adjustment: | Sex: | Age: |
 Frequency of observation: | Time period:

3. $L_{t,c}$: Total number of employed workers in the construction sector of the country at time t (in thousands)

Measure: | Unit of measure: |
 Adjustment: | Sex: | Age: |
 Economic activity: | Frequency of observation:

4. $P_{t,15-24}$: Percentage of working population aged around 20s in the country at time t (in %)

Measure: |
 Unit of measure: |
 Adjustment: | Sex: | Age:

The third challenge in the data collection procedure was the lack of data points for policies implemented too recently. For policies like the Labour Code, Art. 357 para.4 of Bulgaria, were implemented in 2023 (Sredkova, n.d.). Since data points that range until 2028 are unavailable, the data points of the latest years, 2024 and 2025, were divided into quarterly data to have more data points. On the OECD website, the time intervals of the period are changed into quarterly intervals as shown in Figure 3.

Measure: | Unit of measure: |
 Adjustment: | Sex: | Age: |
 Frequency of observation: | Time period:

Figure 3: The Indicators used for the collection of Quarterly $U_{C, 20s}$ of Bulgaria

Country	Policy	Year (Actual value used for correlation)	$U_{C,20s}$
Bulgaria	Labour Code, Art. 357 para.4	2018	0.00072471
		2019	0.00097306
		2020	0.00093744
		2021	0.00171707
		2022	0.00140624
		2023	-0.0002192
		2024-Q1 (2023.25)	-0.0004959
		2024-Q2 (2023.5)	9.2729E-05
		2024-Q3 (2023.75)	0.00028252
		2024-Q4 (2024)	8.5851E-05

Table 3: Collected $U_{C, 20s}$ of Bulgaria and Their Corresponding Year/Quarter

However, such a limitation of this study can be addressed in the future; for example, after 2028, several policies implemented in 2023 may provide complete annual data spanning 2018 to 2028.

The fourth challenge was that certain calculation processes had resulted in division by 0. In response, some variables used in the calculation were rounded (e.g., 1,280.353 1280).

Finally, some variables were not accessible through OECD. As a substitute, data points were obtained from other statistical websites like the World Bank or the economic report regarding the corresponding country (World Bank Group, n.d.-a; World Bank Group, n.d.-b; World Bank Group, n.d.-c; Erol & Unal, 2015). For instance, all variables for Türkiye from 1998 to 2005 were unavailable from OECD Data Explorer. Therefore, the total unemployment values were taken directly from the World Bank Group (World Bank Group, n.d.-b; World Bank Group, n.d.-c).

Also, when the variables of the working population in the construction sector and the percentage of young working population are unavailable, alternative variables like the construction sector growth and age dependency ratio on young workers are used to estimate the construction worker population and employment rate of young workers.

European Union Article 12 of Directive 2014/67

Another potential limitation of this study is the potential influence of political-cultural differences. Among the studied case policies, 20 of them were proposed, implemented, or enacted around 2014 as the national transposition of the European Union's Article 12 of Directive 2014/67, which was a directive enforced by the European Union that regulates subcontracting practice by stating joint liability of the subcontracting chain (*Enforcement Directive...*, n.d.). Also, while some of them were supposed to be implemented in 2016, the enactment of the national transposition of the directive was delayed to 2017 (Document Summary..., n.d.). Since most of the sample policies are from Europe, Europe's political, economic, and cultural environment may have influenced the results.

Limitations of the Causal-comparative Approach

The last point to consider is the source of the data points and how they are interpreted. Although the results compared changes in job security trends, the model was based on the correlation of data points. Since a least-square regression line shows correlation, not causation, even if the results were statistically significant, the method cannot state that the policy *will* cause something, but only whether it *may* cause (Willett, 2023). The present study represents a first attempt to examine the potential impact of a government regulation, such as the Yellow Envelope Act, on the job security of young workers. Further research examining the same policy's impact on the job security of workers in other sectors may shed light on a clearer understanding of the policy's effect.

IMPLICATION

Despite these limitations, these results suggest several theoretical and practical implementations. These results have the potential to contribute to the field of political studies by examining the impact of regulating subcontracting practices on national economies and unemployment worldwide. Combining with Guers et al.'s 2014 article, this study explored a new possible outcome of policies regulating subcontracting practice. It also supports Abbott's most recent study on the effectiveness of the Yellow Envelope Act, which suggests that the regulation on subcontracting practices may enhance firm performance by reducing production costs and transaction costs (Abbott, 2025). Moreover, it may support Anthony's argument that policies on subcontracting give rise to a new form of relationship among the government, companies, and workers (Anthony, 2019). Overall, this study provides a scope for the potential outcomes of the subcontracting-regulation policy, and gives a sense of how regulated subcontracting improves the working environment. In situations where legislative bodies are deciding similar kinds of regulations on subcontracting practice, it may inform them with meaningful data that forecasts future employment trends after policy implementation, potentially allowing them to create responsive moves to the following change in the economy.

FUTURE DIRECTION

In terms of future research, it would be useful to extend the current findings by examining a greater sample size, such as 50 policies, that are implemented in regions other than the European Union, to ensure both statistical significance and generalizability of the results. Since the data for the $U_{C,20s}$ calculation was collected during February of 2026, performing the same method in 2030 can collect more complete data, and comparing the actual $U_{C,20s}$ of Korea to this study's result is highly recommended. By evaluating the actual $U_{C,20s}$ line of Korea for 5 years after the Yellow Envelope Act, the validity of the original method of this study may be tested. In addition, I suggest further research focused on workers in labor-heavy sectors other than construction, such as the manufacturing sector, to further evaluate the impacts of regulating subcontracting on the national unemployment status (Kgwale et al., 2010). Thus, much work remains to be done before a full understanding of the extent of the impact of the Yellow Envelope Act on the labor economy of Korea.

CONCLUSION

The purpose of this study was to gain a better understanding of the Yellow Envelope Act. To explore the question of “what are the possible effects of the Yellow Envelope Act on the job security trend of young construction workers in South Korea?”, a causal-comparative analysis on foreign unemployment risk trend changes around the implementation period of similar subcontracting-regulating policies, which are calculated with online data from OECD Data Explorer. It was used to determine that most subcontracting-regulating policies correlated with a decrease in the slope of the unemployment risk trend. Despite lack of statistical significance and potential influence of third variables, such as the political and economic culture of the European Union, these results have important implications for future legislative bodies as, combined with Guers et al.'s 2014 study, it explores a new possible outcome of explored a new possible outcome of policies regulating subcontracting practice. This new understanding that the Yellow Envelope Act may improve the job security of young construction workers of South Korea fills a gap in the pre-existing literature in the field, between the unstudied effect of the Yellow Envelope Act on labor-heavy sectors other than manufacturing and automobile, and on the job security trend of young laborers in Korea. The present research, therefore, contributes to a growing body of supporting evidence that, as suggested by Yong Heun Yang and Margherita Parodi in their 2025 articles, the Yellow Envelope Act may mitigate the practice of inequitable treatment of workers downstream of the subcontracting system, who have faced low pay, weak representation, and little legal protection. This new understanding also contributes to the current field of study by providing future direction for research in a different labor-intensive sector other than construction, comparison of foreign subcontracting regulatory policies implemented outside of Europe, and repetition of this study's method with a more complete data set available in the future.

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<https://doi.org/10.1177/0020715219889383>

APPENDIX A: Full Policy List

Policy Number	Country	Year when the policy is proposed/implemented/enacted	Citation	slope_ _(-5 ~ 0)	slope_ _(0 ~ 5)	slope_Diff (Δb)
1	Netherlands	2016 (Rasnača et al., 2020)	Rasnača, Z., Bernaciak, M., & Even, Z. (2020). Posting of workers before national courts: Posting of workers before Dutch courts. https://www.etui.org/sites/default/files/2021-01/Chapter8_Posting%20of%20workers%20before%20Dutch%20courts.pdf	0.001499511	-0.000668779	-0.00216829
2	Poland	2016 (Mazur & Zych, 2019)	Mazur, P., & Zych, M. (2019, April 25). Is subcontracting easier? The effects of the amendment of Art. 6471 of the Civil Code two years after adoption In Principle. in Principle. https://litigationportal.pl/en/p/is-subcontracting-easier	0.004354742	-0.000953406	-0.005308148
3	France	2016 (Schilling-Vacaflor, 2020)	Schilling-Vacaflor, A. (2020). Putting the French duty of vigilance law in context: towards corporate accountability for human rights violations in the global South? Human Rights Review, 22(1), 109–127. https://doi.org/10.1007/s12142-020-00607-9	0.002100974	-0.001344656	-0.00344563
4	Germany	2014 (Biletta & Torres-Revenge, 2016)	Biletta, I., & Torres-Revenge, Y. (2016, October 18). EU-level: Member States' progress in transposing Enforcement Directive on posting of workers. Eurofound. https://www.eurofound.europa.eu/en/publications/all/eu-level-member-states-progress-transposing-enforcement-directive-posting-workers	-0.000110421	-0.000365757	-0.000255336
5	Austria	2016 (Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	0.000722673	-0.000451383	-0.001174056
6	Spain	2016 (Biletta & Torres-Revenge, 2016)	Biletta, I., & Torres-Revenge, Y. (2016, October 18). EU-level: Member States' progress in transposing Enforcement Directive on posting of workers. Eurofound. https://www.eurofound.europa.eu/en/publications/all/eu-level-member-states-progress-transposing-enforcement-directive-posting-workers	0.05171322	0.001586133	-0.050127087

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7	Hungary	2014(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	0.000464947	-0.000122271	-0.000587218
8	Croatia	2016(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	-0.001452337	0.000953468	0.002405805
9	Slovakia (Slovak Republic)	2016(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	-0.003254022	0.005060607	0.008314629
10	Luxembourg	2016(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	0.000178142	6.95503E-05	-0.000108591
11	Sweden	2016(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	0.000256258	-8.97345E-05	-0.000345992
12	Greece	2016(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	-0.008631525	0.001299307	0.009930832

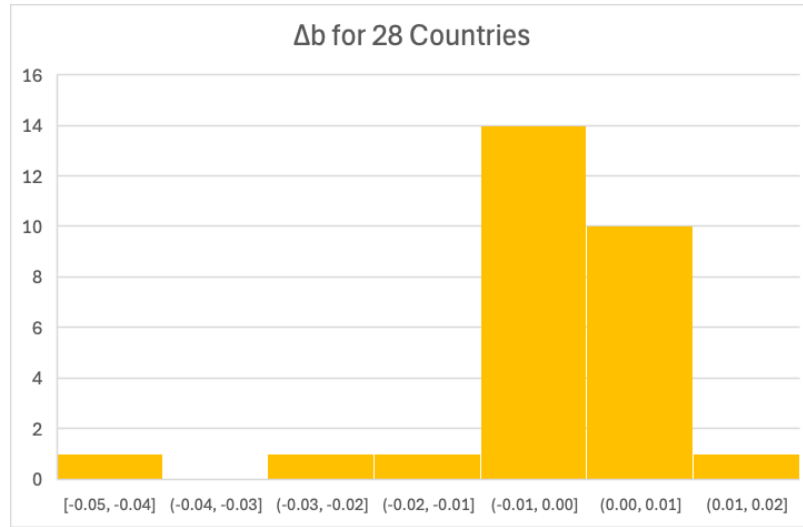
Yellow Envelope Act: A Causal-Comparative Analysis on the Effects of Subcontracting Regulatory Policies

13	Belgium	2016(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	0.002194043	-0.000561986	-0.002756029
14	Türkiye	2003(International Labour Organization, 2003)	International Labour Organization. (2003). Labour Act No. 4857 of 22 May 2003. Natlex. https://natlex.ilo.org/dyn/natlex2/r/natlex/fe/details?p3_isn=64083	0.000292728	-0.00036163	-0.000654357
15	Bulgaria	2023(Ministry of Labour and Social Policy of Bulgaria, n.d.)	Ministry of Labour and Social Policy of Bulgaria. (n.d.). Labour Code. https://www.mlsp.government.bg/uploads/37/politiki/trud/zakonodatelstvo/eng/labour-code.pdf	-7.5435E-05	0.000555391	0.000630826
16	Norway	2009(Alsos, 2009)	Alsos, K. (2009, March 23). Government to widen employer liability in bid to combat social dumping. Eurofound. https://www.eurofound.europa.eu/en/publications/all/government-widen-employer-liability-bid-combat-social-dumping	-0.0019	7.93446E-06	0.001907934
17	Lithuania	2021(State Labor Inspectorate, 2023)	State Labor Inspectorate. (2023). Application using auxiliary elimination of counterfeiting in the construction sector where many users are subcontractors. https://vdi.lrv.lt/en/posting-of-workers/application-of-the-subsidiary-liability-of-the-contractor-in-the-construction-sector-when-the-employer-is-a-subcontractor/?lang=uk	-0.000495085	-0.011029639	-0.010534554
18	Germany	2016(EUR-LEX - 52019SC0337 - EN - EUR-LEX, n.d.)	EUR-LEX - 52019SC0337 - EN - EUR-LEX. (n.d.). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD%3A2019%3A337%3AFIN	-0.000268571	-0.000280848	-1.22775E-05
19	Italy	2016(EUR-LEX - 52019SC0337 - EN - EUR-LEX, n.d.)	EUR-LEX - 52019SC0337 - EN - EUR-LEX. (n.d.). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD%3A2019%3A337%3AFIN	0.025705565	-0.000314767	-0.026020333
20	France	2014(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	-0.000652157	-0.001072088	-0.000419931

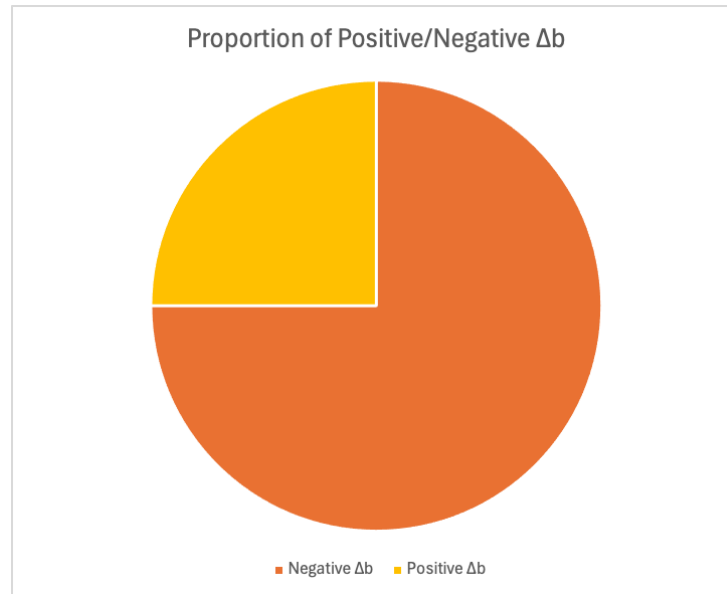
Yellow Envelope Act: A Causal-Comparative Analysis on the Effects of Subcontracting Regulatory Policies

21	Austria	2016(Client Liability – Posting of Workers Platform, n.d.)	Client liability – Posting of workers platform. (n.d.). https://www.entsendeplattform.at/en/enforcement/client-liability	0.000722673	-0.000451383	-0.001174056
22	Netherlands	2015(Hoofddlijnen Wet Aanpak Schijnconstructies, n.d.)	Hoofddlijnen Wet aanpak schijnconstructies. (n.d.). Sdu. https://www.sdu.nl/content/hoofddlijnen-wet-aanpak-schijnconstructies	0.001441619	-0.001487027	-0.002928647
23	Spain	2014(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	0.011786791	0.010337526	-0.001449264
24	Hungary	2014(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	9.94095E-05	-0.000217975	-0.000317385
25	Slovakia	2014(Document Summary Legislative Observatory European Parliament, n.d.)	Document summary Legislative Observatory European Parliament. (n.d.). European Union, 2026 - Source: European Parliament. https://oeil.europarl.europa.eu/oeil/en/document-summary?id=1593323	-0.003254022	0.005060607	0.008314629
26	Luxembourg	2016(Fps, 2020)	Fps. (2020, October 29). Luxembourg - Employment Law Review 2017 - Ius laboris. Ius Laboris. https://iuslaboris.com/insights/luxembourg-employment-law-review-2017/	0.000178142	6.95503E-05	-0.000108591
27	Czech Republic	2023(Čoupková & Nováček, 2023)	Čoupková, S., & Nováček, J. (2023). Liability for employee wage claims in subcontracting chains in construction KPMG Czech Republic. https://danovky.cz/en/news/detail/1303	0.00021772	0.000180741	-3.6979E-05
28	Bulgaria	2023(KPMG & KPMG International Limited, 2026)	KPMG & KPMG International Limited. (2026, February 4). Amendments to the Labour Code. KPMG. https://kpmg.com/bg/en/insights/2024/04/amendments-to-the-labour-code.html	-7.5435E-05	0.000555391	0.000630826

APPENDIX B: Additional Figures



APPENDIX B1: Histogram for Difference in $U_{C, 20s}$ Slopes (Δb)



APPENDIX B2: Proportion of Positive/Negative Differences in $U_{C, 20s}$ Slope (Δb)

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