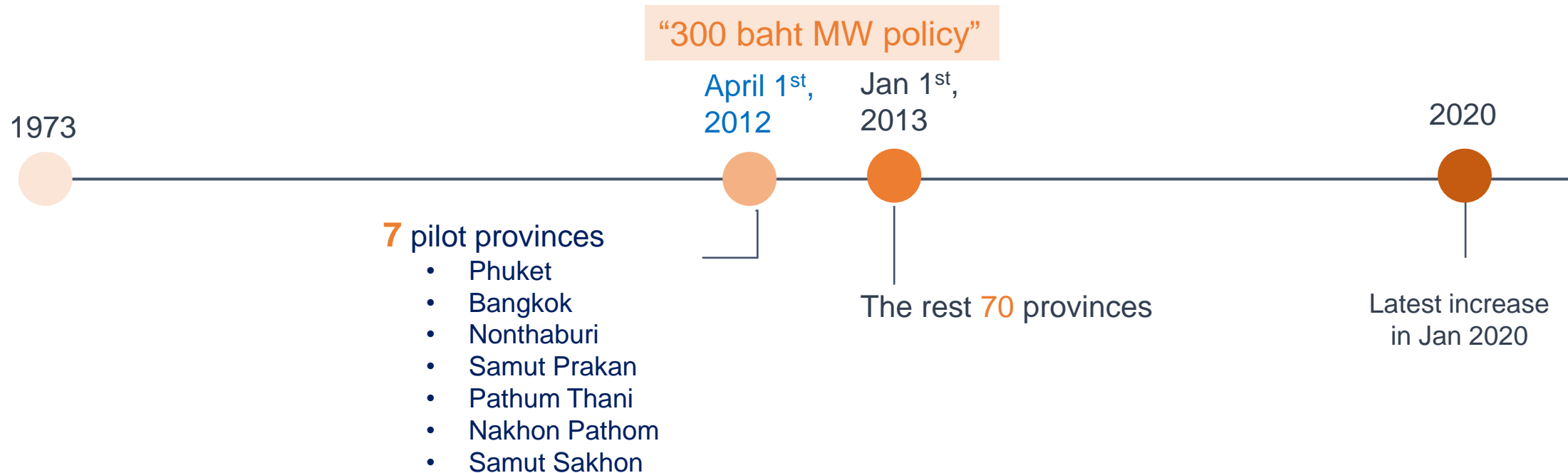# Who Is Affected by a National Minimum Wage Hike in Thailand? Evidence from the 300-Baht Minimum Wage Policy

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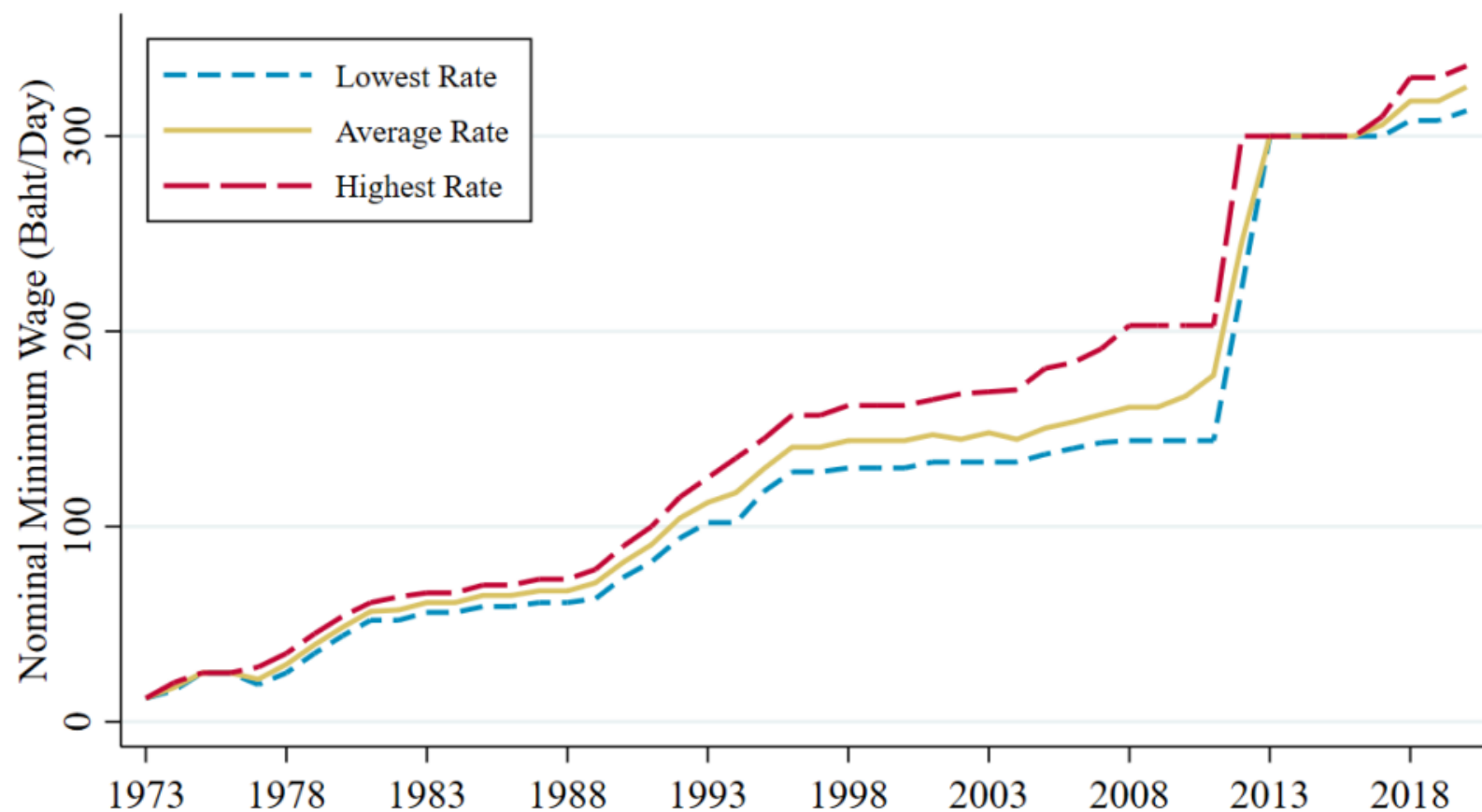PIER Research Workshop 2022

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Introduction

- The minimum wage policy has been implemented in Thailand since 1973 as a tool to tackle poverty and income inequality.

- The minimum wage is set by the tripartite National Wage Committee which consists of representatives of employers, employees, and the government.

- Interestingly, there was a significant minimum wage increase to 300 baht per day across country during 2012-2013.

"300 baht MW policy"

April 1st, 2012

Jan 1st, 2013

1973

2020

7 pilot provinces
- Phuket
- Bangkok
- Nonthaburi
- Samut Prakan
- Pathum Thani
- Nakhon Pathom
- Samut Sakhon

The rest 70 provinces

Latest increase in Jan 2020

Introduction

Nominal Minimum Wages in Thailand (Baht/Day)

Note: This figure plots daily nominal minimum wage (baht) in 1973-2020. As the minimum wage varies by provinces, the rates shown here are the lowest, highest, and average minimum wage of each year. The data is from the Ministry of Labor.

- That was the biggest jump in the Thai history! (about 35% from 2012)

- This quasi-natural experiment presents an intriguing opportunity to study its effects on Thai labor market outcomes

- This 300-baht policy seems to substantially affect the labor market as it raise the overall wages, but potentially has negative effect on the labor demand side (employment).

Economic Prediction on Employment and Wage Effects of MW

The classic supply-demand model

Assuming perfect competition with homogeneous workers, it predicts the disemployment effect of minimum wage increases. When firms (as a price taker) cannot substitute away from the higher labor cost, some workers are displaced and become unemployed.

The monopsonistic model

predicts that the minimum wage increases up to the perfectly competitive level could raise employment to the perfectly competitive level but increasing the minimum wage above perfectly competitive level would reduce employment

The two-sector model

predicts that the displaced workers (from covered sector) might migrate to uncovered sector, then the wage in uncovered sector is lower and the employment is higher. The opposite case may happen when workers move to covered sector if they tend to find new jobs in covered sector with the minimum wage.

Source: Bailey et al. (2020) and Fortin (2020)

Related Literature

Impact of MW on employment

- Large body of research and debate on the employment effect (for example, Card and Krueger (1994); Machin and Manning (1997); and Neumark and Wascher (2008))
- In case of Thailand, recent studies indicate that the effects of MW on overall disemployment are minimal (Del Carpio et al. (2019); Lathapipat and Poggi (2016)), but the effects on hour worked are mixed.

Impact of MW on wage

- A consensus has emerged on the effect of MW on average wage, but not on overall wage distribution (Del Carpio et al. (2019); Leckcivilize (2015) and Lathapipat and Poggi (2016)).

Impact of a high national MW

- Bailey et al. (2020) find that MW hike caused by the 1966 Fair Labor Standards Act (FLSA) results in wage increase and minimal disemployment. The impacts are larger in African-American men.
- In Thai context, Thangstapornpong and Porananond (2017) find that the 300-baht policy led to little disemployment effect in the short run in formal sector and positive effect on average wage.

Questions and How to Answer

Research Questions ▶ **How to Answer**

What are the effects of a large national minimum wage increase on average wages, employment and hours worked?

Do these effects differ across regions and subgroups of workers?

Does the policy improve the wage inequality in Thailand?

Short-term impact: Diff-in-diff approach, contrast pilot and non-pilot provinces in 2012

Long-term impact: Diff-in-diff and Dose-response analysis (use the shares of workers paid below 300 baht as a measure of different 'bite' across provinces)

Dynamic impact: Event study and Dose-response analysis.

Impact on wage distribution: Unconditional Quantile Regression

Data

This paper uses the **2006-2019 Labor Force Survey** by Thailand National Statistical Office (NSO)

Restrict samples to working-age population **aged 15-65**

Convert to **quasi-panel data** (76 provinces*x13 years) for short-term, long-term, and dynamic impact analyses

Key outcomes of interest: wages, employment rates (employment-to-labor-force ratio), and weekly hours worked

*Treating Beung Kan as a part of Nong Khai

Empirical Approach

- **Differences-in-differences**
  - **Short run** : Contrast pilot and non-pilot provinces to see short-term effect in 2012

$$Y_{pt} = \alpha + \beta X_{pt} + \gamma Z_{pt} + \theta_p + \delta_t + \varepsilon_{pt} \tag{1}$$
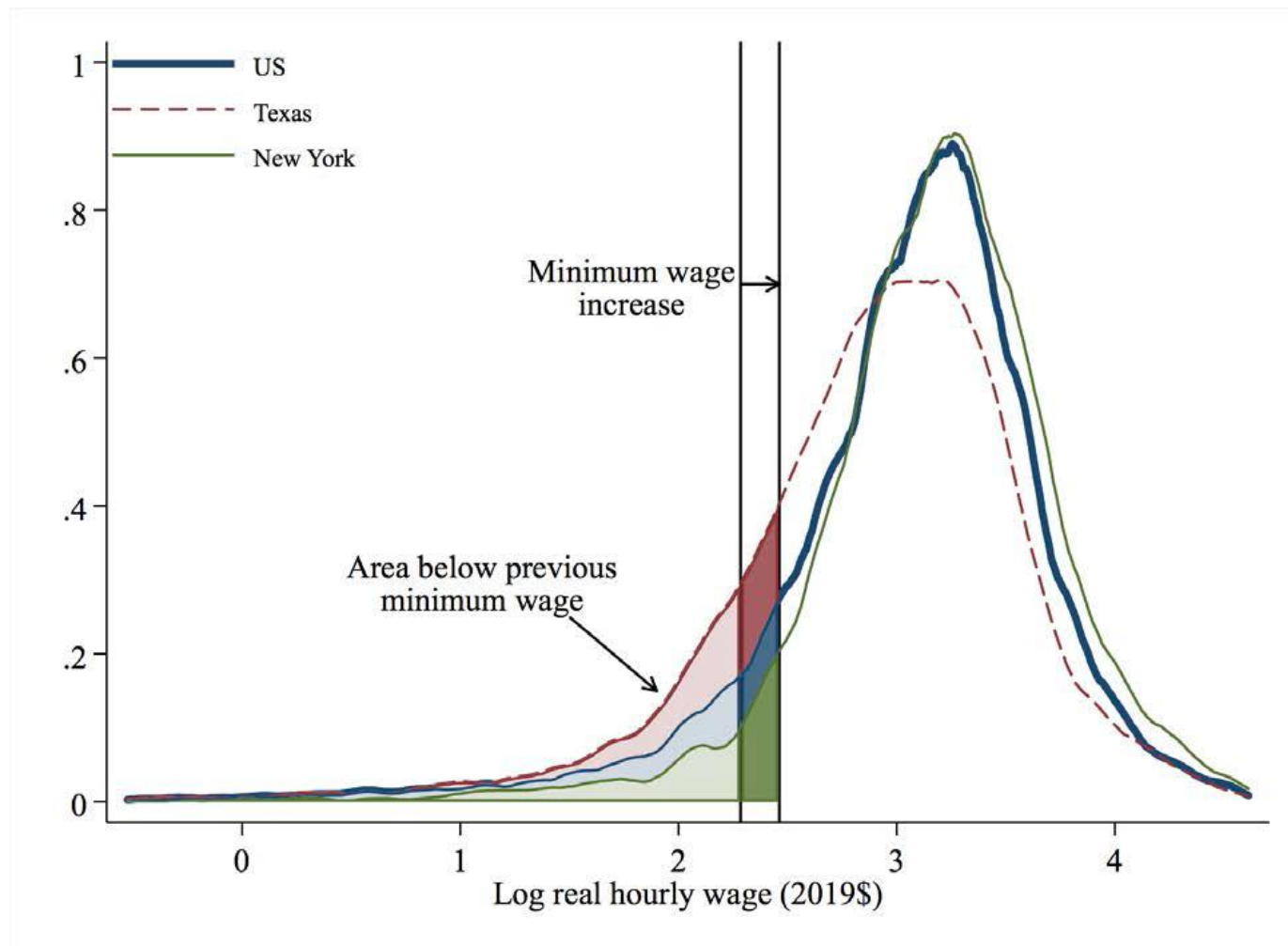
- Y_{pt} are outcomes of interest: log monthly wages, employment, and log weekly hours worked
- X_{pt} is equal to 1 if p=7 pilot provinces and t=2012, 0 otherwise
- Z_{pt} are covariates including sex, age, education, marital status, municipal area, and gross provincial product
- θ_p and δ_t are province and year fixed effects

  - **Long run** : Contrast more and less affected provinces (6 years after the policy) following Bailey et al. (2020)

$$Y_{pt} = \alpha + \beta(D_{pt} \times F_p) + \gamma Z_{pt} + \theta_p + \delta_t + \varepsilon_{pt} \tag{2}$$

- D_{pt} is equal to 1 if t = year after the policy implementation (6 years), and interacted with F_p
- F_p is the fraction affected, the share of workers earning below 300 baht before the policy implementation
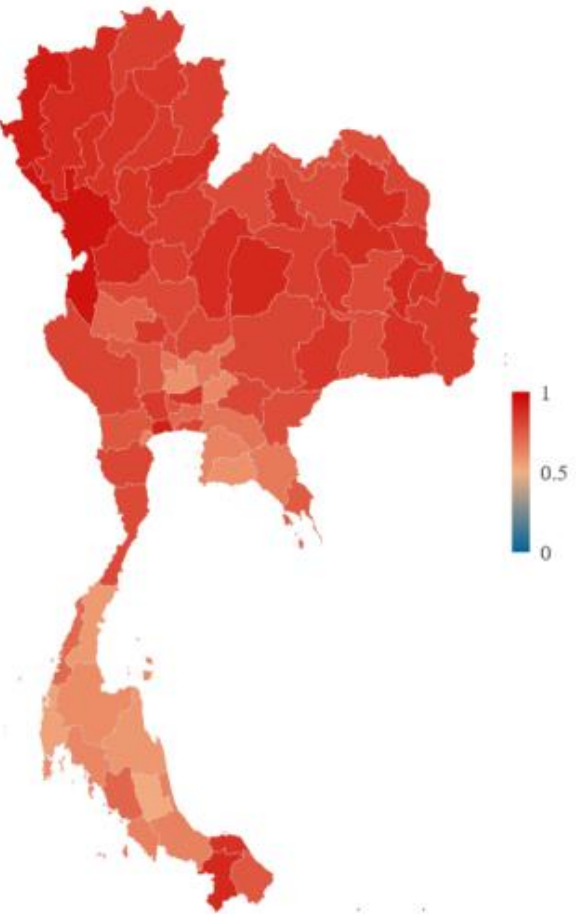
Dose-Response Analysis

Source: Bailey et al. (2020)

- The research design contrasts the more affected provinces and the less affected provinces
- The idea is that the MW increase should have a larger "bite" in the provinces with lower wages, which is those with higher fraction of workers earning less than 300 baht (the new MW level) in the year before the policy.
- The fraction affected (F_p) reflects the difference in the minimum wage bite across provinces.
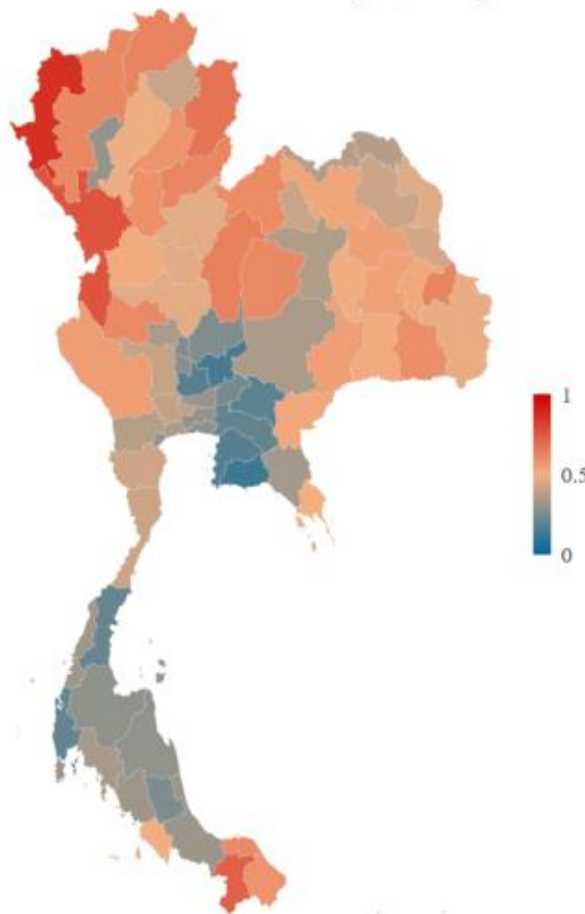
Share of workers earning less than 300 baht per day

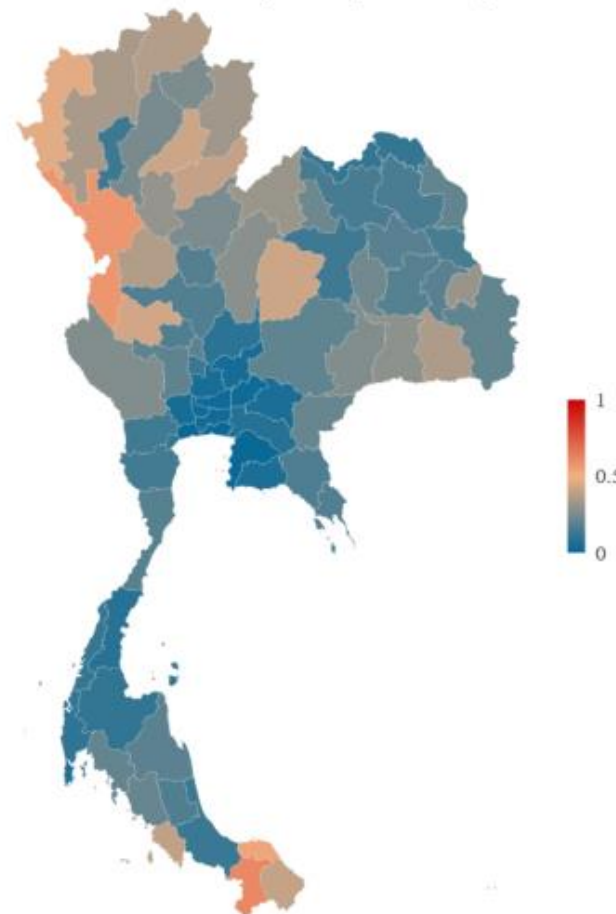"fraction affected"

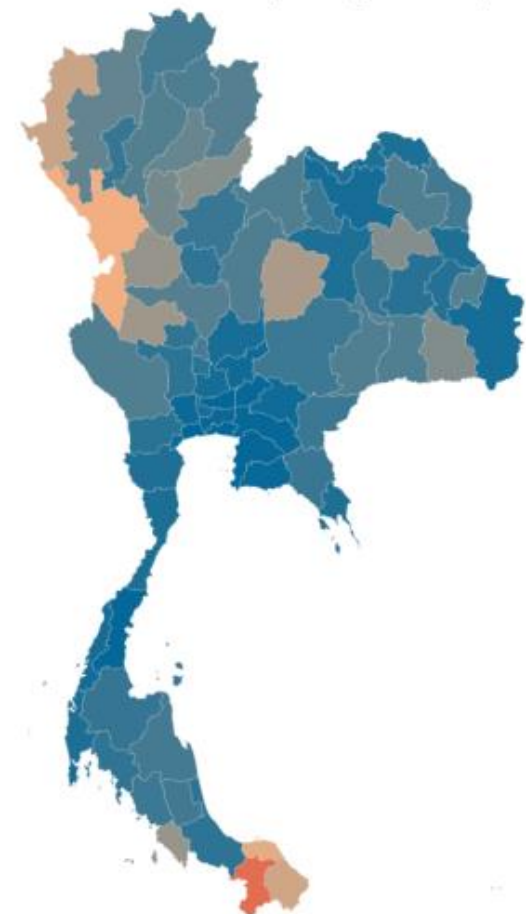A. Before the Policy (Average 77.3%)   B. 1 Year after the Policy (Average 43.2%)   C. 2016 (Average 20.7%)   D. 2019 (Average 14.1%)

Empirical Approach

- **Event Study**
  - Evaluate the dynamic impacts of the policy (6 years leads and lags)

$$Y_{pt} = \alpha + \sum_k \beta_k 1(t = k) \times F_p + \gamma Z_{pt} + \theta_p + \delta_t + \varepsilon_{pt} \tag{3}$$

  - $1(t = k)$ are event study dummies (equal to 1 if year since the policy implementation = k), interacted with F_p
  - β_{-1} (the effect one year before the policy) is normalized to zero

- **Distributional Method**
  - Evaluate the effects of MW on distribution of wages using Unconditional Quantile Partial Effects (UQPE) strategy proposed by Firpo, Fortin, and Lemieux (2009).
  - UQPE controls for covariates like education but does not condition the wage distribution on them. In other words, it defines low wages regardless of (unconditional on) covariates.
  - To find UQPE, one can perform RIF-DiD regression

$$\text{RIF}(Y_{ipt}, Q_\tau) = \alpha + \beta(D_{ipt} \times F_p) + \gamma Z_{ipt} + \theta_p + \delta_t + \varepsilon_{ipt} \tag{3}$$

  - RIF is the Recentered Influence Function for each quantile

Short-Run Impact
(Pilot vs. Non-pilot)

- The policy raises average wages in pilot provinces* by 0.3 percent (not statistically significant)
  - Significant wage increase is higher for young, informal**, and low-educated workers

- No significant impact on overall short-term employment despite the positive but small magnitude which is mainly from higher employment for male, high-skilled and agricultural workers.
  - There is a fall in employment rates for the elderly by 0.1 percentage point while manufacturing workers experience a 0.6 percentage point fall in employment.

- No statistically significant effect on hours worked in the full sample and subgroups

Note: * pilot provinces include Phuket, Bangkok, Nonthaburi, Samut Prakan, Pathum Thani, Nakhon Pathom, and Samut Sakhon

   ** informal sector is defined following Lathapipat and Poggi (2016) as a sector consisting of self-employed workers, unpaid family workers, and workers in micro enterprise (firms with less than five employees)

Table 1—Short-Run Effects of the 300-Baht Minimum Wage Policy

	(1) Log Monthly Wages	(2) Employment Rates	(3) Log Weekly Hours Worked
A. All	0.0029	0.1233	-0.0259
	(0.0278)	(0.1815)	(0.0198)
B. Gender			
Female	0.0403	0.0852	-0.0259
	(0.0411)	(0.2823)	(0.0226)
Male	0.0230	0.1509	-0.0188
	(0.0278)	(0.1611)	(0.0167)
C. Education			
High school or less	0.0975***	-0.0309	-0.0040
	(0.0275)	(0.1252)	(0.0128)
Above high school	0.0083	0.2013	-0.0208
	(0.0449)	(0.4335)	(0.0133)
D. Formal/Informal			
Formal workers	0.0253	0.0229	-0.0019
	(0.0267)	(0.1865)	(0.0113)
Informal workers	0.0632**	-0.1462	-0.0196
	(0.0295)	(0.0892)	(0.0168)
E. Age			
15-24	0.0794***	-0.2587	0.0086
	(0.0232)	(0.4534)	(0.0154)
25-44	0.0338	0.0838	-0.0136
	(0.0206)	(0.1511)	(0.0184)
45-65	-0.0653**	-0.1418**	-0.0079
	(0.0288)	(0.0642)	(0.0153)
F. Industry			
Agriculture	-0.2145	0.4736	-0.0357
	(0.2016)	(0.3333)	(0.0294)
Manufacturing	0.0371	-0.5523*	-0.0029
	(0.0373)	(0.3235)	(0.0195)
Construction	-0.0256	-0.5735	0.0213
	(0.0223)	(0.5252)	(0.0260)
Trade	0.0639	-0.0908	-0.0037
	(0.0497)	(0.1547)	(0.0129)
Services	0.0443	-0.0619	-0.0054
	(0.0329)	(0.1769)	(0.0144)

Long-Run Impact

- The policy raises the average monthly wages by 3.3% (0.0431× 0.77 or average fraction affected) nationally.
  - More affected provinces like Chiang Mai (87.9% of workers paid below 300 baht per day) experience a 1.2% larger increase in average wages relative to the less affected provinces like Phuket (59.7% fraction affected)
  - Informal workers appear to benefit the most from the policy as their wages go up by 17.1 percent.

- Minimal insignificant positive impact on employment
  - The elderly endures the significantly negative impact on employment, with 0.1 percentage point decline.

- Daily-paid workers' hours worked significantly decrease owing to the hike. The policy has mixed results across industry.
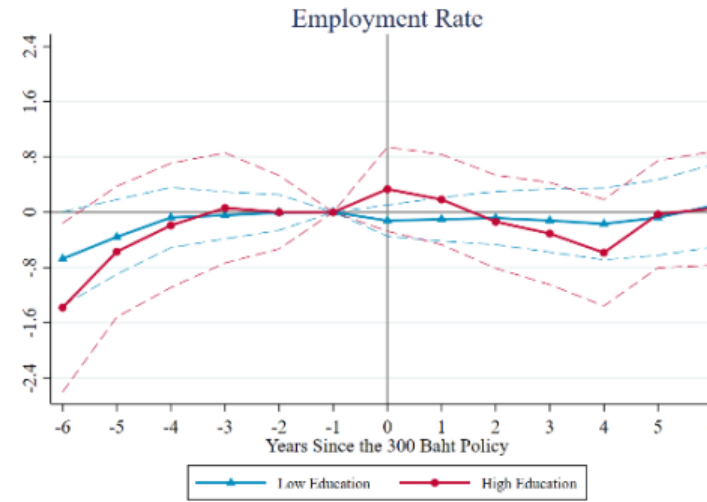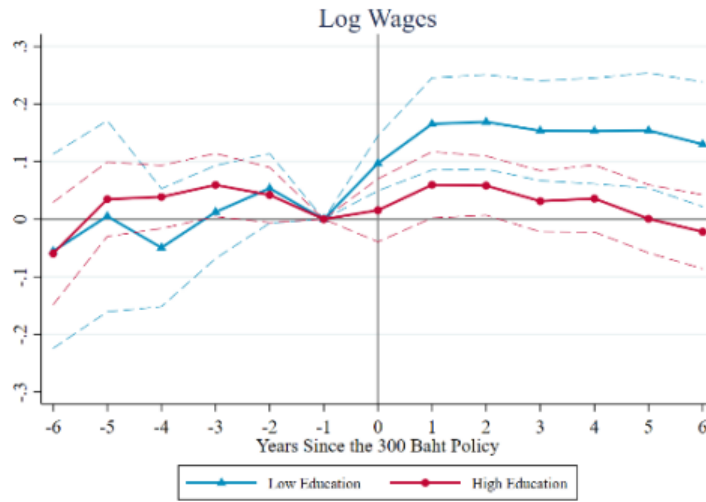
Table 2—Long-Run Effects of the 300-Baht Minimum Wage Policy

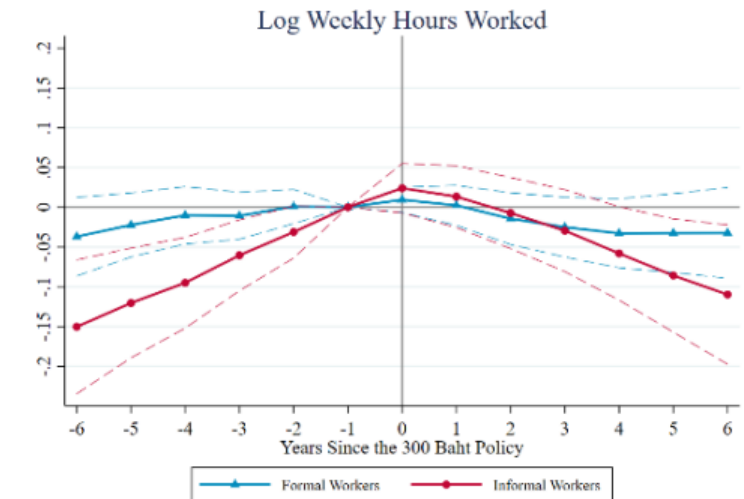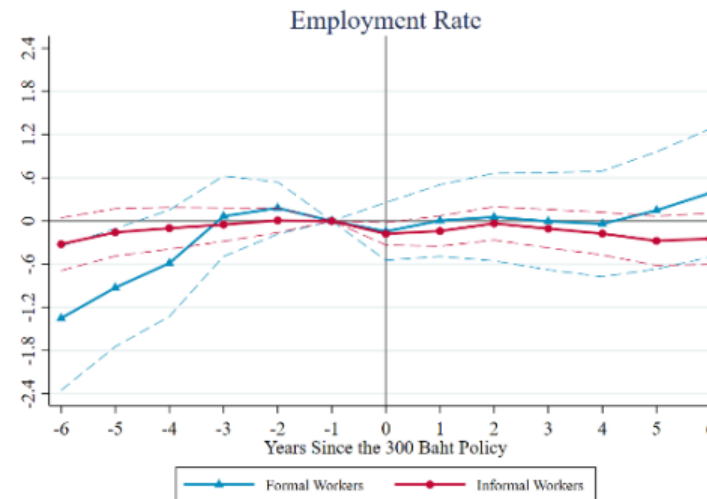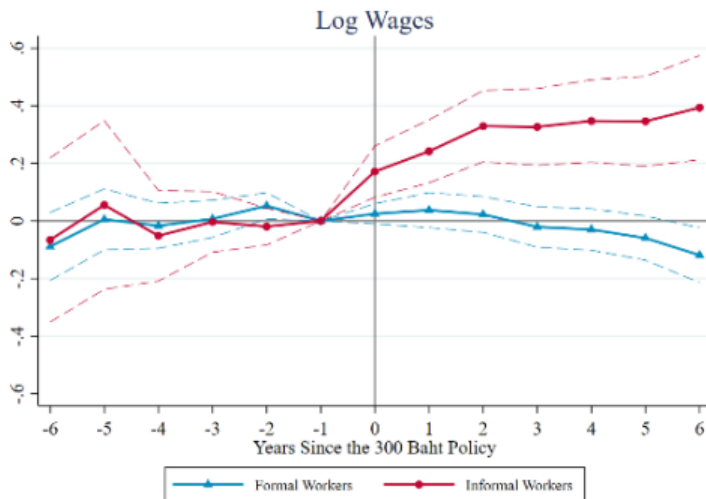|	(1) Log Wages	(2) Employment Rates	(3) Log Weekly Hours Worked
A. All	0.0431*	0.0058	-0.0036
	(0.0253)	(0.1536)	(0.0129)
B. Gender			
Female	0.0470*	-0.0640	-0.0023
	(0.0241)	(0.1646)	(0.0107)
Male	0.0296	0.1332	0.0037
	(0.0291)	(0.1760)	(0.0145)
C. Education			
High school or less	0.1135***	-0.0946	0.0159
	(0.0298)	(0.1213)	(0.0132)
Above high school	0.0079	0.2554	-0.0031
	(0.0165)	(0.2432)	(0.0073)
D. Formal/Informal			
Formal workers	0.0105	0.0173	0.0031
	(0.0218)	(0.2235)	(0.0099)
Informal workers	0.2261***	-0.1401	0.0243
	(0.0544)	(0.0865)	(0.0166)
E. Age Group			
15-24	0.1407***	-0.0416	-0.0171
	(0.0325)	(0.5941)	(0.0134)
25-44	0.1279***	0.0811	-0.0270**
	(0.0210)	(0.1222)	(0.0135)
45-65	-0.0077	-0.1347*	-0.0014
	(0.0213)	(0.0691)	(0.0137)
F. Industry			
Agriculture	0.1761*	0.2095	0.0365*
	(0.0915)	(0.2490)	(0.0209)
Manufacturing	0.1198***	0.3519	-0.0099
	(0.0340)	(0.3180)	(0.0142)
Construction	0.0764**	0.2490	-0.0379***
	(0.0310)	(0.4197)	(0.0134)
Trade	0.2154***	-0.0312	0.0105
	(0.0385)	(0.1656)	(0.0111)
Services	-0.0162	0.0198	0.0179*
	(0.0273)	(0.1280)	(0.0099)
G. Wage Type			
Hourly	0.3205		0.0893
	(0.2456)		(0.1454)
Daily	0.1511***		-0.0281**
	(0.0259)		(0.0134)
Weekly	-0.0513		-0.0947
	(0.2403)		(0.0852)

Dynamic Impact

- The wage effects for low-skilled workers and informal workers are larger
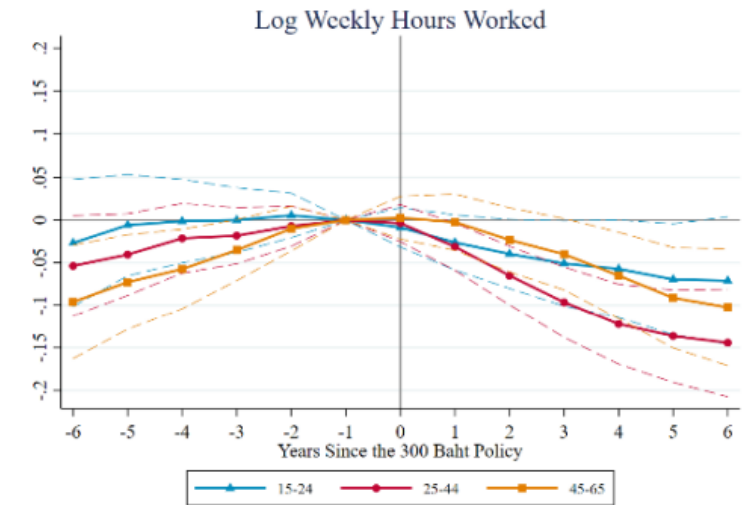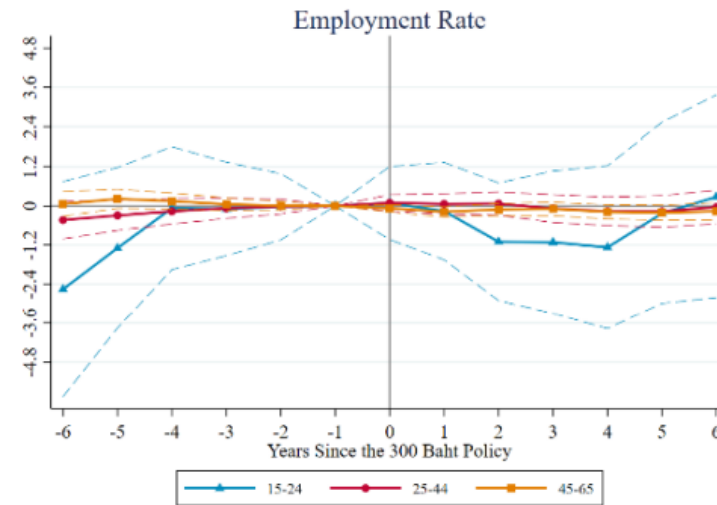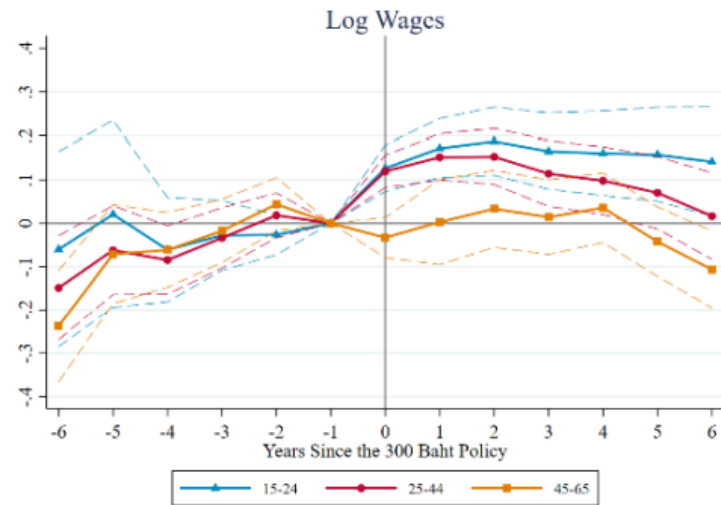- The disemployment effects are also visible in those two groups
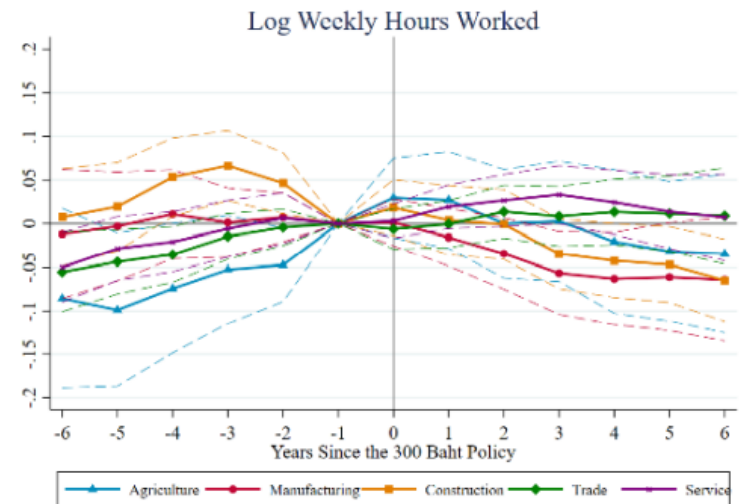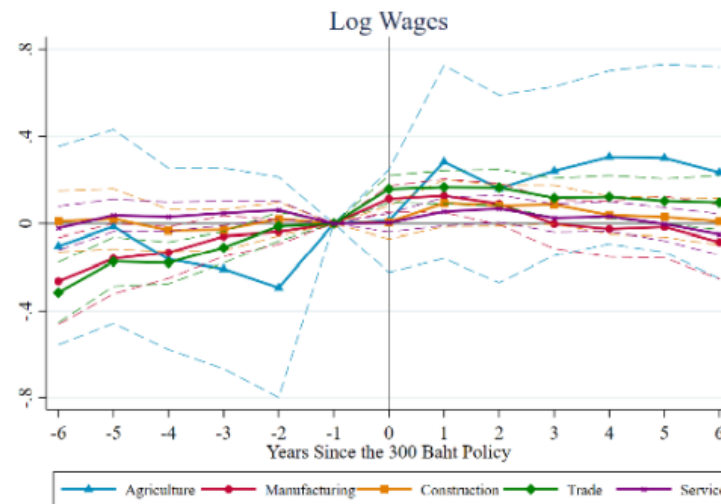

A. Education
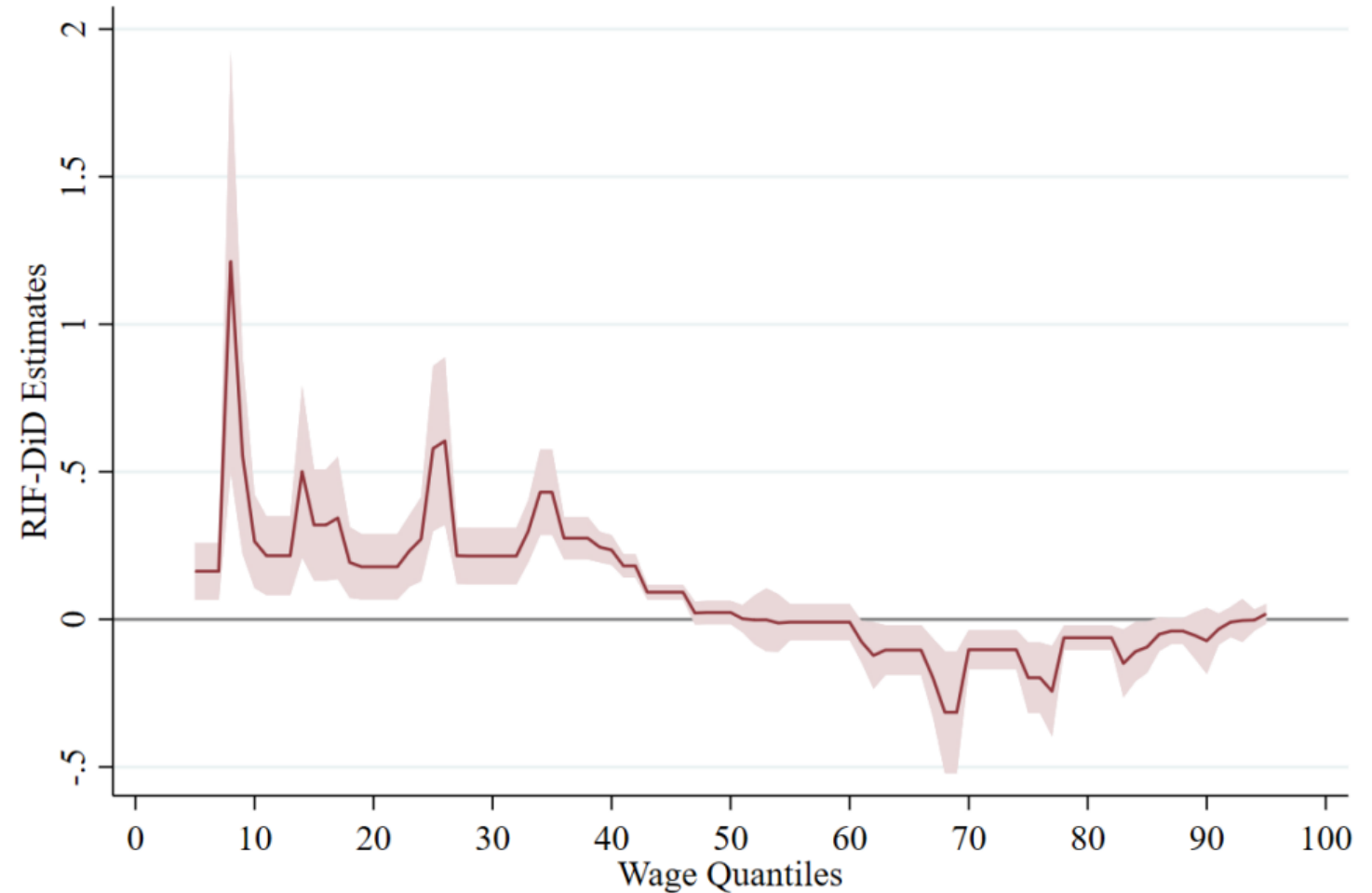
B. Formal/Informal

Dynamic Impact

C. Age Group

D. Industry

Impact on Wage Distribution

- The policy appears to improve wage distribution as there are larger positive effects on the bottom half of wage distribution but zero to negative effects on the upper half.

- Daily wage inequality is reduced by the policy as well.

Figure 4—Unconditional Quantile Partial Effects

Note: This figure plots RIF-DiD estimates (unconditional quantile partial effects) in equation 5 along with 95-percent confidence intervals (shaded area). The X-axis refers to log monthly wage quantiles from 5th to 95th percentiles. The standard errors in this model are clustered at the province-year level

Conclusion

- In the short run, the 300-baht policy has no impact on overall wage, employment, and hours worked.
  - Yet, the less-educated, youths, and informal workers experience a significant rise in wage. As they are *relatively low-wage workers, the policy play a vital role in lifting their wages*
  - The elderly suffer from lower wages and employment in the short run due possibly to *substitution between workers in different age groups to comply the laws and manage labor costs.*
  - Employment rates fall in manufacturing workers

- In the longer run, the policy raises average wages by 3.3 percent.
  - Larger wage effects on low-wage workers (like in the SR)
  - Informal workers enjoy the largest wage increase due possibly to the *movement between two sectors and the lighthouse effect* (higher informal sector's wage signaled from formal sector's)
  - Employment rates fall in senior workers
  - Lower hours worked for prime-aged, construction, and daily-paid workers.

- The dynamic impact corresponds to the LR impact on overall and subgroups of workers. It suggests the wage effects of the policy grow continuously and begin to fall in the fourth year
- The policy improve wage inequality as result show positive effects on the bottom half of the wage distribution but zero-to-negative effects on the upper quantiles.

Who is affected by the policy?

	Wage	Employment	Hours worked
Short run	less-educated workers (+) youths (+) informal (+) the elderly (-)	the elderly (-) manufacturing workers (-)	
Long run	overall (+) women (+) less-educated workers (+) youths/prime-aged (+) informal (+) daily-paid (+) all but service workers (+)	the elderly (-)	prime-aged workers (-) daily-paid (-) construction workers (-) agricultural workers (+)

Thank you!
ขอบคุณครับ