The Differential Effect of the Minimum Wage on Employment in Routine Occupation in Thailand

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- Compliance and Effectiveness of the law enforcement

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- Large increases in 2012-13 weakly affected employment but improved the wage distribution (Lathapipat & Poggi 2016)
- The difference in compliance rate between large and small firms (not between covered and uncovered sectors) seems to be the prominent factor behind the fragmented effects of the minimum wage on wage inequality (Leckcivilize, 2015)

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- **'Lighthouse effect'**, a benchmark for "fair" remuneration
- **Changes in skill composition** between formal and informal sectors
  ⇒ sorting of workers by skill could lead to higher average skills of workers in the informal sector

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- Since October 1981, it was set with respect to inflation, living standard, competitiveness, economic and labour market condition of each province
- Number of zones increased dramatically from *3-4 zones during 1981-2001* to *8 in 2002* and *28 zones in 2010*
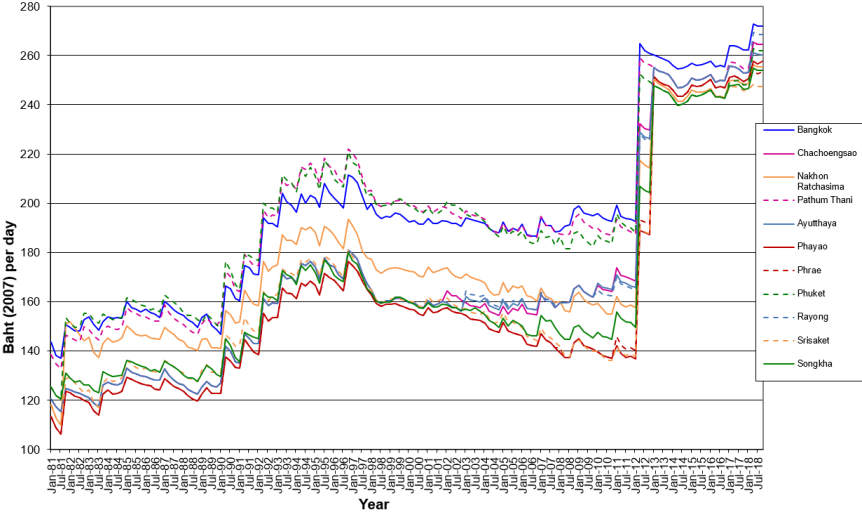
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- Number of zones increased dramatically from *3-4 zones during 1981-2001* to *8 in 2002* and *28 zones in 2010*
- Two-step large increases in 2012-2013 led to a single minimum wage at 300 baht per day through out the country

Minimum Wage to Average Wage Ratio by provinces
in the third quarter of 2002-2018
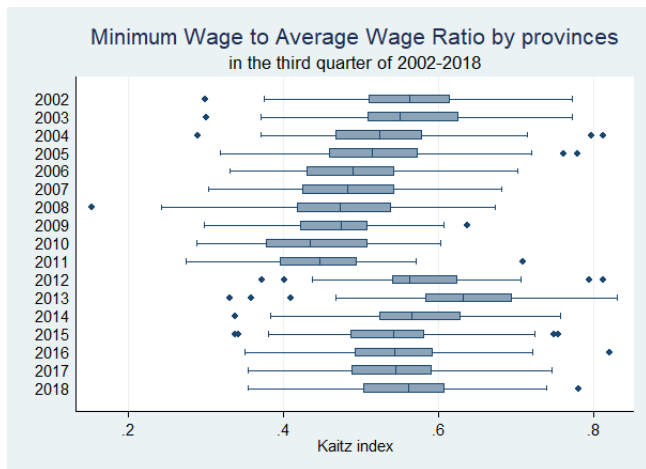
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- Yet the enforcement is questionable e.g. during 2006-2010, more than 94% of firms caught violating any labor law received only a warning while less than 0.3% of all wrongdoing establishments were fined or prosecuted
- However, in recent years, the non-compliance rate dropped from 10% to about 1-2%
- This might reflect a tougher stand on such illegal cases by moving away from just a light touch like warning to an order of compliance or criminal action against the culprits

Year	Number of Establishments Inspected	Non-compliance with Labor law			Conduction of Labor Inspector				
		All types of Illegal Conduct	Minimum Wage Est.	Minimum Wage Persons	Warning issued	Summon	Order of Compliance	Fine	Criminal Action Submission
2006	44,658	7,982	2,100	7,730	7,570	251	145	6	10
2007	50,993	7,725	2,005	6,752	7,300	329	76	11	9
2008	47,940	5,667	1,287	4,018	5,509	118	38	2	-
2009	50,669	5,150	880	4,137	4,946	119	76	2	7
2010	49,463	2,447	625	4,033	2,366	50	26	1	4
2011	44,224	1,457	273	1,831	1,421	3	33	-	-
2012	54,104	689	618	9,306	636	6	44	2	1
2013	48,749	465	171	1,927	164	32	248	8	13
2014	40,274	499	89	733	-	51	435	7	6
2015	44,859	663	78	711	-	14	610	9	30
2016	40,801	662	55	430	-	3	610	12	37
2017	41,847	715	171	1,608	-	1	650	4	60

Source : Labor Standard Development Bureau, Department of Labor Protection and Welfare

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- The data is aggregated to provincial level of 76 provinces to create a panel dataset for province-quarter

Data: Task information

- Based on O*NET task data for occupations (Dorn, 2009)
- Using crosswalks occupations in Dorn (2009) and the ISCO classification, particularly the ISCO-88 and ISCO-08

Table 2. Construction of task contents measures

Task content measure (T)	Task items (J)
Non-routine cognitive analytical	Analysing data/information Thinking creatively Interpreting information for others
Non-routine cognitive interpersonal	Establishing and maintaining personal relationships Guiding, directing and motivating subordinates Coaching/developing others
Routine cognitive	The importance of repeating the same tasks The importance of being exact or accurate Structured vs. unstructured work
Routine manual	Pace determined by the speed of equipment Controlling machines and processes Spending time making repetitive motions
Non-routine manual physical	Operating vehicles, mechanized devices, or equipment Spending time using hands to handle, control or feel objects, tools or controls Manual dexterity Spatial orientation

From Gorka et al. (2017)

Routine Task Index Movement in Thailand

Net Routine Task Index

Net Routine Task = log(routine) – log(abstract) – log(manual)

Abstract = DCP (direction, control, planning of activities) + GED-MATH (quantitative reasoning requirements)

Routine= STS (adaptability to work requiring set limits, tolerances, standards) + FINGDEX (finger dexterity)

Manual = EYEHAND (eye, hand, foot coordination)
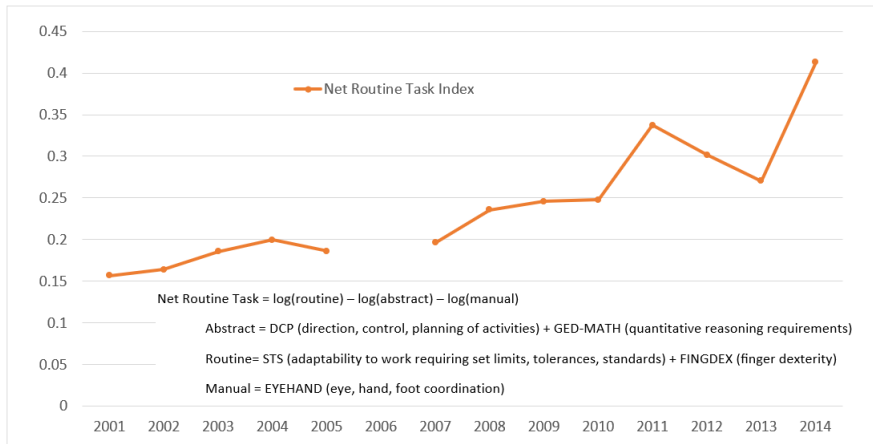
From Lekfuangfu (2017)

Ratio of Routine Occupations (Workers)

Ratio of Routine Occupations in selected provinces
(All Workers)
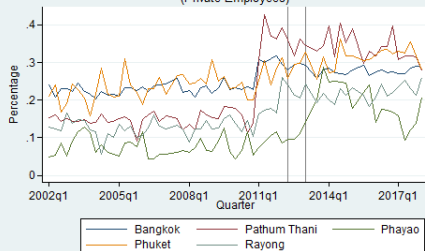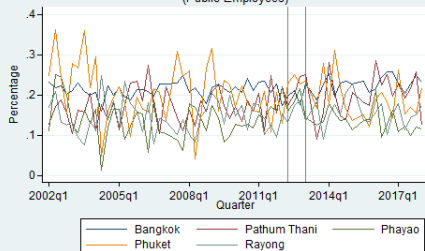
Source: Author's calculation from Thai Labor Force Survey

Ratio of Routine Occupations (Formal sector)

Ratio of Routine Occupations (Informal sector)

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Methodology
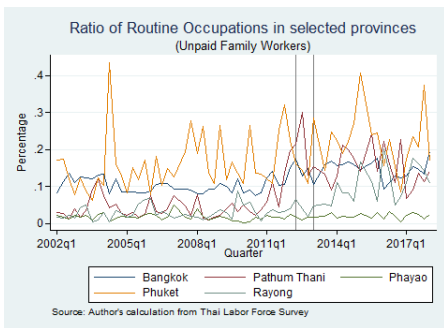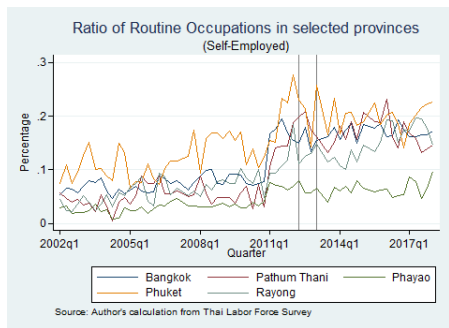
- Follow Meer and West (2016) who argue that the minimum wage may impact employment over time through changes in employment growth rather than affect the level of employment in a discrete manner

- First-Difference regression with distributed lags with provincial linear trends can be specified as:

$$\Delta y_{it} = \alpha_t + \mu_i + \sum_{s=0}^{k} \beta_s \Delta mw_{it-s} + \gamma \Delta control_{it} + \Delta \varepsilon_{it}$$

- Δy_{it} is a difference between period t and t-1 of a natural log of total employment in province i by various sub-groups, i.e. all workers, wage employees in both private and public sectors, self-employed and unpaid family workers

- Δmw_{it-s} is a difference in log of the nominal minimum wage in province i between period t-s and t-s-1

- $controls_{it}$ are log population and share of adults aged 15-59

- α_t and μ_i are time and provincial fixed effects

$\Rightarrow$ Clustering standard errors at provincial level

	all workers				private employees				public employees			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.0636	-0.0638	-0.0638	-0.0639	0.455**	0.457**	0.457***	0.457***	0.330	0.330	0.330	0.330
	(0.0489)	(0.0488)	(0.0490)	(0.0489)	(0.173)	(0.173)	(0.172)	(0.172)	(0.223)	(0.223)	(0.224)	(0.223)
1st lag of Log MW	-0.699***	-0.713***	-0.714***	-0.712***	0.598	0.707	0.705	0.697	1.099	1.082	1.084	1.071
	(0.232)	(0.234)	(0.234)	(0.232)	(0.533)	(0.520)	(0.519)	(0.516)	(0.763)	(0.746)	(0.746)	(0.743)
2nd lag of Log MW		-0.295	-0.295	-0.293		2.292***	2.291***	2.278***		-0.346	-0.344	-0.365
		(0.217)	(0.217)	(0.214)		(0.744)	(0.745)	(0.745)		(0.693)	(0.693)	(0.691)
3rd lag of Log MW			-0.0665*	-0.0664*			-0.197	-0.197			0.188	0.187
			(0.0382)	(0.0382)			(0.134)	(0.134)			(0.294)	(0.293)
4th lag of Log MW				0.0256				-0.130				-0.209
				(0.0776)				(0.297)				(0.411)
Sum MW effects	-0.763***	-1.072***	-1.140***	-1.110***	1.053**	3.456***	3.255***	3.105***	1.428*	1.066	1.257	1.015
Wald test (F-stat)	10.11	9.648	11.79	13.17	3.994	19.86	17.03	15.05	3.479	2.271	2.704	1.772
Observations	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408

Note: Robust standard errors are clustered by province and displayed in parentheses while ***, ** and * indicate significant at 1% , 5% and 10% level respectively. All columns include province fixed effects, time fixed effects, provincial linear time trend and province-specific time-varying controls: log-population, and the share aged 15 - 59.

Results: All occupations informal sector 2002-2018

	self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.219	-0.219	-0.219	-0.219	-0.372	-0.373	-0.374	-0.374
	(0.132)	(0.132)	(0.132)	(0.132)	(0.265)	(0.264)	(0.266)	(0.265)
1st lag of Log MW	-0.849**	-0.838**	-0.839**	-0.837**	-2.110***	-2.171***	-2.172***	-2.155***
	(0.406)	(0.397)	(0.397)	(0.397)	(0.621)	(0.618)	(0.618)	(0.614)
2nd lag of Log MW		0.223	0.222	0.225		-1.290*	-1.291*	-1.265*
		(0.327)	(0.327)	(0.325)		(0.735)	(0.735)	(0.724)
3rd lag of Log MW			-0.0387	-0.0386			-0.175	-0.175
			(0.0947)	(0.0946)			(0.194)	(0.194)
4th lag of Log MW				0.0273				0.276
				(0.179)				(0.407)
Sum MW effects	-1.068***	-0.834**	-0.874**	-0.842**	-2.482***	-3.834***	-4.012***	-3.693***
Wald test (F-stat)	8.093	6.218	6.066	4.496	12.77	18.96	21.16	17.28
Observations	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408

Note: Robust standard errors are clustered by province and displayed in parentheses while ***, ** and * indicate significant at 1% , 5% and 10% level respectively. All columns include province fixed effects, time fixed effects, provincial linear time trend and province-specific time-varying controls: log-population, and the share aged 15 - 59.

	private employees				self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.0641	-0.0649	-0.0649	-0.0649	-0.142	-0.142	-0.142	-0.144	-0.982	-0.985	-0.986	-0.991
	(0.426)	(0.426)	(0.427)	(0.427)	(0.373)	(0.373)	(0.374)	(0.374)	(0.812)	(0.814)	(0.811)	(0.811)
1st lag of Log MW	-1.151	-1.200	-1.199	-1.197	1.688	1.691	1.693	1.740	12.26***	12.06***	12.05***	12.18***
	(1.504)	(1.474)	(1.474)	(1.471)	(1.874)	(1.819)	(1.819)	(1.825)	(3.525)	(3.490)	(3.483)	(3.485)
2nd lag of Log MW		-1.026	-1.025	-1.023		0.0620	0.0639	0.137		-4.184	-4.197	-3.990
		(1.589)	(1.588)	(1.591)		(2.243)	(2.243)	(2.235)		(4.103)	(4.102)	(4.100)
3rd lag of Log MW			0.0829	0.0830			0.243	0.244			-1.647*	-1.643*
			(0.357)	(0.357)			(0.331)	(0.330)			(0.913)	(0.911)
4th lag of Log MW				0.0242				0.754				2.153
				(0.616)				(0.782)				(1.448)
Sum MW effects	-1.215	-2.290	-2.206	-2.178	1.546	1.611	1.858	2.732	11.28***	6.892	5.217	7.711
Wald test (F-stat)	0.584	1.499	1.524	1.418	0.709	0.622	0.874	1.736	10.59	2.218	1.318	2.908
Observations	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,396	4,396	4,396	4,396

Results: Routine occupations Female 2002-2018

	private employees				self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.219	-0.219	-0.219	-0.220	-0.0792	-0.0808	-0.0809	-0.0853	-0.326	-0.331	-0.331	-0.334
	(0.429)	(0.429)	(0.429)	(0.429)	(0.510)	(0.510)	(0.508)	(0.509)	(0.831)	(0.834)	(0.832)	(0.830)
1st lag of Log MW	-2.364	-2.337	-2.338	-2.323	4.077*	3.981*	3.979*	4.089*	7.374*	7.054	7.045	7.152
	(1.850)	(1.812)	(1.812)	(1.814)	(2.237)	(2.192)	(2.191)	(2.201)	(4.330)	(4.305)	(4.298)	(4.308)
2nd lag of Log MW		0.566	0.565	0.589		-2.051	-2.053	-1.882		-6.899*	-6.908*	-6.747
		(1.815)	(1.814)	(1.814)		(2.303)	(2.303)	(2.300)		(4.136)	(4.134)	(4.111)
3rd lag of Log MW			-0.123	-0.123			-0.211	-0.207			-1.232	-1.228
			(0.468)	(0.468)			(0.398)	(0.398)			(1.010)	(1.008)
4th lag of Log MW				0.251				1.765*				1.679
				(0.690)				(0.921)				(1.652)
Sum MW effects	-2.584	-1.990	-2.116	-1.825	3.998*	1.849	1.635	3.679	7.049	-0.176	-1.426	0.521
Wald test (F-stat)	1.780	1.005	1.222	0.815	3.271	0.584	0.491	2.045	2.793	0.00129	0.0902	0.0120
Observations	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,340	4,340	4,340	4,340

	private employees				self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	0.0692	0.0666	0.0668	0.0671	-0.654	-0.654	-0.653	-0.655	-2.661*	-2.659*	-2.704*	-2.706*
	(0.789)	(0.791)	(0.792)	(0.792)	(0.587)	(0.587)	(0.585)	(0.586)	(1.405)	(1.405)	(1.407)	(1.412)
1st lag of Log MW	1.338	1.182	1.186	1.178	0.218	0.256	0.264	0.303	20.42***	20.28***	20.35***	20.59***
	(2.064)	(2.026)	(2.025)	(2.013)	(3.089)	(2.989)	(2.988)	(2.984)	(4.492)	(4.412)	(4.412)	(4.433)
2nd lag of Log MW		-3.292	-3.288	-3.300		0.794	0.801	0.861		-2.909	-2.894	-2.336
		(2.141)	(2.139)	(2.136)		(3.556)	(3.557)	(3.548)		(4.907)	(4.908)	(4.901)
3rd lag of Log MW			0.465	0.465			0.852	0.853			-3.761***	-3.739***
			(0.460)	(0.460)			(0.773)	(0.772)			(1.056)	(1.053)
4th lag of Log MW				-0.124				0.601				5.838**
				(0.989)				(0.880)				(2.398)
Sum MW effects	1.407	-2.043	-1.570	-1.713	-0.436	0.397	1.263	1.963	17.76***	14.71***	10.99***	17.64***
Wald test (F-stat)	0.465	0.670	0.418	0.513	0.0212	0.0163	0.165	0.458	15.97	7.776	4.229	9.575
Observations	4,403	4,403	4,403	4,403	4,394	4,394	4,394	4,394	3,698	3,698	3,698	3,698

Results: Routine occupations Urban Area 2002-2018

	private employees				self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.234	-0.236	-0.236	-0.238	-0.385	-0.386	-0.386	-0.390	-0.528	-0.528	-0.530	-0.534
	(0.392)	(0.392)	(0.392)	(0.393)	(0.417)	(0.417)	(0.418)	(0.417)	(0.678)	(0.678)	(0.675)	(0.676)
1st lag of Log MW	1.760	1.644	1.646	1.691	1.387	1.316	1.318	1.414	5.341*	5.326*	5.315*	5.384*
	(1.308)	(1.271)	(1.271)	(1.271)	(1.735)	(1.700)	(1.700)	(1.698)	(2.774)	(2.720)	(2.718)	(2.710)
2nd lag of Log MW		-2.462*	-2.461*	-2.391*		-1.498	-1.496	-1.348		-0.336	-0.346	-0.209
		(1.297)	(1.297)	(1.290)		(1.688)	(1.688)	(1.690)		(3.915)	(3.916)	(3.914)
3rd lag of Log MW			0.223	0.224			0.252	0.255			-1.287*	-1.284*
			(0.326)	(0.326)			(0.414)	(0.413)			(0.740)	(0.739)
4th lag of Log MW				0.725				1.537***				1.335
				(0.638)				(0.562)				(1.188)
Sum MW effects	1.526	-1.055	-0.828	0.0120	1.002	-0.568	-0.312	1.468	4.813*	4.461	3.152	4.691
Wald test (F-stat)	1.375	0.764	0.514	9.71e-05	0.314	0.112	0.0347	0.723	2.964	1.151	0.611	1.389
Observations	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,408	4,352	4,352	4,352	4,352

	private employees				self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.262	-0.262	-0.262	-0.259	0.108	-0.654	0.104	0.103	-2.058*	-2.060*	-2.060*	-2.048*
	(0.598)	(0.597)	(0.598)	(0.599)	(0.613)	(0.587)	(0.613)	(0.614)	(1.126)	(1.126)	(1.127)	(1.127)
1st lag of Log MW	-2.091	-2.080	-2.078	-2.136	4.414	0.256	4.298	4.327	6.264	6.340	6.351	6.377
	(2.356)	(2.287)	(2.285)	(2.279)	(2.998)	(2.989)	(2.941)	(2.953)	(4.749)	(4.701)	(4.696)	(4.692)
2nd lag of Log MW		0.242	0.243	0.163		0.794	-2.537	-2.492		1.892	1.895	2.125
		(2.779)	(2.778)	(2.790)		(3.556)	(3.531)	(3.483)		(4.461)	(4.463)	(4.468)
3rd lag of Log MW			0.174	0.172			0.433	0.434			-0.377	-0.372
			(0.513)	(0.513)			(0.583)	(0.582)			(1.123)	(1.123)
4th lag of Log MW				-0.927				0.457				2.184
				(0.914)				(1.195)				(2.057)
Sum MW effects	-2.353	-2.100	-1.923	-2.987	4.521	0.397	2.299	2.829	4.207	6.171	5.808	8.266
Wald test (F-stat)	0.867	0.660	0.622	1.351	2.539	0.0163	0.434	0.738	0.707	1.180	0.948	1.648
Observations	4,292	4,292	4,292	4,292	4,178	4,394	4,178	4,178	2,729	2,729	2,729	2,729

	all workers				private employees				public employees			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.136**	-0.136**	-0.137**	-0.137**	0.572***	0.571***	0.569***	0.568***	0.350	0.350	0.354	0.353
	(0.0563)	(0.0562)	(0.0564)	(0.0563)	(0.198)	(0.198)	(0.197)	(0.197)	(0.228)	(0.228)	(0.227)	(0.227)
1st lag of Log MW	-0.636**	-0.669**	-0.672**	-0.669**	0.787	0.965	0.959	0.937	1.017	0.935	0.944	0.923
	(0.283)	(0.285)	(0.285)	(0.284)	(0.593)	(0.598)	(0.598)	(0.590)	(1.125)	(1.109)	(1.113)	(1.115)
2nd lag of Log MW		-0.573*	-0.574*	-0.569*		3.078***	3.075***	3.031***		-1.416	-1.412	-1.454
		(0.325)	(0.324)	(0.320)		(0.942)	(0.943)	(0.933)		(1.058)	(1.058)	(1.059)
3rd lag of Log MW			-0.0526	-0.0525			-0.116	-0.118			0.185	0.184
			(0.0371)	(0.0370)			(0.137)	(0.136)			(0.310)	(0.310)
4th lag of Log MW				0.0513				-0.454				-0.435
				(0.120)				(0.381)				(0.442)
Sum MW effects	-0.772**	-1.378**	-1.436***	-1.377***	1.359**	4.613***	4.487***	3.965***	1.367	-0.131	0.0710	-0.429
Wald test (F-stat)	6.517	9.873	11.04	11.71	5.038	14.19	13.63	13.85	1.424	0.0106	0.00294	0.0915
Observations	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508

	self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.203	-0.203	-0.204	-0.204	-0.675**	-0.675**	-0.677**	-0.676**
	(0.145)	(0.145)	(0.145)	(0.145)	(0.279)	(0.280)	(0.280)	(0.280)
1st lag of Log MW	-1.092**	-1.101**	-1.104**	-1.098**	-1.098	-1.220	-1.228	-1.198
	(0.514)	(0.509)	(0.508)	(0.508)	(0.929)	(0.932)	(0.931)	(0.924)
2nd lag of Log MW		-0.161	-0.162	-0.150		-2.113*	-2.117*	-2.057*
		(0.479)	(0.480)	(0.478)		(1.236)	(1.235)	(1.223)
3rd lag of Log MW			-0.0594	-0.0591			-0.149	-0.148
			(0.102)	(0.102)			(0.193)	(0.192)
4th lag of Log MW				0.127				0.606
				(0.211)				(0.493)
Sum MW effects	-1.295***	-1.465**	-1.530**	-1.384**	-1.774*	-4.008***	-4.171***	-3.473***
Wald test (F-stat)	7.710	5.997	6.179	4.867	3.297	7.814	8.669	6.183
Observations	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508

Results: Routine occupations overall & formal 2009-2018

	all workers				private employees				public employees			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	0.129	0.129	0.127	0.128	0.0905	0.0901	0.0901	0.0907	0.284	0.285	0.277	0.276
	(0.200)	(0.200)	(0.201)	(0.201)	(0.460)	(0.460)	(0.462)	(0.462)	(0.459)	(0.459)	(0.455)	(0.456)
1st lag of Log MW	-2.544**	-2.568**	-2.572**	-2.560**	-6.036**	-5.959**	-5.959**	-5.942**	0.274	0.0867	0.0638	0.0274
	(1.255)	(1.251)	(1.249)	(1.247)	(2.599)	(2.543)	(2.537)	(2.534)	(2.292)	(2.275)	(2.269)	(2.290)
2nd lag of Log MW		-0.415	-0.417	-0.394		1.333	1.333	1.368		-3.250	-3.261	-3.334
		(1.202)	(1.201)	(1.206)		(2.452)	(2.452)	(2.458)		(2.192)	(2.191)	(2.176)
3rd lag of Log MW			-0.0692	-0.0685			0.00288	0.00389			-0.463	-0.465
			(0.192)	(0.192)			(0.357)	(0.357)			(0.579)	(0.578)
4th lag of Log MW				0.237				0.363				-0.754
				(0.429)				(0.771)				(1.177)
Sum MW effects	-2.416*	-2.855	-2.930*	-2.657	-5.946**	-4.537*	-4.533*	-4.116	0.558	-2.878	-3.383	-4.250
Wald test (F-stat)	3.708	2.774	3.147	2.419	5.061	2.816	3.171	2.240	0.0564	1.177	1.581	1.881
Observations	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508	2,508

	self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.0399	-0.0398	-0.0366	-0.0361	-0.684	-0.683	-0.709	-0.707
	(0.358)	(0.358)	(0.361)	(0.361)	(0.854)	(0.854)	(0.853)	(0.854)
1st lag of Log MW	0.108	0.0911	0.101	0.116	7.489	7.214	7.138	7.209
	(1.968)	(1.932)	(1.930)	(1.931)	(6.071)	(5.940)	(5.934)	(5.925)
2nd lag of Log MW		-0.297	-0.292	-0.260		-4.761	-4.798	-4.654
		(2.595)	(2.592)	(2.586)		(6.800)	(6.806)	(6.789)
3rd lag of Log MW			0.190	0.191			-1.544*	-1.540*
			(0.352)	(0.352)			(0.896)	(0.895)
4th lag of Log MW				0.329				1.471
				(0.739)				(1.542)
Sum MW effects	0.0683	-0.245	-0.0376	0.340	6.805	1.771	0.0874	1.780
Wald test (F-stat)	0.00135	0.00741	0.000183	0.0149	1.255	0.0545	0.000132	0.0579
Observations	2,508	2,508	2,508	2,508	2,502	2,502	2,502	2,502

	FEMALE							
	private employees				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.237	-0.238	-0.242	-0.240	-0.454	-0.451	-0.467	-0.467
	(0.496)	(0.496)	(0.497)	(0.496)	(0.872)	(0.873)	(0.874)	(0.874)
1st lag of Log MW	-6.877**	-6.650**	-6.661**	-6.599**	1.392	0.919	0.871	0.869
	(2.679)	(2.619)	(2.615)	(2.616)	(6.746)	(6.573)	(6.573)	(6.558)
2nd lag of Log MW		3.942	3.936	4.063		-7.965	-7.989	-7.994
		(2.582)	(2.582)	(2.572)		(7.566)	(7.564)	(7.557)
3rd lag of Log MW			-0.219	-0.216			-0.909	-0.910
			(0.450)	(0.450)			(0.976)	(0.975)
4th lag of Log MW				1.296				-0.0486
				(0.835)				(1.961)
Sum MW effects	-7.115**	-2.947	-3.186	-1.695	0.938	-7.497	-8.495	-8.551
Wald test (F-stat)	6.615	1.167	1.518	0.344	0.0197	0.885	1.154	1.227
Observations	2,508	2,508	2,508	2,508	2,466	2,466	2,466	2,466

	all workers				private employees				public employees			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	0.861***	0.855***	0.840***	0.911***	-0.794	-0.649	-0.684	-0.816	0.504	0.522	0.573	0.508
	(0.305)	(0.295)	(0.297)	(0.315)	(0.825)	(0.800)	(0.809)	(0.832)	(0.724)	(0.700)	(0.686)	(0.715)
1st lag of Log MW	-0.669**	-0.674**	-0.690**	-0.610**	0.519	0.642	0.605	0.457	1.230	1.245	1.299	1.226
	(0.276)	(0.276)	(0.268)	(0.257)	(0.798)	(0.764)	(0.740)	(0.738)	(1.003)	(0.963)	(0.950)	(0.966)
2nd lag of Log MW		-0.0746	-0.0881	0.00140		1.756*	1.724*	1.559*		0.212	0.258	0.176
		(0.268)	(0.265)	(0.252)		(0.908)	(0.908)	(0.888)		(0.920)	(0.924)	(0.895)
3rd lag of Log MW			-0.166	-0.0881			-0.388	-0.533			0.563	0.492
			(0.189)	(0.191)			(0.495)	(0.484)			(0.627)	(0.592)
4th lag of Log MW				0.852***				-1.577**				-0.774
				(0.320)				(0.644)				(0.783)
Sum MW effects	0.192	0.107	-0.104	1.067**	-0.275	1.749	1.258	-0.909	1.735	1.979**	2.692***	1.628
Wald test (F-stat)	0.324	0.108	0.130	4.649	0.0606	3.334	1.520	0.524	1.799	4.792	7.927	1.643
Observations	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204

	self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.272	-0.228	-0.227	-0.240	3.066***	3.018***	2.978***	3.179***
	(0.363)	(0.358)	(0.363)	(0.365)	(1.069)	(1.033)	(1.024)	(1.078)
1st lag of Log MW	-0.731	-0.693	-0.692	-0.706	-2.492***	-2.533***	-2.575***	-2.351***
	(0.544)	(0.526)	(0.527)	(0.524)	(0.816)	(0.794)	(0.776)	(0.772)
2nd lag of Log MW		0.537	0.538	0.522		-0.580	-0.616	-0.364
		(0.431)	(0.423)	(0.414)		(0.862)	(0.873)	(0.828)
3rd lag of Log MW			0.0169	0.00254			-0.440	-0.220
			(0.314)	(0.301)			(0.697)	(0.652)
4th lag of Log MW				-0.157				2.397**
				(0.408)				(1.149)
Sum MW effects	-1.003	-0.384	-0.363	-0.579	0.574	-0.0945	-0.652	2.642
Wald test (F-stat)	2.261	0.569	0.384	1.047	0.189	0.00975	0.386	2.271
Observations	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204

	all workers				private employees				public employees			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.767	-0.867	-0.806	-0.813	-1.821	-2.048	-1.886	-1.750	0.752	0.640	0.921	0.870
	(1.170)	(1.195)	(1.180)	(1.182)	(1.738)	(1.755)	(1.745)	(1.725)	(1.629)	(1.683)	(1.654)	(1.689)
1st lag of Log MW	1.658	1.573	1.637	1.630	0.909	0.716	0.888	1.040	-1.866	-1.961	-1.664	-1.721
	(1.462)	(1.430)	(1.406)	(1.398)	(1.934)	(1.905)	(1.853)	(1.849)	(2.659)	(2.564)	(2.551)	(2.566)
2nd lag of Log MW		-1.221	-1.166	-1.173		-2.752	-2.606	-2.434		-1.360	-1.107	-1.171
		(1.261)	(1.221)	(1.207)		(2.092)	(2.008)	(1.998)		(2.606)	(2.560)	(2.535)
3rd lag of Log MW			0.675	0.668			1.793	1.942			3.111	3.055
			(1.181)	(1.183)			(2.088)	(2.074)			(2.056)	(1.979)
4th lag of Log MW				-0.0741				1.631				-0.613
				(1.021)				(1.912)				(1.844)
Sum MW effects	0.891	-0.515	0.340	0.238	-0.913	-4.084	-1.812	0.429	-1.114	-2.682	1.262	0.420
Wald test (F-stat)	0.283	0.0736	0.0467	0.0177	0.154	2.011	0.583	0.0242	0.172	0.787	0.176	0.0168
Observations	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204	2,204

	self-employed				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-1.552	-1.474	-1.462	-1.710	-3.399	-3.807	-3.977	-3.817
	(1.676)	(1.652)	(1.666)	(1.674)	(2.889)	(2.932)	(2.969)	(2.969)
1st lag of Log MW	2.866	2.932	2.945	2.668	15.76***	15.42***	15.24***	15.42***
	(2.598)	(2.487)	(2.451)	(2.479)	(4.938)	(4.836)	(4.770)	(4.811)
2nd lag of Log MW		0.938	0.949	0.639		-4.972	-5.124	-4.925
		(2.813)	(2.767)	(2.666)		(4.918)	(4.791)	(4.700)
3rd lag of Log MW			0.135	-0.137			-1.876	-1.702
			(1.795)	(1.789)			(3.974)	(3.881)
4th lag of Log MW				-2.957				1.898
				(2.159)				(4.109)
Sum MW effects	1.315	2.396	2.567	-1.496	12.36***	6.638	4.262	6.869
Wald test (F-stat)	0.199	0.757	1.114	0.244	6.996	1.515	0.690	1.419
Observations	2,204	2,204	2,204	2,204	2,198	2,198	2,198	2,198

	FEMALE								MALE							
	private employees				unpaid family workers				private employees				unpaid family workers			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Log-MW	-0.332	-0.462	-0.300	-0.0881	2.021	1.440	1.310	1.707	-4.627*	-5.049**	-4.928**	-4.935**	-5.552	-5.799	-6.215	-6.128
	(2.179)	(2.148)	(2.171)	(2.172)	(3.163)	(3.203)	(3.207)	(3.270)	(2.466)	(2.503)	(2.435)	(2.425)	(5.523)	(5.544)	(5.636)	(5.617)
1st lag of Log MW	-0.555	-0.666	-0.493	-0.257	11.11**	10.62**	10.49**	10.93**	3.142	2.783	2.912	2.904	27.78***	27.54***	27.15***	27.24***
	(2.409)	(2.344)	(2.315)	(2.304)	(5.425)	(5.324)	(5.240)	(5.263)	(2.425)	(2.386)	(2.352)	(2.326)	(7.553)	(7.319)	(7.287)	(7.261)
2nd lag of Log MW		-1.586	-1.439	-1.174		-7.044	-7.161	-6.667		-5.126*	-5.017*	-5.026*		-3.625	-4.036	-3.944
		(2.637)	(2.554)	(2.544)		(4.908)	(4.829)	(4.699)		(2.702)	(2.576)	(2.563)		(6.552)	(6.528)	(6.464)
3rd lag of Log MW			1.801	2.032			-1.440	-1.004			1.344	1.336			-5.086	-4.986
			(2.333)	(2.277)			(3.977)	(3.879)			(3.051)	(3.004)			(5.618)	(5.322)
4th lag of Log MW				2.525				4.754				-0.0900				0.921
				(2.154)				(4.635)				(2.770)				(6.379)
Sum MW effects	-0.886	-2.714	-0.431	3.038	13.14**	5.018	3.194	9.721	-1.484	-7.392*	-5.688	-5.812	22.23***	18.12**	11.82	13.10
Wald test (F-stat)	0.0925	0.844	0.0215	0.961	6.040	0.797	0.339	2.115	0.182	3.114	2.676	2.294	7.216	5.508	1.295	1.714
Observations	2,204	2,204	2,204	2,204	2,177	2,177	2,177	2,177	2,202	2,202	2,202	2,202	1,717	1,717	1,717	1,717

Discussion

- The impact of minimum wage on employment in Thailand is characterized by:
  - Distinction between formal and informal sectors (wage employees in private and public sectors versus self-employed and unpaid family workers) and interactions between the two
  - And the size of the hikes
- Only large increases in minimum wages lead to significant changes in employment growth with a reduction in the informal sector but an expansion in the private sector employment
- The findings could be explained by a combination of two-sector model (Gramlich-Mincer-Welch; 1974, 1976) with substantial monopsony power of private firms in the formal sector (Manning, 2003)
- Large increases $=>$ Loss in mainly routine private sector jobs

- Potential robustness checks
  - Using annual data to mitigate seasonal variation
  - Additional controls e.g. Gross Provincial Products (only annually)
  - Different specifications and Falsification tests
- Future works could focus differential between genders and rural vs. urban
- What happen to the non-routine as well as cognitive occupations?
- Were there really any extra investment in capital to substitute routine workers?

Thank you for your attention