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The Double-Edged Sword: Unintended Consequences of SME Promotion Policy

by

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Abstract

This paper investigates the unintended effects of size-dependent regulations in SME promotion policies. Using administrative data from all registered firms in Thailand, we examine the 2012 introduction of a revenue cap—designed for corporate income tax exemption of SMEs— and its cascading impact on firms' growth and investment decisions and the broader market landscape. Our findings indicate a strong response to the cap, with a significant bunching of firms just below the threshold. After the introduction of the policy, we observe a significant decline in both revenue growth and investment among firms eligible for the scheme, compared to ineligible firms. This adverse effect is more pronounced among firms with lower pre-policy profitability. Additionally, while the size-dependent policy does not directly curtail the growth of large firms, it inadvertently enhances their market share due to the policy's negative effects on SME growth. Our study highlights the unintended outcomes of SME policies that, while aiming to support smaller entities, may inadvertently curb SME growth—giving an edge to larger firms in the industry.

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1. Introduction

Governments around the world implement support programs specifically designed for small- and medium-size enterprises (SMEs). These initiatives typically come with qualification criteria, often reliant on the size of the businesses (Bergner et al., 2017). The criteria, in turn, may create an incentive for firms to maintain their size to remain eligible. Such size-dependent regulations could have far-reaching implications on firms' behaviors, such as their decisions related to growth and investment. Furthermore, the impact may extend beyond SMEs, potentially affecting larger firms as well.

This study examines the effects of a size-dependent regulation on SMEs' growth and investment decisions. It also explores potential spillover impacts on larger firms. We use administrative data containing annual financial statements from 2004 to 2017 encompassing the universe of registered firms in Thailand. Our identification strategy is based on Thailand's introduction of the 30-million-baht revenue cap as a criterion for its SME tax scheme in 2012.[1] Using the bunching method, we first demonstrate that this cap introduction created a salient tax notch for SMEs. We then employ a difference-in-difference approach to explore the impact of the revenue cap on firms' decisions related to growth and investment. We also highlight how the introduction of the cap contributes to an increase in the market share of larger firms.

We document three sets of empirical findings. First, using the bunching framework (Kleven and Waseem, 2013), we identify a strong response to the revenue cap, as indicated by a significant bunching just below the threshold that did not exist before the introduction of the tax incentive. This bunching is mainly driven by firms with positive EBIT, while there is no bunching among firms with negative or zero EBIT, which have no incentive to bunch. We also note a smooth distribution of the revenue-variable cost ratio around the notch, suggesting that a significant part of the observed effect might be attributed to the real operation response.

Second, our difference-in-difference analyses illustrate that the size-dependent regulation negatively affects the decision to grow and invest. Following the 2012 introduction of the revenue cap, we observe a significant decline in the revenue growth among firms eligible for the program, relative to ineligible firms. Our analysis further suggests broader implications of the revenue cap beyond curtailing revenue growth.

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[1] The threshold is around 0.9 million USD using the average exchange rate during 2004–2017 (1 USD = 34.3 THB). Note that the exchange rate for THB ranged between 26.8 and 41.6 baht per USD during that time.

Following the 2012 policy introduction, we find a significant decline in the growth rate of fixed assets for eligible firms, compared to ineligible firms. We also show that these adverse effects on revenue growth and investment are largely concentrated among firms with low profitability, as proxied by pre-policy return on assets (ROA).

Third, we demonstrate that while the size-dependent SME regulation may not directly impede the growth of large firms, it indirectly expands their market share due to the policy's negative effects on SME growth. Using the revenue share of firms below the SME threshold in the year preceding the policy introduction at the industry-province level as an identification, we investigate whether the policy influences the market share of firms above the SME threshold. Our findings indicate significant spillover effects—the SME-targeted policy boosts the market share of larger firms. This result suggests that these larger entities effectively fill the market void created by limited SME growth.

This study is directly related to two strands of literature. The first one consists of the studies on how regulations that depend on firm size affect growth and productivity. Garicano, Lelarge, and van Reenen (2016), for instance, shows that France's size-dependent labor regulations have important effects on productivity distribution. Benedek et al. (2017) finds that size-related tax incentives that do not specifically target R&D investment have a significant negative relationship with firm productivity and growth. In addition, studies by Tsuruta (2020) and Cui et al. (2021) examine the investment behaviors of small firms under similar regulations in Japan and China, respectively. Our paper extends this body of literature by offering clear identification strategies that indicate the influence of a revenue cap on growth and investment and demonstrating how such size-dependent regulation might affect firms beyond the target group.

The second strand of related literature focuses on firm responses to thresholds or notches created by tax systems. Examples include bunching to avoid complying with value added tax regulations (Harju, Matikka and Rauhanen, 2016; Liu et al., 2019; Muthitacharoen et al., 2021), to benefit from lower tax rates in the corporate income tax system (Bachas and Soto, 2018), and to stay below the enforcement radar (Almunia and Lopez-Rodriguez, 2018). Our research contributes to this literature by demonstrating the firm's strong response to the introduction of an SME threshold and by indicating that its impact is not confined to areas near the threshold but spread to other firms in the market.

Altogether, our findings emphasize the importance of thoughtfully crafted policies that intend to support SMEs. Given their inherent challenges when competing

with large firms, government support might be needed to create a level playing field. However, there could be unintended consequences of SME promotion policies. Our findings further show that a size-dependent regulation can create an incentive for SMEs to restrain their growth while making larger firms expand their market shares.

The remainder of this paper is organized as follows. Section 2 provides an institutional background of the policy. We describe the data used in the analysis of this study in Section 3. Sections 4 and 5 discuss the empirical strategy and the results for each of the following analyses: (1) bunching, (2) revenue growth, (3) fixed assets growth, (4) survival, and (5) spillover effects to larger firms. Section 6 concludes and discusses policy implications.

2. Policy Background

All registered Thai firms are subject to corporate income taxation, generally levied as a flat-rate tax on net profit. In 2008, the government initiated a preferential tax scheme targeted at small- and medium-size enterprises (SMEs). To qualify for this program, a firm must have a registered capital not more than 5 million baht. This preferential scheme allows lower corporate income tax rates to eligible firms and is designed to ease SMEs' financial constraints and enhance their competitiveness.

In 2012, a significant revision was made to this SME tax scheme qualification criteria. The government introduced an annual revenue cap of 30 million baht, along with the requirement that a firm must not exceed this revenue limit in any preceding year. This 30-million-baht threshold created an important tax notch within the corporate income tax system. It is in contrast to the earlier criterion which only considered registered capital level and was generally easier to meet. Table 1 shows corporate income tax rates for general firms in Thailand, compared with those applicable to SMEs.

Table 1 Corporate income tax rates: General and SMEs (%)

	General tax rate	**SMEs scheme**						
		Registered capital requirement (5 mil. Baht)	Revenue requirement (30 mil. Baht)	Tax rate by size of Net Profit				
				0–150,000	150,000–300,000	300,000–1M	1M–3M	>3M
2004	30	-	-	30	30	30	30	30
2005	30	-	-	30	30	30	30	30
2006	30	-	-	30	30	30	30	30
2007	30	-	-	30	30	30	30	30
2008	30	Yes	**No**	0	15	15	25	30
2009	30	Yes	**No**	0	15	15	25	30
2010	30	Yes	**No**	0	15	15	25	30
2011	30	Yes	**No**	0	15	15	25	30
2012	23	Yes	**Yes**	0	15	15	23	23
2013	20	Yes	**Yes**	0	0	15	20	20
2014	20	Yes	**Yes**	0	0	15	20	20
2015	20	Yes	**Yes**	0	0	10	10	10
2016	20	Yes	**Yes**	0	0	10	10	10
2017	20	Yes	**Yes**	0	0	15	15	20
2018	20	Yes	**Yes**	0	0	15	15	20

Note: This table describes Thailand's corporate tax rate structure from 2004 to 2018. During 2008–2011, firms were considered SMEs and qualified for the reduced tax rates if they had registered capital not over 5 million baht. Since 2012, SMEs must have registered capital not over 5 million baht and have revenue not over 30 million baht. The introduction of the 30-million-baht revenue requirement was announced on 21 December 2011.

3. Data

This study analyses corporate profile and financial statements (CPFS) data of registered Thai firms from 2004 to 2017. Every registered firm in Thailand is legally required to submit its annual financial statements to the Department of Business Development (DBD). The CPFS database has various financial information including assets, liabilities, revenues, and expenses. It also contains additional firm information such as registration year, registration type, operation status, and primary industry. We exclude holding companies from our analysis as they do not directly engage in production activities.[2]

Table 2 shows summary statistics for each analysis performed later in this study: the main bunching analysis (Panel A), the difference-in-difference analyses for revenue

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[2] For more details, see Banternghansa, Paweenawat, and Samphantharak (2019).

growth, fixed assets growth, profitability and survival likelihood (Panels B-E), and the difference-in-difference analysis of the spillover effect to larger firms (Panel F).

Table 2 Descriptive statistics

Variables	N	Mean	Median	S.D.
Panel A: Bunching analysis				
Revenue	599,627	26,160,208	24,442,722	8,322,355
Panel B: Difference-in-Difference analysis for revenue growth				
Revenue growth	550,677	0.090	0.007	1.197
Treat (0/1)	550,677	0.769	1.000	0.421
Post (0/1)	550,677	0.462	1.000	0.499
Age	550,677	12.357	10.000	9.194
Panel C: Difference-in-Difference analysis for fixed assets growth				
Fixed assets growth	516,261	-0.036	-0.086	1.390
Treat (0/1)	516,261	0.764	1.000	0.424
Post (0/1)	516,261	0.470	0.000	0.499
Age	516,261	12.699	11.000	9.204
Panel D: Difference-in-Difference analysis for profitability				
ROA	584,959	0.030	0.046	0.209
Treat (0/1)	584,959	0.774	1.000	0.418
Post (0/1)	584,959	0.446	0.000	0.497
Age	584,959	11.846	10.000	9.331
Panel E: Difference-in-Difference analysis for survival probability				
Survival	587,521	0.911	1.000	0.284
Treat (0/1)	587,521	0.774	1.000	0.418
Post (0/1)	587,521	0.448	0.000	0.497
Age	587,521	11.855	10.000	9.334
Panel F: Difference-in-Difference analysis for spillover to larger firms				
Market share	291,653	0.015	0.001	0.069
Exposure	291,653	0.099	0.066	0.106
Post (0/1)	291,653	0.380	0.000	0.485
Age	291,653	13.863	12.000	9.682

Note: The table describes summary statistics of data used in this paper. Return on assets (ROA) is winsorized at the 1% level.

Source: Authors' estimate.

4. Bunching Analysis

4.1 Measuring Bunching

Following Kleven and Waseem (2013), we measure bunching at the SME tax notch by comparing the actual distribution to the counterfactual distribution in the absence of the tax notch. This can be written as

$$b = \frac{\sum_{j=y_L}^{y^*}(c_j - \hat{c}_j)}{\frac{\sum_{j=y_L}^{y^*}\hat{c}_j}{N_j}}, \tag{1}$$

where y^* is the SME threshold, y_L is the lower limit of the excluded region, c_j is actual number of firms in each revenue bin (width of 100,000 baht), $\hat{c}_j$ is the counterfactual number in each revenue bin in the absence of the tax notch, and N_j is the number of bins within the interval $[y_L, y^*]$. The bunching parameter b reflects the size of excess bunching relative to the average height of the counterfactual distribution to the left of the notch.

The counterfactual distribution of reported revenue is estimated by fitting a 5th degree polynomial equation and excluding the areas around the notch where bunching occurs.[3] The equation can be written as

$$c_j = \sum_{i=0}^{p}\beta_i(z_j)^i + \sum_{i=z_L}^{z_U}\gamma_i 1[z_j = i] + v_j, \tag{2}$$

where c_j denotes number of firms in bin j, z_j denotes revenue level of bin j, p denotes polynomial order, $[z_L, z_U]$ denotes the excluded region, and v_j denotes the error term. The predicted value $(\hat{c}_j)$ from this equation represents the counterfactual distribution that is used in equation (1). Note that the lower limit of the excluded region (y_L) is set where the bunching begins, and the upper limit is estimated in an iterative procedure to ensure that the excess mass below the notch equals the missing mass above.

4.2 Bunching at the Tax Notch

To determine whether firms responded to the SME tax notch, Figure 1 shows histograms of revenue around the SME threshold with a bin width of 100,000 baht. There is a sharp bunching just below the 30-million-baht threshold during the post-policy period (2012–2017), which did not exist before the introduction of the tax incentive in 2012. These findings suggest that firms responded strongly to the SME tax incentives.

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[3] We also estimate the polynomial equations of the 4th, 6th and 7th degree. The results are consistent and are available upon request.

Figure 1 Histogram of revenue around the SME threshold

A) 2004–2011	B) 2012–2017
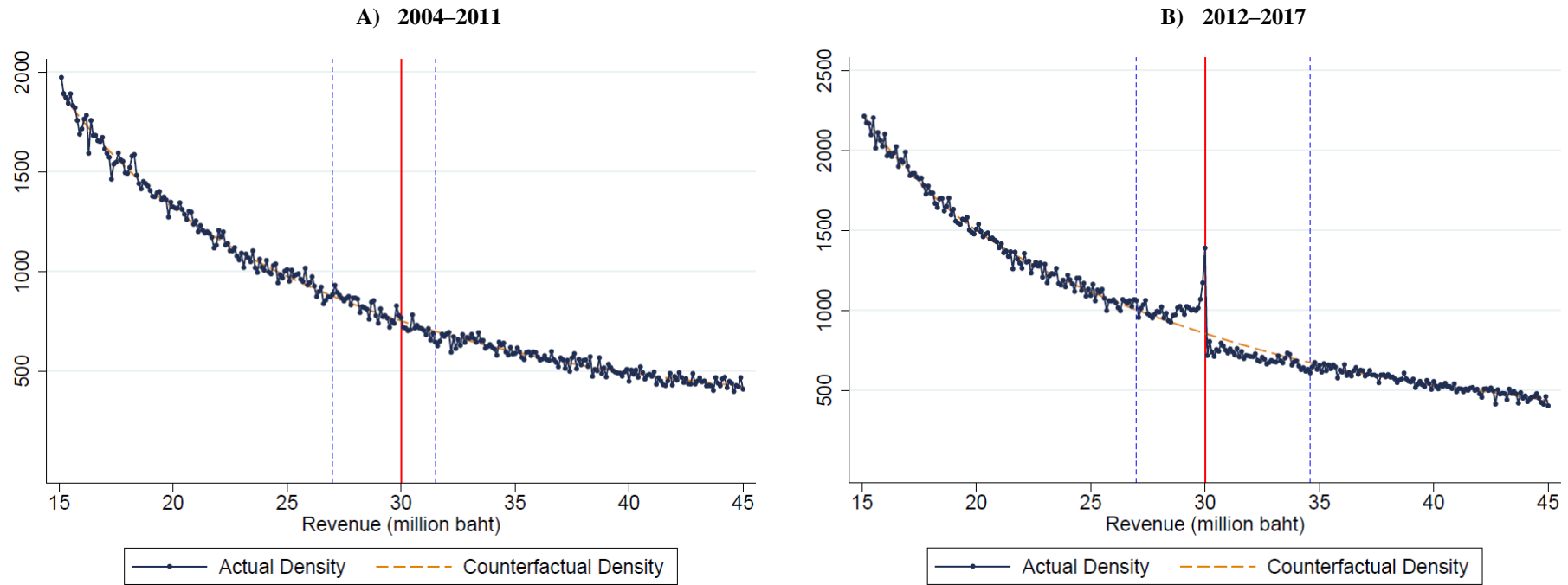
Note: This figure shows the histograms of firms' revenue by pooling data of all firms from 2004 to 2011 (panel A) and from 2012 to 2017 (panel B). The bin width is 100,000 baht. The red vertical line denotes the SME threshold of 30 million baht. The blue vertical dashed line denotes the lower bound and the upper bound of the excluded region (27–34.8 million baht). The orange dashed line is the counterfactual density fitted by excluding bins around the SME notch.
Source: Authors' estimate.

Table 3 reports the bunching estimates. The overall bunching estimate is 2.84, i.e., the total excess bunching mass is approximately 2.8 times the average height of the counterfactual over the excluded range. While the bunching is large and statistically significant across all major sectors, it appears to be most pronounced in the retail trade sector. One explanation is that the Value Added Tax (VAT) self-enforcement mechanism becomes less effective at the retail stage, providing a chance for manipulation of reported sales.[4]
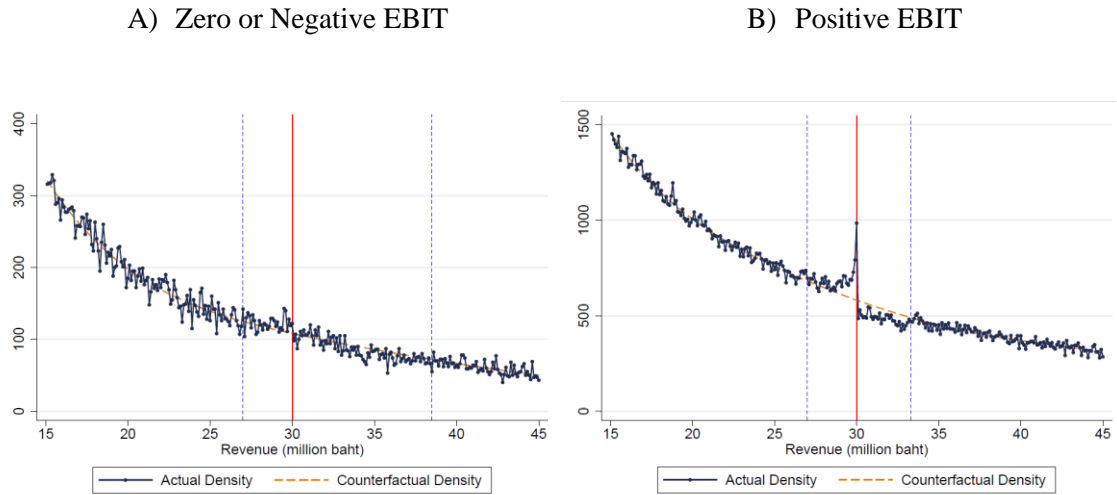
Table 3 Bunching estimates by major sectors (2012-2017)

	N	Bunching estimate	SE
All sectors	298,064	2.844	0.018
Manufacturing	94,532	3.004	0.036
Services	79,371	2.406	0.025
Wholesale	75,950	2.522	0.033
Retail	48,211	3.870	0.102

Note: This table shows the bunching estimates around the SME threshold for 2012–2017. The estimation methodology is based on Kleven and Waseem (2013).

We also find that the bunching response is mainly driven by firms with positive EBIT, as shown in Figure 2. There is no bunching among firms with negative or zero EBIT, which have no incentive to bunch. This result suggests that the response is consistent with the monetary incentive for firms to respond to the new tax scheme.

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[4] See, for example, Pomeranz (2015) and Naritomi (2017).

Figure 2 Histogram of revenue around the SME threshold by profitability (2011–2017: All sectors)

| A) Zero or Negative EBIT | B) Positive EBIT |

What we observe is likely to be a mix of the real operation response and the under-reporting response. We are not able to identify the contribution of each mechanism precisely. However, using information on firm's input costs, we can provide some suggestive evidence that a significant part of the observed bunching could be attributed to the real operation response.

Our investigation is based on the notion that, when revenue bunching is due to the real operation response, we expect firms to lower their variable inputs proportionally. Consequently, the distribution of the ratio between revenue and variable costs is likely to be smooth around the SME notch. On the other hand, if the bunching is not from changes in the real operation, the ratio may not be smooth because input costs are generally deductible for corporate income tax, making firms reluctant to reduce their reported costs. If most firms under-reported revenue but did not adjust their reported costs accordingly, we would expect to see a drop in the average revenue-cost ratio just below the tax notch relative to that above the notch.

Figure 3 illustrates the average revenue-cost ratio of SMEs in bins of 2 million baht on both sides of the threshold. The revenue-cost ratio is defined as total revenue divided by costs of goods and services sold (COGS). Such costs include salary expense which is relatively difficult to misreport due to withholding taxes. The evidence of smooth distribution of the revenue-cost ratio around the notch suggests that a significant part of the effect could be attributed to the real operation response.

It is important to note that this finding is only suggestive evidence since some firms may reduce their reported cost in proportion to their under-reported revenue. Although the cost is tax-deductible, lowering cost in proportion to the sale may help avoid potential scrutiny from the tax authority.

Figure 3 Revenue-cost ratio around the SMEs threshold
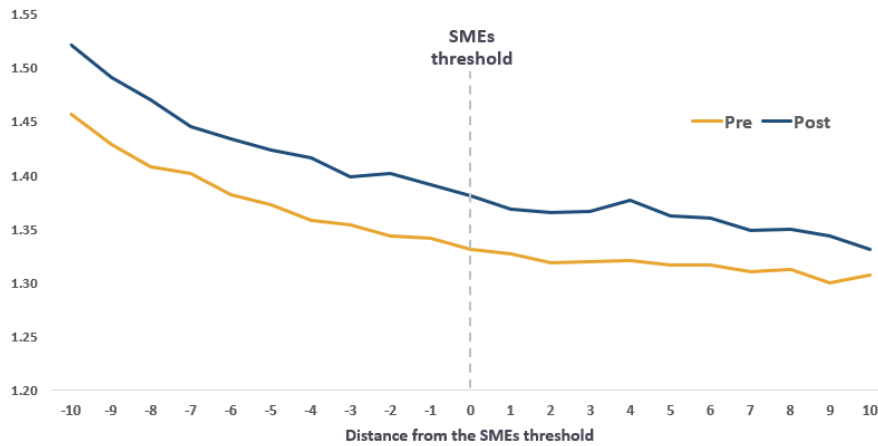
Note: This figure shows the average revenue-input ratio of SMEs in bins of 2 million baht on both sides of the threshold. The revenue-input ratio is defined as total revenue divided by costs of all goods and services.
Source: Authors' estimate.

## 5. Implications on Growth and Spillovers

Having established that the SME tax incentive is salient and may reflect real response, we further analyze how the size-dependent regulation has affected firm growth. This section first illustrates the persistence of firm behavior around the threshold. It then uses a more-robust framework to demonstrate the effects of the SME promotion policy on revenue growth, investment, profitability and survival. We conclude this section by examining the spillover effects to large firms.

5.1 Persistence

Figure 4 shows the one-year persistence rates of firm size on both sides of the threshold, comparing before and after the introduction of the SME tax incentive. The persistence rate is defined as the proportion of firms that remain in the same revenue bin from one year to the next, where the width of each bin is 2 million baht. As illustrated in the figure, during 2012–2017, the persistence rate in the bin just below the threshold (2.8–3 million baht) is noticeably larger than that in the other bins around the threshold. This pattern is not observed before the SME tax incentive introduction. We also find that this pattern of

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persistence rate remains even after a few years, as shown in Figure 5. This finding implies that firms attempted to stay below the tax notch for multiple years.

Figure 4 Persistence rate at the SMEs threshold: 1 year (2004-2011 vs. 2012-2017)
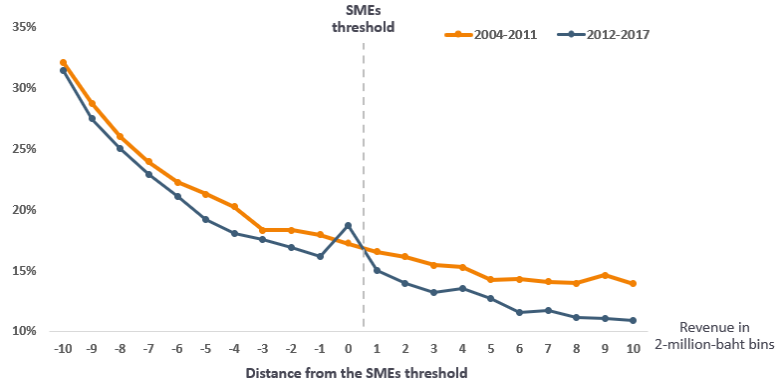
Note: This figure shows the persistence rate, defined as the probability that a firm remains in the same 2-million-baht revenue bin from one year to another.
Source: Authors' estimate.

Figure 5 Persistence rate at the SMEs threshold: 1, 2, and 3 years (2012-2017)
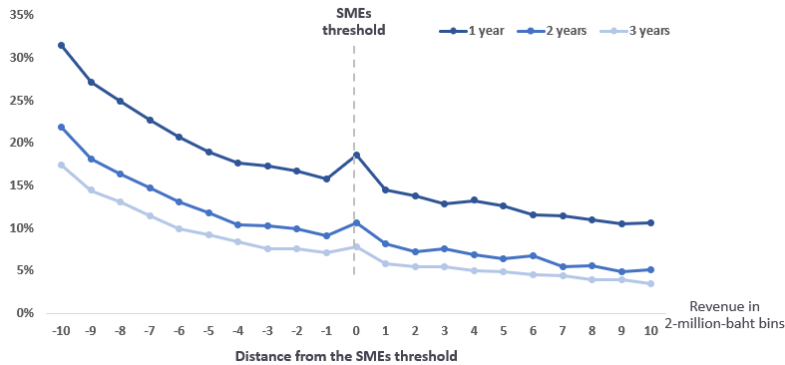
Note: This figure shows the persistence rate, defined as the probability that a firm remains in the same 2-million-baht revenue bin from one year to another.
Source: Authors' estimate.

5.2 Revenue Growth, Investment, Profitability and Survival

Next, we employ the difference-in-difference framework to evaluate the impacts of the size-dependent promotion policy on the revenue growth. We focus our sample on firms that existed in the year just before the policy (2011) and were just below the threshold at the time (having revenue in the range of 10–30 million baht). The pre-policy period is 2004–2011, while the post-policy period is 2012–2017.

We define our treatment group to be firms that had revenue not over 30 million

baht during all pre-policy years.[5] Control group includes firms with revenue over 30 million baht in at least one year during the pre-policy period. The estimation equation can be written as:

$$y_{it} = \alpha_0 + \alpha_1 post_t + \alpha_2 treat_i + \alpha_3 post_t \cdot treat_i + \alpha_4 Age_{it}$$
$$+ FirmFE + YearFE + YearxSectorFE + \varepsilon_{it}, \qquad (3)$$

where y_{it} denotes revenue growth defined as $\log(Revenue_{it}) - \log(Revenue_{i,t-1})$, $post_t$ denotes a dummy variable that equals one for the years including and after 2012 and equals zero otherwise, $treat_i$ denotes a dummy variable that equals one for treated firms and zero for controlled firms, and Age_{it} denotes firm age. Note that is $treat_i$ is dropped from the regression due to the inclusion of firm fixed effects. Under the identification assumption that unobserved determinants of revenue growth (ε_{it}) do not change differentially on average across the treatment and control groups around the reform, the coefficient α_3 represent the causal effect of the SME tax policy on the revenue growth. The estimation period ranges from 2004 to 2017.

Our difference-in-difference analyses illustrate that the tax incentives adversely affected firm growth for stand-alone firms. As shown in Table 4, following the 2012 introduction, the revenue growth for treated firms declined by 22.4 percentage points relative to control firms (Columns 4 of Table 4). The adverse impacts on revenue growth are observed across all major sectors (Figure 6).

Our findings are generally robust to alternative model specifications. The coefficient for the interaction term, $post_t \cdot treat_i$, is negative and statistically significant throughout the model specifications where we progressively add firm fixed effects, year fixed effects, and sector-year fixed effects to the model (Columns 1–3 of Table 4). The overall result is also consistent when we extend our sample to include firms positioned just above the threshold in 2011, with revenues ranging from 30 to 50 million baht (Column 6 of Table 4).

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[5] Note that we do not impose a requirement on registered capital since its information is only available for 2017. However, over 85% of all firms in that year have registered capital not exceeding 5 million baht.

Table 4: Effects of the SME tax incentive on revenue growth (Dep var = Revenue growth)

	(1)	(2)	(3)	(4)	(5)
		Adding fixed effects incrementally		Baseline	Including firms above threshold in 2011
Post	-0.282***	-0.417***	-0.350***	-3.998*	-4.019**
	(0.006)	(0.012)	(0.135)	(2.280)	(1.905)
Treat x Post	-0.203***	-0.212***	-0.224***	-0.224***	-0.121***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.006)
Age				0.281	0.269*
				(0.175)	(0.146)
Observations	550,720	550,720	550,677	550,677	746,034
R-squared	0.035	0.039	0.046	0.046	0.045
Number of firms	49,113	49,113	49,113	49,113	65,767
Firm FE	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	YES
Sector x Year FE	NO	NO	YES	YES	YES

Note: This table presents the estimated impacts of the size-dependent SME promotion policy on revenue growth. Sample include firms that exist in 2011 and have revenue in the range of 10–30 million baht in that year. Post is a dummy variable that equals one for 2012–2017, and zero for 2004–2011. Treat is a dummy variable that equals one for firms that have revenue not over 30 million baht during all pre-policy years, and zero for firms with revenue over 30 million baht in at least one year during the pre-policy period. Treat x Post is the interaction variable between Treat and Post. Standard errors are heteroscedasticity-robust and clustered at firm level. Numbers in parentheses indicate standard error. ***, **, * denotes significance at the 1%, 5%, and 10% levels, respectively.
Source: Authors' estimate.

Figure 6: Sectoral heterogeneity analysis of the effects of the SME tax incentive on revenue growth
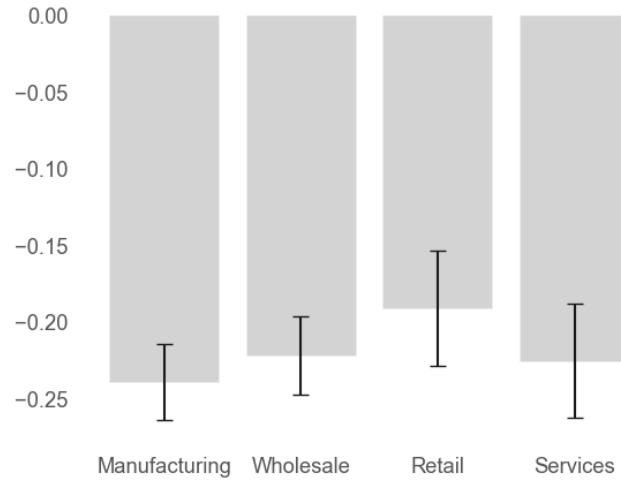
Note: This figure presents the estimated impacts of the size-dependent SME promotion policy on revenue growth by sectors. The estimated regression equation is: $y_{it} = \alpha_0 + \alpha_1 post_t + \alpha_2 treat_i + \alpha_3 post_t \cdot treat_i + \alpha_4 post_t \cdot treat_i \cdot wholesale_i + \alpha_5 post_t \cdot treat_i \cdot retail_i + \alpha_6 post_t \cdot treat_i \cdot services_i + \alpha_7 Age_{it} + FirmFE + YearFE + YearxSectorFE + \varepsilon_{it}$. Manufacturing is the base sector. Error bars represent the 95% confidence interval. The full regression result is in Appendix Table A1.
Source: Authors' estimate.

Our analysis also suggests broader implications of the policy beyond merely curtailing revenue growth. Post the 2012 policy introduction, we find a decline in the growth rate of fixed assets by 4.1 percentage points for firms in the treatment group, compared to those in the control group (Columns 4 of Table 5). Furthermore, when we employ alternative specifications with incrementally added fixed effects, these results remain consistent (Columns 1-3 of Table 5).

Table 5: Effects of the SME tax incentive on fixed assets growth (Dep var = Fixed assets growth)

	(1)	(2)	(3)	(4)
	Adding fixed effects incrementally			Base
Post	-0.165***	-0.389***	-0.203**	-5.568***
	(0.008)	(0.013)	(0.095)	(2.031)
Treat x Post	-0.031***	-0.042***	-0.041***	-0.041***
	(0.010)	(0.010)	(0.010)	(0.010)
Age				0.413***
				(0.156)
Observations	516,301	516,301	516,261	516,261
R-squared	0.005	0.008	0.011	0.011
Number of firms	47,037	47,037	47,037	47,037
Firm FE	YES	YES	YES	YES
Year FE	NO	YES	YES	YES
Sector x Year FE	NO	NO	YES	YES

Note: This table presents the estimated impacts of the size-dependent SME promotion policy on fixed assets growth. Sample include firms that exist in 2011 and have revenue in the range of 10–30 million baht in that year. Post is a dummy variable that equals one for 2012–2017, and zero for 2004–2011. Treat is a dummy variable that equals one for firms that have revenue not over 30 million baht during all pre-policy years, and zero for firms with revenue over 30 million baht in at least one year during the pre-policy period. Treat x Post is the interaction variable between Treat and Post. Standard errors are heteroscedasticity-robust and clustered at firm level. Numbers in parentheses indicate standard error. ***, **, * denotes significance at the 1%, 5%, and 10% levels, respectively.
Source: Authors' estimate.

In addition to the growth effects, we revisit the intended objective of the SME tax incentive, whether it helps relax financial constraints of SMEs and enhance their survival. We apply the same difference-in-difference framework and use the return on assets (defined as after-tax profit divided by total assets) as the outcome variable. Our finding indicates that, after the introduction of the policy, there is a 1.8 percentage point increase in ROA for treated firms relative to those in the control group (Column 4 of Table 6). This effect is significant at the 0.01 level. This result remains consistent when we incrementally introduce firm, year, and sector-year fixed effects (Columns 1-3 of Table 6). From an economic standpoint, this 1.8 percentage point increase is noteworthy; considering the pre-policy ROA mean of 4.5% for treated firms, this effect represents an approximately 40% increase.

Table 6: Effects of the SME tax incentive on profitability (Dep var = Return on assets)

	(1)	(2)	(3)	(4)
	Adding fixed effects incrementally			Base
Post	-0.039***	-0.047***	-0.064	0.235
	(0.002)	(0.002)	(0.046)	(0.415)
Treat x Post	0.017***	0.018***	0.018***	0.018***
	(0.002)	(0.002)	(0.002)	(0.002)
Age				-0.023
				(0.032)
Observations	585,007	585,007	584,959	584,959
R-squared	0.005	0.011	0.017	0.017
Number of firms	49,163	49,163	49,163	49,163
Firm FE	YES	YES	YES	YES
Year FE	NO	YES	YES	YES
Sector x Year FE	NO	NO	YES	YES

Note: This table presents the estimated impacts of the size-dependent SME promotion policy on profitability. The sample includes firms that existed in 2011 and had revenue in the range of 10-30 million baht in that year. Post is a dummy variable that equals one for 2012–2017, and 0 for 2004–2011. Treat is a dummy variable that equals one for firms that had revenue not over 30 million baht during all pre-policy years, and zero for firms with revenue over 30 million baht in at least one year during the pre-policy period. Treat x Post is the interaction variable between Treat and Post. Standard errors are heteroscedasticity-robust and clustered at the firm level. Numbers in parentheses indicate standard error. ***, **, * denotes significance at the 1%, 5%, and 10% levels, respectively.
Source: Authors' estimate.

Although we find that the policy significantly relieves SMEs' financial burden and enhances their profitability, it does not appear to influence their long-term viability. We use the same difference-in-difference framework, with a firm's likelihood of surviving into the subsequent year as the outcome variable. Our findings indicate that the SME promotion policy does not have any significant effect on the survival probability (Column 4 of Table 7). This result again remains consistent when we incrementally introduce firm, year, and sector-year fixed effects (Columns 1-3 of Table 7).

Table 7: Effects of the SME tax incentive on survival (Dep var = Next-year survival)

	(1)	(2)	(3)	(4)
	Adding fixed effects incrementally			Base
Post	-0.197***	-1.029***	-1.028***	12.109***
	(0.001)	(0.001)	(0.007)	(0.055)
Treat x Post	0.001	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Age				-1.011***
				(0.004)
Observations	587,571	587,571	587,521	587,521
R-squared	0.114	0.713	0.716	0.716
Number of firms	49,163	49,163	49,163	49,163
Firm FE	YES	YES	YES	YES
Year FE	NO	YES	YES	YES
Sector x Year FE	NO	NO	YES	YES

Note: This table presents the estimated impacts of the size-dependent SME promotion policy on next-year survival. The sample include firms that existed in 2011 and had revenue in the range of 10-30 million baht in that year. Post is a dummy variable that equals one for 2012–2017, and 0 for 2004–2011. Treat is a dummy variable that equals one for firms that had revenue not over 30 million baht during all pre-policy years, and zero for firms with revenue over 30 million baht in at least one year during the pre-policy period. Treat x Post is the interaction variable between Treat and Post. Standard errors are heteroscedasticity-robust and clustered at the firm level. Numbers in parentheses indicate standard error. ***, **, * denotes significance at the 1%, 5%, and 10% levels, respectively.
Source: Authors' estimate.

The impact of the SME promotion policy may differ across firms, depending on their business potential. Firms with limited potential might rely heavily on the SME tax incentives to survive, which could in turn limit their ambition for growth as they would like to remain eligible for the tax benefit. Conversely, firms with a high potential to grow far beyond the threshold are less likely to constrain their growth as the benefit from the incentive is less than the opportunity cost of not growing.

We investigate this hypothesis by categorizing firms into two groups based on their business potential. Firms with limited potential might rely heavily on the SME tax their pre-policy pre-tax return on assets (ROA). Specifically, we restrict our sample to firms that operated in the three years preceding the policy introduction (2009–2011). We then compute the average pre-tax ROA during this period, defined as the ratio of earnings before interest and tax (EBIT) to total assets. Firms are classified into low- and high-ROA groups based on the industry-level median value of the average pre-tax ROA.

Our findings indicate that the detrimental growth effects associated with the SME promotion policy are more pronounced among firms within the low-ROA category. the

revenue growth of low-ROA firms in the treatment group declines by 23.8 percentage points compared to their counterparts in the control group (Table 8). On the other hand, this effect is substantially smaller, at 9.8 percentage points, for the high-ROA firms. For the fixed assets growth, the negative effect is limited to the low-ROA group, while no significant effect is observed for the high-ROA group. We also find no significant impact on the survival likelihood for either the low- or high-ROA groups.

Table 8: Heterogeneity in the effects of the SME tax incentive by pre-policy profitability

	(1)	(2)	(3)	(4)	(5)	(6)
	Dep var = Revenue growth		Dep var = Fixed assets growth		Dep var = Next-year survival	
	Low ROA	High ROA	Low ROA	High ROA	Low ROA	High ROA
Post	0.228	-1.740	-1.326	-5.449***	10.593***	12.174***
	(3.018)	(4.137)	(1.591)	(1.043)	(0.538)	(0.071)
Treat x Post	-0.238***	-0.098***	-0.045***	-0.025	0.001	0.003
	(0.011)	(0.014)	(0.014)	(0.019)	(0.002)	(0.002)
Age	-0.042	0.113	0.079	0.406***	-0.893***	-1.017***
	(0.242)	(0.318)	(0.125)	(0.079)	(0.041)	(0.005)
Observations	215,250	211,559	207,075	195,089	227,523	224,245
R-squared	0.047	0.055	0.015	0.013	0.730	0.729
Number of firms	18,061	18,102	17,687	17,253	18,072	18,112
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Sector x Year FE	YES	YES	YES	YES	YES	YES

Note: This table presents the heterogeneity effects of the size-dependent SME promotion policy by pre-period ROA. The samincludeslude firms that existed in 2011 and had revenue in the range of 10–30 million baht in that year. Post is a dummy variable that equals one for 2012–2017, and 0 for 2004–2011. Treat is a dummy variable that equals one for firms that had revenue not over 30 million baht during all pre-policy years, and zero for firms with revenue over 30 million baht in at least one year during the pre-policy period. Treat x Post is the interaction variable between Treat and Post. Standard errors are heteroscedasticity-robust and clustered at the firm level. Numbers in parentheses indicate standard error. ***, **, * denotes significance at the 1%, 5%, and 10% levels, respectively.
Source: Authors' estimate.

5.3 Spillovers

The ramifications of the SME policy may extend beyond its primary target group. In the final analysis, we explore the potential impacts on larger firms, questioning whether the SME policy might exert a broader influence on the economy. Our identification is based on policy exposure, defined as the revenue share of firms that reported revenue below 30 million baht in the year preceding the policy introduction (2011). This policy exposure variable is calculated at the intersection of two-digit ISIC and province (ISIC2-x-province). To gain a comprehensive insight, we consider three outcome variables: revenue growth, return on assets (defined as EBIT/total assets) and market share (defined as a firm's revenue divided by total revenue at the ISIC2-x-province level). The equation can be written as:

$$y_{it} = \alpha_0 + \alpha_1 post_t + \alpha_2 exposure_i + \alpha_3 post_t exposure_i + \alpha_X X_{it}$$
$$+ FirmFE + YearFE + YearxSectorFE + \varepsilon_{it}, \tag{4}$$

where y_{it} denotes the outcome variable defined above at the ISIC2-x-province level, $post_t$ denotes a dummy variable that equals one for the years including and after 2012 and equals zero otherwise, $exposure_i$ denotes the policy exposure variable computed in the year prior to the policy introduction, and X_{it} denotes a control variable (firm age). The estimation period ranges from 2004 to 2017. We limit our sample to firms with revenue above 30 million baht. To ensure that we do not include firms in the baseline analysis, we also require that all firms have revenue above 30 million baht in 2011.

Our findings indicate that the SME policy inadvertently boosts the market shares of large firms. As anticipated, the SME policy does not significantly influence the revenue growth or the profitability of these large firms (Columns 1-2 of Table 9). However, following the policy introduction, a one percentage point increase in the pre-policy share of SMEs corresponds to an 8.4 percentage point increase in the market share of large firms, relative to the pre-policy period (Column 9 of Table 8). This result suggests that while the SME policy may not directly affect the growth of large firms, it inadvertently enhances their market share due to its adverse impact on SME growth.

Table 9: Effects of the SME tax incentive on large firms

	(1)	(2)	(3)
	Revenue growth	ROA	Market share
Post	-0.838*	-0.560	0.084
	(0.474)	(10.005)	(0.070)
Exposure	-0.025	-1.461*	0.305***
	(0.063)	(0.813)	(0.017)
Post x Exposure	0.012	-0.118	0.084***
	(0.039)	(0.369)	(0.007)
Age	0.020	0.122	-0.001
	(0.045)	(0.973)	(0.006)
Observations	554,299	525,655	592,965
R-squared	0.046	0.002	0.166
Number of firms	61,375	61,448	61,537
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
Sector x Year FE	YES	YES	YES
Control	YES	YES	YES

Note: This table presents the estimated impacts of the size-dependent SME promotion policy on revenue growth, profitability and market share of large firms. We limit our sample to firms with revenue above 30 million baht. To ensure that we do not include firms in the baseline analysis, we also require that all firms have revenue above 30 million baht in 2011. Post is a dummy variable that equals one for 2012–2017, and 0 for 2004–2011. Exposure is the policy exposure variable computed in the year prior to the policy introduction. Exposure x Post is the interaction variable between Exposure and Post. Standard errors are heteroscedasticity-robust and clustered at the firm level. Numbers in parentheses indicate standard error. ***, **, * denotes significance at the 1%, 5%, and 10% levels, respectively.
Source: Authors' estimate.

6. Conclusion

This study examines the implications of size-dependent regulations within SME support programs, focusing on Thailand's introduction of a 30-million-baht revenue cap for SMEs in 2012. We have illustrated how this policy, while designed to bolster SMEs, has led to unintended outcomes with broader implications on firm behaviors and market dynamics.

Our first key findings highlight the pronounced responses of firms to the revenue cap. We find a significant bunching of firms just below the threshold, primarily driven by those with positive EBIT. This suggests that the cap serves as a salient regulation, leading firms to adjust their behaviors accordingly. The impact is also persistent and remains for multiple years. Second, our study identified the adverse effects of the size-dependent tax regulation on firms' decisions to grow and invest. Firms eligible for the scheme experience a decline in revenue growth and investment following the cap introduction.

These negative effects are relatively pronounced for those with lower pre-policy profitability. Finally, our findings indicate that, while the size-dependent SME regulation does not directly impede the growth of large firms, it inadvertently boosts their market share as a consequence of hindering SME growth.

Altogether, our findings emphasize the critical role of well-designed policy in the context of SME promotion. It is important not only to extend necessary support but also to avoid introducing potential growth disincentives. Our results further show that a size-dependent regulation, though primarily targeting SMEs, can have consequential spillover effects on larger firms. This finding thus highlights the need to account for the interconnected nature of market dynamics.

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Appendix

Table A1: Sectoral heterogeneity analysis of the effects of the SME tax incentive on revenue growth

	(1)
	Sector heterogeneity
Post	-4.081*
	(2.273)
Post x Wholesale	-0.001
	(0.026)
Post x Retail	-0.068**
	(0.029)
Post x Services	-0.066*
	(0.035)
Treat x Post	-0.239***
	(0.013)
Treat x Post x Wholesale	0.017
	(0.018)
Treat x Post x Retail	0.048**
	(0.023)
Treat x Post x Services	0.014
	(0.023)
Age	0.292*
	(0.175)
Observations	550,677
R-squared	49,113
Number of firms	0.046
Firm FE	YES
Year FE	YES
Sector x Year FE	YES
Control	YES

Note: This table presents the full regression results of the heterogeneity analysis shown in Figure 6.
Source: Authors' estimate.