



Does Stock Market Listing Boost or Impede Corporate Investment?

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Abstract

This paper investigates investment behavior across public and privately held firms using a novel firm-level dataset. We use coarsened exact matching to construct a control group of firms with which we compare listed firms before and after listing in a difference-in-differences framework. Results reveal that stock market listing spurs growth significantly in terms of sales, employment and assets for manufacturing firms. Furthermore, results indicate that manufacturing listed firms invest more than their non-listed counterparts. In addition, their investment decisions are significantly more sensitive to changes in investment opportunities, and they respond more aggressively. These results constitute a rejecting evidence against existence of short-termism for manufacturing listed firms in Turkey. Moreover, these findings provide significant support for the arguments regarding the advantages of public firms in terms of better access to external finance and enhanced corporate structure, which enables them to fulfill growth potential much easily, and highlight the importance of policies that should be implemented to deepen the Turkish capital markets.

Keywords: *Stock market listing; corporate investment; firm growth; coarsened exact matching; difference-in-differences*

JEL codes: *C23, D22, G31, G32, L25*

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Non-technical Summary

Despite growing empirical research contrasting investment behavior of stock market-listed and privately held firms, evidence provided is mixed, which seems to be much more severe for emerging countries. In order to shed some light on the issue, we analyze how being public affects firm investment decisions in Turkey, one of the most important emerging economies. The ambiguity in existing empirical findings can be attributed to data availability and the main difficulty is finding a comparable counterfactual for how listed firms would behave absent their listed status. We address this difficulty by finding comparable privately held firms and analyze the differentiation in their investment behaviors, utilizing a novel dataset of privately held Turkish non-financial firms covering more than 1,000,000 firms over the period 2006-2018.

Using the combination of coarsened and exact matching procedure and difference in difference methodology, first, we document that stock market listing has a significant positive impact on firm growth for manufacturing firms. Stock market-listed manufacturing firms become significantly larger in post listing period compared to their private counterparts as their number of employees, total assets and sales increase significantly. Results of this study also show that stock market-listed manufacturing firms invest more for expansion than their non-listed counterparts. In addition, their investment decisions are significantly more sensitive to changes in investment opportunities and respond more aggressively in post-listing period. This provides support for the findings of previous research regarding the advantages of public firms in terms of better access to external finance and enhanced corporate structure, which enables them to fulfil growth potential much easily.

Moreover, results of this study provide an indirect evidence on the important role of financial market development in mitigating frictions regarding information asymmetry, and easing the access of firms to capital. As in many emerging countries, in Turkey, dominant source of external finance for privately held firms is bank lending, and external financing alternative to straight bank debt is quite limited. Besides, bank lending is highly cyclical and vulnerable to financial and economic conditions. By disseminating information across different classes of investors, a firm can increase its funding opportunities beyond not only bank loans, but also this can help broaden options through bond markets and other alternative funding instruments. However, despite the improvement in financial development in the last decade, number of public firms is still limited in Turkey. There are only around four hundred firms listed on Borsa Istanbul. In comparison to her peer countries, stock market capitalization as a percent of gross domestic product is also low. This suggests room for growth and results of this study highlight the importance of policies that should be implemented to deepen the Turkish capital markets.

1. Introduction

Financial markets and capital allocation process has been one of the most prominent topics in finance literature. Although the economic distinction between stock market listed and non-listed firms have been widely discussed, prior researches in this area have rarely paid attention to differentiation in their investment behavior. Considering inherent trade-offs between the costs (Berle and Means, 1932; Jensen and Meckling, 1976) and the benefits associated with being part of the public equity markets (Clementi, 2002), the impact of stock market listing on corporate investments is theoretically ambiguous and needs empirical examination.

Despite the importance of the issue, the empirical literature contrasting public and private firms' investment behavior is scarce and evidence provided is mixed. Although, the issue is clarified for neither the advanced nor the emerging countries, the ambiguity seems to be much more severe for the latter. In order to shed some light on the issue, we analyze how being listed affects firm investment decisions in Turkey, one of the most important emerging economies.

The scarcity in existing empirical findings can be attributed to data availability because of the confidentiality of financial information of privately held firms. Thus, the main difficulty is finding a comparable counterfactual for how listed firms would behave absent their listed status. We address this difficulty by finding comparable privately held firms and analyze the differentiation in their investment behaviors, utilizing a novel dataset of privately held Turkish non-financial firms covering more than 1,000,000 firms over the period 2006-2018.

The primary concern in the empirical analysis is that firms that are more likely to increase their investments will also be the firms that decides to be listed in stock market (Bernstein, 2015). In order to deal with this potential endogeneity we first, construct a control group of privately held firms using coarsened and exact matching (CEM) methodology. In contrast with previous studies, our novel dataset allows us to match firms based on a rich criteria set such as firm size, number of employment, fixed assets, cash holdings, both financial and total debt structures, revenues, sector, and inventories. This enables us to find reliable and comparable control firms. This is crucial for the quality of impact analysis, which is mostly one of the main drawbacks of the previous studies. Then, since we have data both before and after firms are being listed, we

employ a difference in differences (DD) setup in order to compare listed firms with the matched control firms (Caliendo and Kopeinig, 2008).

In the first place, results reveal that that stock market listing has a significant positive impact on firm growth for manufacturing firms. Using the combination of coarsened and exact matching procedure and difference in differences methodology (CEM-DD), results show that stock market-listed manufacturing firms become larger in post listing period relative to their private counterparts as their total assets, sales and number of employees increase significantly. Results also reveal a significant increase in both gross and net tangible fixed assets. This suggests that listed manufacturing firms invest more for expansion than their non-listed counterparts in the post-listing period.

In order to assess whether manufacturing public firms invest more due to better investment opportunities they face in post-listing period, we also incorporate investment opportunities in our empirical model. Results show that holding investment opportunities constant does not alter our findings. Moreover, results reveal that manufacturing listed firms not only invest more than their non-listed counterparts in terms of investment level, but also their investment decisions are significantly more sensitive to changes in investment opportunities and they respond more aggressively in post-listing period.

Our results contribute to several strands of the literature. First, our paper adds to the growing empirical literature on the investment behavior distinction between stock market listed and non-listed firms. Conventional literature argues that listing in stock market paves the way for future growth of firms by allowing access to cheap finance, enhanced corporate structure and firm reputation. Jain and Kini (1994) and Mikkelson et al. (1997) provide some pioneer empirical evidences in support for the claim that public firms grow in terms of sales and capital expenditure in US. In the same vein, Kim and Weisbach (2008), Brav (2009) and Mortal and Reisel (2013) focus on capital expenditure behavior of public firms in their studies and they show that public firms invest more and their responsiveness to investment opportunities is higher than privately held firms in both US and Europe. Maksimovic et al. (2019) confirms same results and contributes that especially public firms which supported by venture capital are more responsive compared to similar counterpart private firms.

On the other hand, some counter arguments compatible with agency theory put forwards that listing in stock market can create agency cost and distort investment tendency because of dispersion on ownership structure (Jensen and Meckling, 1976). Such a distortion may occur through different channels. First, managers tends to give up from long term objectives in order to increase firms' value in the eye of investors (Stein, 1989). Second, when a firm become public, monitoring of managers by shareholders become crucial. "Empire building" hypothesis predicts that if monitoring is weak, managers can decide self-ordainedly and this may damage optimal investment policy of firms (Jensen, 1986). Concordantly, managers can behave short-termist and prioritize short-term profit instead of long term goals to obtain reputation (Narayanan, 1985). Third, similar to empire building, according to "quiet life" hypothesis, managers can avoid from the risky investments and lower their investment level (Bertrand and Mullainathan, 2003). Common consequence of all these channels is distortion on investment policies in public firms. This is evidenced by Graham et al. (2005) reporting that most of the managers smooth short-term earnings by giving up long term investment. Asker et al. (2015) also provide significant evidence in support for this short-termism. They show that US listed firms invest substantially less, and they are less sensitive to investment opportunities.

In contrast to these concerns mentioned in the literature, we find no evidence in favor of short-termism in Turkey. On the other hand, our findings corroborates traditional theory, which argue that public firms catch higher growth and investment rate than similar privately held firms in post-listing period. Our result can also be seen as rejection of empire building and quiet life hypothesis in terms of investment behavior.

Furthermore, our study adds to the growing literature on financial market development and firm growth. Specifically, our findings shed new light on the debate as to whether the economic advantage of listed firms varies with institutional setting. Mortal and Reisel (2013), for instance, argue that investment sensitivity to growth opportunities is higher for listed firms only in countries with well-developed stock markets by utilizing a large cross-country data set. Contrary to these findings, our results suggest that even in a country with a relatively less-developed stock market, stock market listing leads firms to take advantage of investment opportunities that might not be undertaken if the firms were private.

The remaining of the paper is as follows. Section 2 depicts Turkish stock market structure and its development over time, Section 3 explains data and methodology, Section 4 presents results and robustness tests, and finally Section 5 concludes.

2. Stock Market in Turkey

Founding in 1986, Borsa Istanbul (BIST) has grown rapidly with financial liberalization reforms in 1990s. The development of Turkish stock market is depicted in Figure 1.

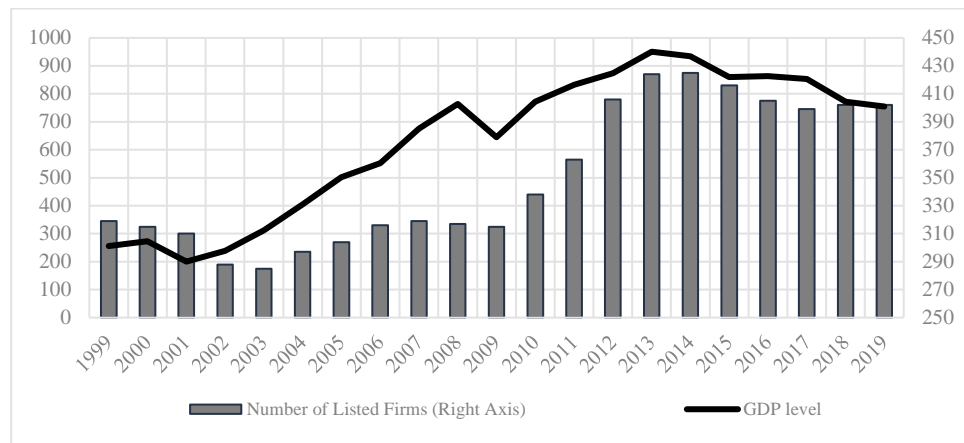


Figure 1. Gross Domestic Product and number of listed firms in Turkey

This figure shows GDP, and number of listed firms in Turkey over 1999-2019. GDP is in billion US dollars and obtained from the World Bank dataset while number of listed firms including financial firms is compiled from Capital Market Board dataset.

Following 2001 national crisis, Turkey entered a fast growth period. Between the years of 2002-2013, GDP grew up steadily and market capitalization accompanied this increasing as well. Then, both GDP and stock market capitalization have decreased at some extent, which can be attributable to the negative effect of FED's tapering on emerging market and decreasing business dynamism in Turkey (Akcigit et al. 2020).

As of January 2020, there exists 402 firms listed in BIST including financial firms and market capitalization has reached to 184 billion USD. Firm size distributions of listed and unlisted firms are given in Figure 2. Listed firms in BIST are mostly large firms in contrast to unlisted firms. Of the firms listed in BIST, 70.85% are large firms, 21% are medium-sized firms, 8.15% are small firms, and none is micro-sized firms, while the same ratios for all incorporated unlisted firms are 1.19%, 5.05%, 24.49% and 69.27%, respectively.

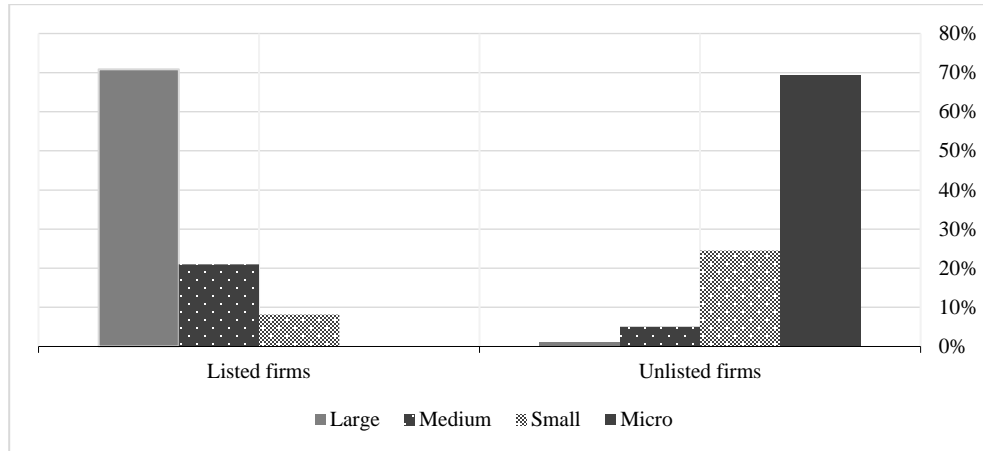


Figure 2. Size distributions: Listed vs unlisted firms

The graph shows size distribution of listed and unlisted Turkish firms in 2018 based on authors' own calculations using data from the Revenue Administration dataset.

Listed firms account for 8.96% of sales and 3.91% of employment of all Turkish firms covered in the database of Revenue Administration on average, which includes the universe of all incorporated firms' financial tables in Turkey (Figure 3). Besides, their total assets and tangible fixed assets share are around 9.13% and 12.47%, respectively, which indicates that investment reactions of listed firms are of capital importance for Turkish economy.

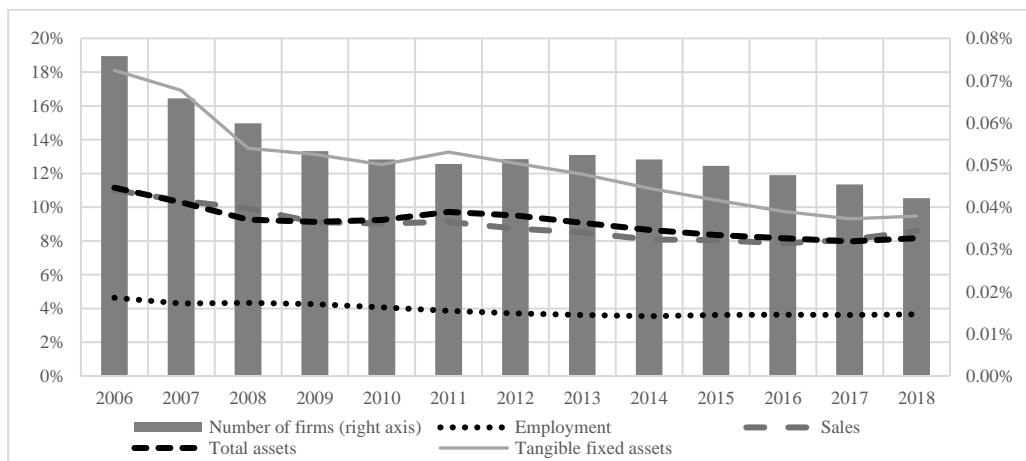


Figure 3: Share of listed firms in terms of employment, total assets, sales and tangible fixed assets (% of all incorporated firms)

Source: Authors' calculations using data from the Revenue Administration dataset.

However, Figure 3 shows that the shares of listed firms in terms of total assets, employment, sales, and tangible assets decrease over time in Turkey, which is compatible with Figure 1. Moreover, only around 0.05% of all incorporated firms are listed in Turkey on average over the sample period (Figure 3). In comparison to both advanced and peer emerging countries, BIST has also relatively low stock market capitalization as a percent of gross domestic product (Figure 4), which suggests room for growth for the Turkish capital markets.

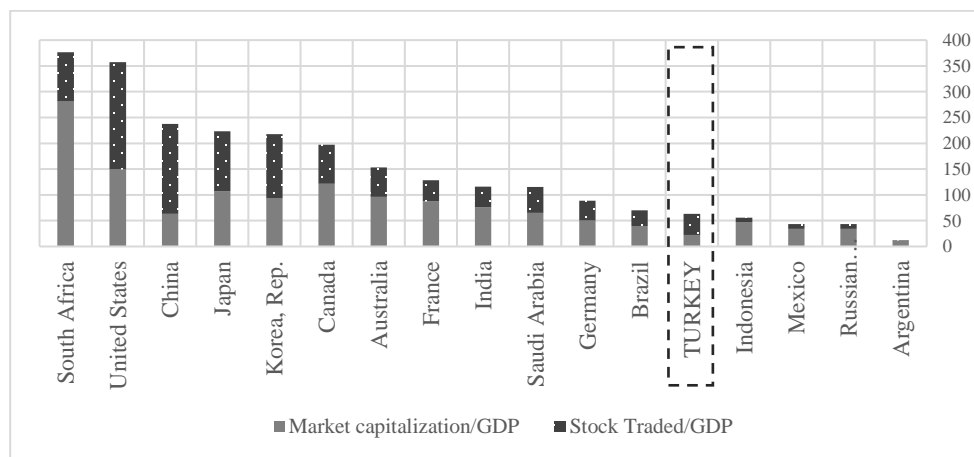


Figure 4: Fundamental Stock Market Indicators of Selected Countries

The graph shows five-year average of stock market indicators of selected countries. Data is obtained from World Bank World Development Indicators dataset, which is compiled from World Federation of Exchange and Bloomberg.

3. Data and Methodology

We construct our unique dataset using various sources. Our main data source is Revenue Administration dataset, which includes the universe of all incorporated firms' financial tables in Turkey. Data consists of 1,095,330 non-financial firms' annual balance sheet and income statements over the period 2006-2018. Additionally, we use Credit Registry database provided by Banks Association of Turkey to Central Bank of Republic of Turkey (CBRT), which provides all firms' monthly credit details. Besides, we use firm-level annual employment data from Turkstat, which is originally collected by Social Security Institution of Turkey. We merge all these datasets using unique tax identity number of firms.

We detect listing firms over our sample period, 2006-2018 from FINNET. It is a private database including all listed firms in Turkey with their exact listing date since BIST has found.

In order to compare listed firms with the matched control firms, our CEM-DD setup is built in a seven-year time window, three years before and four years after the listing year. For robustness, we also construct alternative time windows around listing years. The details are discussed in Section 4.4. Thus, we focus the period between 2009-2015 in which 103 non-financial firms become listed. Also, as can be seen in Figure 1, the listings in Turkey are predominantly in this period.

In addition to financial firms, we also exclude firms with inconsistent data from the analysis, such as observations with negative total assets, negative liabilities and negative fixed assets. Besides, in order to increase our matching quality, in addition to using firms' covariates a year prior to listing, we also use two-year lags of covariates in our matching procedure. Thus, we condition firms to exist in both one and two years before the listing year. Moreover, we exclude firms that change their legal status over the sample period. These firms changed their tax identity number, which makes it impossible to be traced. As a result, we identify 81 non-financial listing firms over the sample period. Descriptive statistics for listed and unlisted firms are presented in Table 1.

In the first place, listed firms appear to be larger than unlisted firms in terms of sales and employment. This is not surprising due to size criterion to become listed in Turkey. Besides, substantial differences can also be seen across listed and non-listed firms for the rest of variables, such as tangible assets, total financial debt and liabilities. Thus, in order to control for observable differences between listed and privately held firms, we employ a matching procedure following the prior literature (e.g., Saunders and Steffen, 2011; Michaely and Roberts, 2012; and Gao et al., 2013). A reliable control group can reduce the bias in estimating the listing effect and allows to reduce the likelihood of confounding when analyzing the non-randomized and observational data (Haukoos and Lewis, 2015).

Table 1: Descriptive statistics and balancing tests for listed and matched control firms

Covariates		Mean		T test		Median		Pearson χ^2		Wilcoxon Rank-Sum Test	
		Listed	Unlisted	t	p-value	Listed	Unlisted	χ^2	p-value	z	p-value
Sales (Pre_1)	Unmatched	17,16	10,49	-11,04	0,00	17,13	12,43	75,11	0,00	-13,98	0,00
	Matched	16,80	16,78	-0,04	0,97	16,97	16,79	0,03	0,87	-0,09	0,93
Employment (Pre_1)	Unmatched	4,55	1,47	-22,98	0,00	4,76	1,10	81,57	0,00	-13,90	0,00
	Matched	4,38	4,35	-0,11	0,91	4,52	4,51	0,03	0,87	-0,03	0,98
Financial debt (Pre_1)	Unmatched	13,27	4,29	-13,88	0,00	15,52	0,00	74,33	0,00	-12,79	0,00
	Matched	13,02	12,85	-0,17	0,86	15,36	15,20	0,03	0,87	-0,27	0,79
Tangible fixed assets (Gross) (Pre_1)	Unmatched	16,23	9,55	-13,06	0,00	16,47	10,91	75,11	0,00	-13,96	0,00
	Matched	15,95	15,87	-0,24	0,81	16,25	16,07	0,03	0,87	-0,23	0,82
Tangible fixed assets (Net) (Pre_1)	Unmatched	15,49	8,93	-12,71	0,00	16,11	10,34	71,31	0,00	-13,38	0,00
	Matched	15,19	15,01	-0,40	0,69	15,95	15,65	0,71	0,40	-0,51	0,61
Total Liability (Pre_1)	Unmatched	16,82	11,65	-14,39	0,00	16,67	12,21	75,11	0,00	-14,03	0,00
	Matched	16,49	16,27	-0,71	0,48	16,27	16,29	0,03	0,87	-0,39	0,70
Cash & cash equivalents (Pre_1)	Unmatched	13,78	9,22	-14,49	0,00	13,70	9,37	60,50	0,00	-12,26	0,00
	Matched	13,46	13,22	-0,62	0,54	13,35	13,44	0,03	0,87	-0,36	0,72
Operating income (Pre_1)	Unmatched	11,26	0,16	-14,45	0,00	2,16	0,004	30,86	0,00	-9,18	0,00
	Matched	5,60	4,78	-0,34	0,73	1,53	0,91	2,31	0,13	-0,88	0,38
Inventories (Pre_1)	Unmatched	14,24	8,11	-9,65	0,00	15,47	10,62	44,45	0,00	-11,55	0,00
	Matched	13,77	13,31	-0,56	0,58	15,22	14,97	0,03	0,87	-0,42	0,67
Sales (Pre_2)	Unmatched	16,36	10,75	-9,75	0,00	16,89	12,47	60,49	0,00	-12,61	0,00
	Matched	15,91	16,42	0,90	0,37	16,64	16,60	0,03	0,87	0,28	0,78
Employment (Pre_2)	Unmatched	4,42	1,50	-21,88	0,00	4,61	1,10	72,86	0,00	-13,44	0,00
	Matched	4,23	4,25	0,07	0,94	4,31	4,43	0,00	1,00	0,08	0,94
Financial debt (Pre_2)	Unmatched	13,65	4,32	-14,51	0,00	15,04	0,00	84,93	0,00	-13,65	0,00
	Matched	13,52	12,73	-0,84	0,40	14,99	14,87	0,03	0,87	-0,57	0,57
Tangible fixed assets (Gross) (Pre_2)	Unmatched	16,00	9,73	-12,87	0,00	16,14	10,94	75,11	0,00	-13,78	0,00
	Matched	15,70	15,69	-0,05	0,96	15,88	15,94	0,03	0,87	-0,10	0,92
Tangible fixed assets (Net) (Pre_2)	Unmatched	15,22	9,08	-12,38	0,00	15,58	10,37	71,31	0,00	-13,18	0,00
	Matched	14,88	14,96	0,17	0,86	15,46	15,43	0,03	0,87	-0,16	0,87
Total Liability (Pre_2)	Unmatched	16,69	11,65	-14,78	0,00	16,48	12,14	75,11	0,00	-14,10	0,00
	Matched	16,36	16,07	-0,97	0,33	16,33	16,04	0,26	0,61	-0,76	0,45
Cash & cash equivalents (Pre_2)	Unmatched	13,74	9,23	-15,01	0,00	13,69	9,33	67,61	0,00	-12,67	0,00
	Matched	13,42	13,10	-0,84	0,40	13,23	13,54	0,26	0,61	-0,60	0,55
Operating income (Pre_2)	Unmatched	3,59	0,15	-4,62	0,00	1,56	0,01	28,44	0,00	-8,73	0,00
	Matched	3,77	3,88	0,07	0,94	1,29	0,44	1,40	0,24	-0,84	0,40
Inventories (Pre_2)	Unmatched	14,10	8,25	-9,41	0,00	15,16	10,68	47,46	0,00	-11,43	0,00
	Matched	13,67	13,02	-0,80	0,42	15,02	14,67	0,26	0,61	-0,53	0,60

This table presents descriptive statistics for the full samples of listed and non-listed firms and matched sample over the period 2009-2015. Pre_1 and Pre_2 denote for one and two years before the listing, respectively. See Section 3 for the details of how we construct the full sample and details of our matching procedure. The table reports means, medians and balance tests of the key variables used in our empirical analysis. Operating income is in millions TL while rest of the variables are in natural logarithms.

We conduct one to one matching via Coarsened Exact Matching (CEM) algorithm of Iacus et al. (2012). This methodology has become widely used in recent years in different fields of economics such as labor (Mattson, 2019) and corporate finance (Butler et al., 2019). The advantage of CEM is that it provides flexibility and simplicity to users to arrange imbalance level manually. As a member of monotonic imbalance bounding method family, imbalance level in CEM is chosen ex-ante. Covariates are split into some intervals and then coarsens to different stratas. It also offers superior computational efficiency for large datasets.¹

Following the related literature (e.g., Gao et al., 2013; Asker et al., 2015), we use firm size and industry in our matching specification. It is important to control them in our analysis since Gala and Julio (2011) report significant evidence that corporate investment increases in firm size while Jorgenson (1971) shows that it varies across sectors. We use sales and employment as proxies of firm size and Nace-Rev 2 two digits for the industry classification. Constructing a reliable control group is essential for impact analysis (Haukoos and Lewis, 2015). Thus, in addition to firm size and industry, we match firms on rich criteria set such as tangible fixed assets, cash holdings, both financial and total debt structures, revenues, and inventories. Besides, in addition to one year before the listing, we match the variables in two years before the listing as well. We ended up with an 87% matching rate with 980 firm-year observations including treatment and control firms for our main analysis. Our novel dataset consisting of entire population of incorporated firms allows us to select control firms from a large sample, which enables us to find comparable control firms. The significant improvement in the gap between listed firms and the control firms via the matching procedure is presented in Table 1.

The mean of listed (treatment) firms and unlisted (control) firms are reported in columns 1 and 2, respectively. The mean of sample groups converges considerably after matching process. This is also the case for the medians (columns 5 and 6). In order to test statistically whether control firms share similar distributions with the listed firms, first standard t-test for means is adopted. None of the covariates have significant differences between listed (treatment) firms

¹ See Stuart (2010) for detailed information for Coarsened Exact Matching methodology.

and matched control firms (columns 3 and 4). This is also the case for Pearson χ^2 test for medians (columns 7 and 8).

Distributions can still be different even their mean and medians are equal. For this reason, we also conduct Wilcoxon test to show whether the distributions are practically same (Gao et al. 2013). Results reported in the last column of Table 1 reveals that for all covariates, null hypothesis that distributions across treatment and matched control firms are same cannot be rejected as p-values after matching is substantially high. After the matching, none of the covariates appears to be unbalanced, and all these balancing tests of the matched listed and control unlisted samples confirm the matching quality.

After constructing the matched listed and control groups, we employ a difference in differences (DD) setup in order to compare these groups and to estimate the impact of listing on firm outcomes (Caliendo and Kopeinig, 2008). The DD methodology is a quasi-experiment design for measuring average treatment effect (ATE) over time between balanced control and treatment samples, which is used in previous research extensively.² The econometric specification used in this study is given below:

$$Y_{it} = \alpha + \beta Listed_i + \lambda POST_t + \gamma (POST_t \times Listed_i) + \mu_i + \omega_t + \varphi_i \times \omega_t + \varepsilon_{i,t} \quad (1)$$

where i , and t denotes for firm and year, respectively. Y_{it} is the outcome of interest variable and $Listed_i$ is a binary variable that takes the value one for the listed firms, and zero otherwise. $POST_t$ is one if year is after the listing year including the listing year for both matched listed (treatment) and counterpart unlisted firms, and zero otherwise. We include firm (μ_i) fixed effects in order to control any time-invariant unobserved heterogeneity. We also include year (ω_t) fixed effects to fully absorb any market-wide effects. Additionally, sector x year ($\varphi_i \times \omega_t$) fixed effects are included in order to control any possible omitted time variant unobservable industry factors. Our parameter of interest is γ in our model showing the impact of being listed on firm performance, and ε_{it} is the idiosyncratic error term.

² See Lechner (2011) for the survey and evolution of difference in differences methodology.

4. Results

4.1 Firm expansion

First, we estimate Coarsened and Exact Matching and difference in differences (CEM-DD) model in equation 1 in order to investigate the listing impacts on firm expansion. Table 2 presents results for the full sample.

Table 2 Listing impact on firm expansion, full sample (Coarsened exact matching-difference in differences estimates)

	Total Assets			Employment			Sales		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
POSTxListed	0.314*** (0.106)	0.314*** (0.106)	0.314*** (0.101)	0.239** (0.101)	0.239** (0.101)	0.239** (0.098)	0.393 (0.354)	0.393 (0.355)	0.393 (0.336)
POST	-0.070 (0.069)	-0.070 (0.069)	-0.005 (0.068)	0.017 (0.080)	0.017 (0.080)	0.003 (0.068)	-0.060 (0.275)	-0.060 (0.276)	-0.296 (0.243)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
Observations	980	980	980	980	980	980	980	980	980
R-squared	0.917	0.917	0.928	0.897	0.897	0.911	0.702	0.702	0.751

The table reports the results of difference in differences estimations in equation (1) using the matched sample for the effect of listing on firm performance. The details of our matching procedure are given in Section 3. Listed_{*i*} is a binary variable that takes the value one for the listed firms, and zero otherwise. POST_{*t*} is one if year *t* is after the listing year including the listing year for both matched listed (treatment) and counterpart unlisted firms, and zero otherwise. The coarsened exact matching-difference in differences model is built in a seven-year time window sample, i.e. three years before and 4 years after the listing year including the listing year. All dependent variables are in natural logarithms. Robust standard errors clustered at firm level are reported in parentheses. Statistical significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

The coefficient of Post x Listed is the degree of listed effect on firm expansion variables. In addition to firm fixed effects, which controls for any time-invariant unobserved heterogeneity, we also include year fixed effects in all specifications. Thus, any market-wide effects in the post-listing period are fully absorbed. Controlling firm and year fixed effects, the CEM-DD estimations in Table 2 show that public firms increase their total assets by 31% in post listing period compared to their private counterparts (column 1). A corresponding impact of 24% is found for employment (column 4) while no significant effect appears for net sales (column 7). These relationships remain robust when we also include sector and sector x year fixed effects

in the model in order to control sector fixed effects and any possible omitted time variant unobservable industry factors (columns 2, 3, 5, 6, 8 and 9). These robust relationships indicate that public firms become larger in post listing period relative to their private pairs as their both total assets and number of employees increase significantly.

Table 3 Listing impact on firm expansion, manufacturing vs non-manufacturing (Coarsened exact matching-difference in differences estimates)

	Total Assets			Employment			Sales		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Panel A : Manufacturing firms</i>									
POSTxListed	0.412*** (0.113)	0.412*** (0.113)	0.412*** (0.113)	0.235* (0.133)	0.235* (0.133)	0.235* (0.133)	0.780** (0.364)	0.780** (0.364)	0.780** (0.364)
POST	-0.020 (0.065)	-0.020 (0.065)	-0.020 (0.065)	-0.007 (0.081)	-0.007 (0.081)	-0.007 (0.081)	-0.294 (0.197)	-0.294 (0.197)	-0.294 (0.197)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
Observations	546	546	546	546	546	546	546	546	546
R-squared	0.915	0.915	0.915	0.852	0.852	0.852	0.604	0.604	0.604
<i>Panel B : Non-Manufacturing firms</i>									
POSTxListed	0.191 (0.191)	0.191 (0.192)	0.191 (0.183)	0.244 (0.156)	0.244 (0.156)	0.244 (0.147)	-0.094 (0.649)	-0.094 (0.653)	-0.094 (0.616)
POST	-0.116 (0.135)	-0.116 (0.136)	0.005 (0.142)	0.058 (0.150)	0.058 (0.150)	0.019 (0.122)	0.278 (0.596)	0.278 (0.600)	-0.348 (0.548)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
Observations	434	434	434	434	434	434	434	434	434
R-squared	0.918	0.918	0.934	0.901	0.901	0.923	0.709	0.709	0.770

The table reports the results of difference in differences estimations in equation (1) using the matched sample for the effect of listing on firm performance. The details of our matching procedure are given in Section 3. Listed_{*i*} is a binary variable that takes the value one for the listed firms, and zero otherwise. POST_{*t*} is one if year is after the listing year including the listing year for both matched listed (treatment) and counterpart unlisted firms, and zero otherwise. Results for manufacturing and non-manufacturing firms are given in Panels A and B, respectively. The coarsened exact matching-difference in differences model is built in a seven-year time window sample, i.e. three years before and 4 years after the listing year including the listing year. All dependent variables are in natural logarithms. Robust standard errors clustered at firm level are reported in parentheses. Statistical significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

In order to examine whether there is any difference in the degree of listing effect of industry membership, we reestimate the models separately for manufacturing and non-manufacturing firms. The results reported in Table 3 suggest that the positive effect of listing on total assets and number of employees appear to be significant for manufacturing listed firms (Panel A of Table 3) but not for non-manufacturing listed firms (Panel B of Table 3).

Besides, the non-significant impact on net sales for the full sample in Table 1 turns out to be significant for manufacturing firms (Panel A of Table 3). In post-listed period, manufacturing listed firms become significantly larger relative to their pairs while it is not the case for non-manufacturing listed firms. They increase their total assets, number of employees and net sales by 41%, 24% and 78%, respectively.

4.2 Corporate investment

In order to examine the listing effect on investments, we reestimate the CEM-DID model by using investments as dependent variable. Results for full sample are reported in Table 4 while results manufacturing and non-manufacturing firms are reported in Panel A and Panel B in Table 5, respectively.

Firms can invest and can enlarge capacity through capital expenditures (CAPEX). On the other hand, they increase their assets by buying existing assets of other firms, which is reflected in mergers and acquisitions (M&A) activities. However, the dataset does not allow us to distinguish them separately. In order to avoid biases, following Asker et al. (2015) we measure investment by using gross tangible fixed assets in which we capture both CAPEX and M&A. Based on the regulations, depreciation schemes used by firms can be arbitrary. Thus, firm investment decisions can be captured better by gross terms. Nonetheless, as an additional robustness, we also use net tangible fixed assets, which is net of depreciation.

Table 4 Listing impact on investment, full sample (Coarsened exact matching-difference in differences estimates)

	Gross Tangible Assets			Net Tangible Assets		
	(1)	(2)	(3)	(4)	(5)	(6)
POSTxListed	-0.087 (0.237)	-0.087 (0.238)	-0.087 (0.228)	0.123 (0.183)	0.123 (0.183)	0.123 (0.177)
POST	0.000 (0.092)	0.000 (0.092)	0.076 (0.111)	-0.016 (0.130)	-0.016 (0.131)	0.020 (0.140)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes
Observations	980	980	980	980	980	980
R-squared	0.860	0.860	0.877	0.851	0.851	0.868

The table reports the results of difference in differences estimations in equation (1) using the matched sample for the effect of listing on firm performance. The details of our matching procedure are given in Section 3. $Listed_i$ is a binary variable that takes the value one for the listed firms, and zero otherwise. $POST_t$ is one if year is after the listing year including the listing year for both matched listed (treatment) and counterpart unlisted firms, and zero otherwise. The coarsened exact matching-difference in differences model is built in a seven-year time window sample, i.e. three years before and 4 years after the listing year including the listing year. All dependent variables are in natural logarithms. Robust standard errors clustered at firm level are reported in parentheses. Statistical significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

Results show that public manufacturing firms invest more than their non-public counterparts in the post-listed period. In Panel A of Table 5, the CEM-DD estimate indicates a 28% increase in gross tangible fixed assets for manufacturing listed firms relative to their pairs. The coefficient remain both qualitatively and quantitatively same when sector and sector x year fixed effects are included in the model (columns 1, 2 and 3). Similarly, the impact is 44% for net tangible fixed assets (columns 4, 5 and 6). On the other hand, the effects are insignificant for full sample (Table 4) and non-manufacturing firms (Panel B of Table 5). These results are in line with those reported in Table 3 regarding total assets and number of employees. This suggests that manufacturing listed firms invest more for expansion than their non-listed counterparts.

Table 5 Listing impact on investment, manufacturing vs non-manufacturing (Coarsened exact matching-difference in differences estimates)

	Gross Tangible Assets			Net Tangible Assets		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A : Manufacturing firms</i>						
POSTxListed	0.283** (0.124)	0.283** (0.124)	0.283** (0.124)	0.441*** (0.151)	0.441*** (0.151)	0.441*** (0.151)
POST	-0.012 (0.078)	-0.012 (0.078)	-0.012 (0.078)	0.001 (0.097)	0.001 (0.097)	0.001 (0.097)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes
Observations	546	546	546	546	546	546
R-squared	0.929	0.929	0.929	0.886	0.886	0.886
<i>Panel B : Non-Manufacturing firms</i>						
POSTxListed	-0.551 (0.507)	-0.551 (0.510)	-0.551 (0.502)	-0.276 (0.353)	-0.276 (0.355)	-0.276 (0.356)
POST	0.009 (0.162)	0.009 (0.163)	0.161 (0.243)	0.023 (0.265)	0.023 (0.266)	0.007 (0.320)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes
Observations	434	434	434	434	434	434
R-squared	0.818	0.818	0.841	0.825	0.825	0.844

The table reports the results of difference in differences estimations in equation (1) using the matched sample for the effect of listing on firm performance. The details of our matching procedure are given in Section 3. Listed_{*i*} is a binary variable that takes the value one for the listed firms, and zero otherwise. POST_{*t*} is one if year is after the listing year including the listing year for both matched listed (treatment) and counterpart unlisted firms, and zero otherwise. Results for manufacturing and non-manufacturing firms are given in Panels A and B, respectively. The coarsened exact matching-difference in differences model is built in a seven-year time window sample, i.e. three years before and 4 years after the listing year including the listing year. All dependent variables are in natural logarithms. Robust standard errors clustered at firm level are reported in parentheses. Statistical significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

4.3 Investment opportunities

The reason that manufacturing public firms invest more than their private counterparts might be that they face better investment opportunities in post-listing period. In order to investigate the argument we incorporate investment opportunities and re-estimate our main CEM-DD

model in equation 1. Results for manufacturing and non-manufacturing firms are reported in Panel A and Panel B in Table 6, respectively.

Table 6 Listing impact and investment opportunities, manufacturing vs non-manufacturing (Coarsened exact matching-difference in differences estimates)

	Gross Tangible Assets			Net Tangible Assets		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Manufacturing firms</i>						
POSTxListed	0.249** (0.120)	0.249** (0.120)	0.249** (0.120)	0.419*** (0.151)	0.419*** (0.151)	0.419*** (0.151)
POST	0.029 (0.069)	0.029 (0.069)	0.029 (0.069)	0.040 (0.091)	0.040 (0.091)	0.040 (0.091)
Investment opportunities	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.003*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes
Observations	546	546	546	546	546	546
R-squared	0.938	0.938	0.938	0.894	0.894	0.894
<i>Panel B: Non-Manufacturing firms</i>						
POSTxListed	-0.515 (0.479)	-0.515 (0.482)	-0.532 (0.501)	-0.235 (0.301)	-0.235 (0.303)	-0.245 (0.315)
POST	0.104 (0.137)	0.104 (0.138)	0.172 (0.229)	0.130 (0.250)	0.130 (0.252)	0.005 (0.314)
Investment opportunities	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes
Observations	434	434	434	434	434	434
R-squared	0.858	0.858	0.868	0.851	0.851	0.864

The table reports the results of difference in differences estimations in equation (1) using the matched sample for the effect of listing on firm performance. The details of our matching procedure are given in Section 3. Listed_{it} is a binary variable that takes the value one for the listed firms, and zero otherwise. POST_{it} is one if year is after the listing year including the listing year for both matched listed (treatment) and counterpart unlisted firms, and zero otherwise. We use sales growth (percentage change of annual net sales) to proxy investment opportunities. Results for manufacturing and non-manufacturing firms are given in Panels A and B, respectively. The coarsened exact matching-difference in differences model is built in a seven-year time window sample, i.e. three years before and 4 years after the listing year including the listing year. All dependent variables are in natural logarithms. Robust standard errors clustered at firm level are reported in parentheses. Statistical significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

In existing investment literature, Tobin's q or sales growth (percentage change of annual net sales) are commonly used as proxies for investment opportunities at firm level. Tobin's q is measured as the ratio of market value to book value of assets. However, market value is not observable for non-listed firms. On the other hand, sales growth can be constructed for both listed and non-listed firms at firm level. Accordingly, it has been widely used in the prior literature (e.g., Shin and Stulz, 1998; Bloom et al. 2007; Michaely and Roberts 2012; Mortal and Reisel, 2013 and Asker et al., 2015). Thus, in this paper, we favor the latter and use sales growth as a proxy for investment opportunities.

Results in Table 6 show that holding investment opportunities constant does not alter our finding. The coefficient remain qualitatively same with those in Table 5 in all specifications when investment opportunities are included in the model. These robust results suggest that manufacturing listed firms invest more relative to their pairs even after controlling investment opportunities.

Manufacturing listed firms might not only prefer higher investment levels than their pairs in post-listing period, but also they might respond investment opportunities more aggressively. In order to examine the issue we include the interaction of investment opportunities with Post and Listed, and reestimate the model. This enables us to compare the investment sensitivities of public and private firms in the post-listing period. Results are reported in Tables 7.

The coefficient of $POST \times Listed \times Investment$ opportunities is significant and positive in all alternative specifications for manufacturing firms (Panel A) while it is insignificant for non-manufacturing firms (Panel B). This indicates that listed firms not only invest more than their non-listed counterparts in terms of investment level, but also their investment decisions are significantly more sensitive to changes in investment opportunities in post-listing period. This is the case for only manufacturing firms, which is in line with those reported in Tables 5 and 6. The insignificant results for non-manufacturing firms are in line with the theories in the literature that listing decision predict no impact on firm growth. If the decision is driven by a desired change of ownership and control, which serves as an exit mechanism for the founder or other investors (Zingales, 1995), it does not necessarily lead an impact on firm expansion. On the flip side, non-manufacturing firms might become listed with the purpose of making

Table 7 Listing impact and investment sensitivity, manufacturing vs non-manufacturing (Coarsened exact matching-difference in differences estimates)

	Gross Tangible Assets			Net Tangible Assets		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Manufacturing firms</i>						
POSTxListed	0.306** (0.131)	0.306** (0.131)	0.306** (0.131)	0.452*** (0.158)	0.452*** (0.158)	0.452*** (0.158)
POSTxListedxInvestment opportunities	0.121*** (0.041)	0.121*** (0.041)	0.121*** (0.041)	0.179*** (0.060)	0.179*** (0.060)	0.179*** (0.060)
POST	-0.069 (0.088)	-0.069 (0.088)	-0.069 (0.088)	-0.044 (0.107)	-0.044 (0.107)	-0.044 (0.107)
Investment opportunities	-0.186** (0.072)	-0.186** (0.072)	-0.186** (0.072)	-0.096 (0.134)	-0.096 (0.134)	-0.096 (0.134)
POSTxInvestment opportunities	0.362 (0.271)	0.362 (0.271)	0.362 (0.271)	0.444 (0.285)	0.444 (0.285)	0.444 (0.285)
ListedxInvestment opportunities	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes
Observations	546	546	546	546	546	546
R-squared	0.942	0.942	0.942	0.898	0.898	0.898
<i>Panel B: Non-Manufacturing firms</i>						
POSTxListed	-0.462 (0.438)	-0.462 (0.441)	-0.472 (0.456)	-0.187 (0.293)	-0.187 (0.294)	-0.187 (0.302)
POSTxListedxInvestment opportunities	-0.405 (0.327)	-0.405 (0.329)	-0.476 (0.340)	-0.287* (0.150)	-0.287* (0.151)	-0.437** (0.179)
POST	0.134 (0.156)	0.134 (0.157)	0.200 (0.235)	0.145 (0.258)	0.145 (0.260)	0.032 (0.315)
Investment opportunities	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
POSTxInvestment opportunities	0.000* (0.000)	0.000* (0.000)	-0.000 (0.002)	0.001 (0.001)	0.001 (0.001)	-0.002 (0.002)
ListedxInvestment opportunities	-0.001 (0.001)	-0.001 (0.001)	-0.001* (0.001)	0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	No	Yes	Yes	No	Yes	Yes
Sector x year fixed effects	No	No	Yes	No	No	Yes
Observations	434	434	434	434	434	434
R-squared	0.860	0.860	0.872	0.852	0.852	0.866

The table reports the results of difference in differences estimations in equation (1) using the matched sample for the effect of listing on firm performance. The details of our matching procedure are given in Section 3. Listed_{*i*} is a binary variable that takes the value one for the listed firms, and zero otherwise. POST_{*t*} is one if year is after the listing year including the listing year for both matched listed (treatment) and counterpart unlisted firms, and zero otherwise. We use sales growth (percentage change of annual net sales) to proxy investment opportunities. Results for manufacturing and non-manufacturing firms are given in Panels A and B, respectively. The coarsened exact matching-difference in differences model is built in a seven-year time window sample, i.e. three years before and 4 years after the listing year including the listing year. All dependent variables are in natural logarithms. Robust standard errors clustered at firm level are reported in parentheses. Statistical significance at the 1%, 5%, and 10 % levels is indicated by ***, **, and *, respectively.

investment but they perform poorly after listing due to ownership dispersion and agency problems as suggested by quite life and empire building hypotheses (Jensen, 1986; Bertrand and Mullainathan, 2003).

On the other hand, the findings for manufacturing firms are consistent with the existing literature that indicates stock market listing gives firms access to cheaper investment capital. Brau and Fawcett (2006) suggest that this is the common reason for going public. Public firms enjoy access to a deep pool of capital and corresponding lower cost of capital, which enables them to pursue profitable investment opportunities more easily (Pagano et al. 1998). Besides, these findings contradict the concerns mentioned in the literature that a stock market listing can induce short-termist pressures that distort the investment decisions of public firms. Narayanan (1985), for example, states that American managers tend to make decisions that yield short-term gains at the expense of the long-term interests of the shareholders. In line with these concerns, Asker et al. (2015) provide significant evidence in support for this short-termism, and show that US public firms invest substantially less, and are less responsive to changes in investment opportunities relative to privately held firms. Our findings indicate that short-termism does not exist for Turkish manufacturing listed firms, which can distort their investment decisions.

4.4 Additional robustness

We perform a number of additional checks in order to achieve further confirmation that our results are robust.³ First, to avoid the possibility whether our results are driven by outliers, we winsorize the data in two alternative ways (0.5% and 1% in each tail), and reestimate our CEM-DID model. Estimated coefficients with winsorized data are qualitatively and quantitatively very similar. This suggests that outliers in our dataset are not a significant problem for estimates reported in Section 4.

In addition to examine the difference in the degree of listing effect of industry membership, we also re-estimate the models separately for alternative subsamples based on firm size in order to

³ To conserve space, these results are not reported in the paper. However, they are available from authors upon request.

examine whether the impact differ among firms with different sizes. No differentiation in degree of impact due to firm size is evident in results. Besides, the paired listed firms and control firms are divided into two subgroups. The subgroups are separated by the median value of the observed listed years, i.e. 2012. Subgroup 1 and 2 include all observations that occur listings before 2012, and after 2012 (including 2012), respectively. Results are in line with those in reported Section 4.

The CEM-DD model is built in a seven-year time window sample. Alternatively, we construct a five-year time window sample, i.e. two years before and two years after the listing year including the listing year. The reestimated results are similar, which indicates that our results are not sensitive to the selected time-window.

We include firm fixed effect in our model estimations presented in Section 4, which control for any time-invariant unobserved heterogeneity. Alternatively, following Brown and Earle (2017) pair fixed effect for each group of listed firms and its matched controls (the treatment-control group) is included in the model instead of firm fixed effects. Moreover, we also include province, and province x year fixed effects in the model in order to control province fixed effects and any possible omitted time variant unobservable province factors. Results are both qualitatively and qualitatively in line with those in Section 4.

5. Conclusion

Despite growing empirical research contrasting investment behavior of stock market-listed and privately held firms, evidence provided is mixed, which seems to be much more severe for emerging countries. In order to shed some light on the issue, we analyze how being public affects firm investment decisions in Turkey, one of the most important emerging economies.

The ambiguity in existing empirical findings can be attributed to data availability and the main difficulty is finding a comparable counterfactual for how listed firms would behave absent their listed status. We address this difficulty by finding comparable privately held firms and analyze the differentiation in their investment behaviors, utilizing a novel dataset of privately held Turkish non-financial firms covering more than 1,000,000 firms over the period 2006-2018.

Using the combination of coarsened and exact matching procedure and difference in difference methodology, first, we document that stock market listing has a significant positive impact on firm growth for manufacturing firms. Stock market-listed manufacturing firms become significantly larger in post listing period compared to their private counterparts as their number of employees, total assets and sales increase significantly. This provides support for the findings of previous research regarding the advantages of public firms in terms of better access to external finance and enhanced corporate structure, which enables them to fulfill growth potential much easily (e.g. Clementi, 2002; Kim and Weisbach, 2008; Takahashi, 2015; Yarba and Güner, 2020).

Results of this study also show that stock market-listed manufacturing firms invest more for expansion than their non-listed counterparts. In addition, their investment decisions are significantly more sensitive to changes in investment opportunities and respond more aggressively in post-listing period. These findings provide significant support for the existing literature that indicates stock-market listing gives firms access to cheaper investment capital. On the other hand, it is in a sharp contrast to the evidence provided by Asker et al. (2015) that stock market listing induces short-termist pressures and distorts the investment decisions of US public firms. Financing constraints might have more profound impacts on corporate investment in economies with less developed financial systems (Love and Zicchino, 2006), which seems the possible explanation for this contradiction.

Moreover, results of this study provide an indirect evidence on the important role of financial market development in mitigating frictions regarding information asymmetry, and easing the access of firms to capital. As in many emerging countries, in Turkey, dominant source of external finance for privately held firms is bank lending, and external financing alternative to straight bank debt is quite limited. Besides, bank lending is highly cyclical and vulnerable to financial and economic conditions. By disseminating information across different classes of investors, a firm can increase its funding opportunities beyond not only bank loans, but also this can help broaden options through bond markets and other alternative funding instruments. However, despite the improvement in financial development in the last decade, number of public firms is still limited in Turkey. There are only around four hundred firms listed on Borsa

Istanbul. In comparison to her peer countries, stock market capitalization as a percent of gross domestic product is also low. This suggests room for growth and results of this study highlight the importance of policies that should be implemented to deepen the Turkish capital markets.

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