

Tunneling through employee stock ownership plans: Evidence from China

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ABSTRACT

Are Employee Stock Ownership Plans (ESOPs) adopted for incentivizing employees in China? Many are for expropriating minority investors. Our cross-sectional regressions show that the tunneling owners cash out soon after ESOP adoption announcements, and that their firms' stock and operating performance both deteriorate. These controlling shareholders use several tactics to inflate the stock prices in the short run: earnings management, leveraged ESOPs, and highly participated ESOPs. Their firms tend to have higher leverage, more intercorporate loans, and higher separation of ownership and control prior to ESOP adoption. We also find that owners in firms with more independent board and higher salary level more likely adopt ESOPs to incentivize employees.

EFM classification: 110; 150; 620

Keywords: Earnings Management; ESOP participation rate; leveraged ESOP; Minority shareholder expropriation; Tunneling

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1. Introduction

The popularity of ESOPs in China coincides with the rise and fall of speculative bubbles. Since regulatory approval for ESOPs in 2014, they reached their peak in 2015, an unusual year of bull market in China. Although the typical Chinese ESOP accounts for a small proportion of total shares outstanding, the participation rate is disproportionately large compared with most ESOPs in the US. Instead of contributing to the plans, most ESOP-adopting firms in China require the employees to buy stocks at market prices, either with employees' cash, or with loans from large shareholders or financial institutions. More than 50% of the ESOPs result in losses. The employees in Kaidi Eco lost all their cash contributions in the company's leveraged ESOP, a total of 130 million RMB. As another example, the owner of Corun sold his shares at 180 million RMB to employees, who lost 61% when sales restriction expired. Many firm owners guarantee non-negative minimum returns to the employees, and market reacts positively. Interestingly, however, the owners soon sell their shares after ESOP adoption announcements.

As emerging markets typically have concentrated corporate ownership and weak legal systems, the controlling shareholders have incentives to expropriate minority shareholders. The expropriation by controlling shareholders is called "tunneling" (La Porta et al., 1999 and 2000; Johnson et al., 2000; Shleifer et al., 2002). The owner can divert resources from the corporation in a variety of ways, such as through related transactions and loan guarantees (Johnson et al., 2000). Empirical evidence has shown both the severity and the pervasiveness of tunneling (Bertrand et al., 2002; Chang, 2003; Jiang, Lee, and Yue, 2010; Liu and Tian, 2012; L., 2009). The concentrated corporate ownership, equity sales restriction, and the weak legal system result in pervasive tunneling in Chinese stock market (Jiang, Lee, and Yue, 2010).

Because controlling shareholders generally try to avoid punishment while extracting personal benefits, their activities are disguised as normal operating or financial transactions. Previous research estimate tunneling from the market reaction to related-party transactions (Bae, Kang, and Kim, 2002; Baek, Kang, and Lee, 2006; Peng, Wei, and Yang, 2011), or from earnings shock absorptions within a business group (Bertrand, Mehta and Mullainathan, 2002), or from how corporate characteristics relate to other receivable account (Jiang, Lee, and Yue, 2010). These studies identify the existence of tunneling from the changes in market or book values after corporate events, or from cross-sectional comparison of firms. Although the existing literature shows the mechanisms and the financial results of

tunneling, less is done to differentiate the good firms from the bad ones when the transactions in general may have real economic value. It is especially relevant for corporate events which may have positive effects on the corporate strategy or productivity. In addition, prior research on tunneling concentrates on corporate owners extracting existing assets, but few studies research the expropriation of new minority investors.

After countries adopt more stringent legal rules, the occurrence of tunneling decreases, as can be seen in less dilutive equity offering and higher firm valuation (Atanasov et al., 2010), as well as the better operating performance of firms with Non-Operational Fund Occupancy (Jiang, Rao, and Yue, 2015). However, current regulations only remedy transparent and easily detectable forms of tunneling. Numerous cases of new expropriations are undetected. The problem becomes more serious for financial tunneling disguised as positive corporate events. Firms initiating ESOPs claim that ESOPs increase employee productivity and shareholder value. Do they in reality? This paper investigates how the corporate owners in China expropriate both existing and new minority shareholders through ESOP adoption.

Our empirical analyses solve two problems. First, we examine the possibility of tunneling via ESOP adoption in China. Second, we analyze the firm characteristics conducive to tunneling, as well as firm controllers' common tactics for expropriation. Specifically, we examine how ESOP adoption affects minority shareholders' investment returns and the firm's operating performance, and whether the large shareholders exhibit tunneling behavior in the course of ESOP establishment. We use event-study methodology to calculate the short-term and long-term abnormal returns, and we use Propensity Score Matching approach to evaluate sample firms' operating performance after ESOP adoption. From cross sectional regression, we investigate the firm characteristics and ESOP characteristics associated with tunneling. Our sample firms' ESOP adoption announcement dates are from 2014 to 2018. We only include the companies adopting ESOPs before the enactment of the New Asset Management Rules in China, to avoid the impact of regulatory change.

Our results overall support the hypotheses above. First, we find that the tunneling owners profit from positive market reaction to ESOP adoption announcements by selling their shares soon after. After cashing out, they either announce less positive news or neglect the firms' operations, which result in worse stock return and deteriorating operating performance, compared with control groups. Second, we identify the common tactics that these corporate owners use to drive up the stock prices during ESOP

adoption. Third, we show the characteristics of those owners' firms prior to ESOP adoption announcements, which could serve as warnings for investors.

The tunneling owners tend to use the following tactics to drive up the stock prices in the short run: earnings management, leveraged ESOPs, and highly participated ESOPs. Paradoxically, these short-term winners are long-term losers. Both the long-term abnormal return and operating performance substantially deteriorate for these firms. Besides the worsening long-term performance, these firms' owners are more likely to sell stocks soon after ESOP adoption announcements.

The tunneling owners' firms exhibit these characteristics prior to ESOP adoption announcements: higher leverage, more intercorporate loans, higher separation of ownership and control. These firms experience higher risks of tunneling because the owners cash out soon after ESOP adoption announcements, or because the long-term performance significantly deteriorates after ESOP adoption. We note that high leverage in emerging market may signal tunneling, rather than discipline management.

On the positive side, we show that owners in firms with more independent board and higher salary level more likely adopt ESOPs to incentivize employees. Our results support the previous findings that better corporate governance may reduce tunneling (Pinkowitz, Stulz, and Williamson, 2006; Bae et al., 2012). The degree of board independence is strongly negatively correlated with the probability of controlling shareholders' equity sales soon after ESOP adoption announcement. A more competitive salary level may reduce the probability of tunneling via ESOP—if the non-management employees receive a higher salary in previous three years, both the long-term abnormal return and the operating performance are better after ESOP adoption.

Our contributions are threefold. First, this paper identifies a new channel of tunneling. Different from previous literature, we discover a covert form of tunneling disguised as beneficial corporate event, and we show certain firm characteristics may differentiate owners with genuine incentivization motives from owners with tunneling motives. Second, this paper identifies both the tactics and the continuity of tunneling when the legal enforcement is weak. Regulatory reforms may not stop the corporate owners from misleading the minority shareholders with the common tactics identified in this paper. Past tunneling likely continues into the future under China's weak legal system and poor protection for minority investors. Third, we contribute to the research on ESOPs. Previous literature identifies management entrenchment as a potential misuse of ESOPs. Tunneling risk is the dark side of ESOPs in

emerging market.

Section 2 of the paper present the background and our hypotheses. Section 3 describe the data and present our methods. Section 4 presents both the results and discussions, and Section 5 concludes.

2. Background and hypothesis development

2.1. Unique features of the Chinese ESOPs

In the US, ESOPs are usually in the form of tax-advantaged pension plans. Studies on US-based samples show that ESOPs could effectively deter takeover (Chaplinsky and Niehaus, 1994), and that ESOPs may alleviate agency problem when management shareholding is low but tend to entrench managers when their shareholding is already high (Chang and Mayers, 1992). The expected tax savings from ESOP adoption in the US generally result in positive announcement effects (Beatty, 1995). As ESOPs are not tax-advantaged and corporate ownerships are concentrated in China, we exclude above reasons for ESOP adoption in China. The most likely reason, then, might be the expected improvement in corporate performance after ESOP adoption.

However, the effect of ESOPs on corporate performance has mixed evidences. Some studies suggest that employee capitalism may incentivize the workforce and improve productivity, especially for those ESOPs targeting key employees. Jones and Kato (1995) argue that the introduction of ESOPs improves productivity in Japanese firms. O'Boyle, Patel, and Gonzalez-Mul é (2016) find a small positive effect of ESOPs on firm performance. However, Blasi, Conte, and Kruse (1996) suggest the adoption of ESOPs has negligible effect on performance. Livingston and Henry (1980) find firms with ESOPs have significantly lower profits than firms without ESOPs. According to Kim and Quimet (2014), ESOPs granted to a moderate number of employees could benefit productivity, but the effects for large ESOPs are not as good because managers tend to use them to thwart takeovers or to form alliance.

China first introduced employee stock ownerships in 1992 together with the corporatization of SOEs (State Owned Enterprises), but corruption problems led to the termination of ESOPs two years later. New regulatory approval for ESOPs came in 2014. Since the old ESOP policies may not be relevant today, we only study the new ESOPs starting from 2014. Our sample includes 559 companies adopting ESOPs from 2014 to 2018. The new regulation allows ESOP stocks to be acquired in flexible ways, such as from the secondary market, through private placements, or from large shareholders. China

Securities Regulatory Committee (CSRC) places sales restriction on ESOPs of one year if their stocks are purchased in the secondary market. The sales restriction is three years for those involving private placements. In our sample, the average lockup period is 1.3 years. Most ESOPs are constructed from stocks purchased in the secondary market, because private placements require regulatory approval and result in a longer lockup period. In our sample, it takes 91 days to establish an ESOP on average, starting from the announcement day. The maximum is 1182 days.

We find that Chinese ESOPs are generally smaller than US ESOPs. A median-sized US ESOP controls 6.70% of the firm's shares outstanding (Kim and Quimet, 2014). CSRC sets an upper limit of 10% on the proportion of a listed firm's shares in its ESOP. However, most ESOPs in China are much smaller than the legal ceiling. In our sample, the mean of ESOP shares as a percentage of total shares is only 1.7%, the median value is 1.4%, the maximum value is 9.3%, and 94.74% of ESOPs are less than 5% of total shares outstanding.

Chinese ESOPs are mainly funded with cash from and loans to employees. In our sample, 17.93% of firms issue new shares to employees through private placements; 50.09% of owners directly transfer stocks to ESOPs via block sales; only 1.58% of the ESOPs include contributions from large shareholders; only 1.93% of firms repurchase stocks for discount sales to employees. In sum, 4.74% of the companies provide funding for ESOPs, while 95.26% of the firms require the employees to buy stocks at market prices, either with employees' cash, or with loans from large shareholders or financial institutions. Since most firms require employees to pay to participate in ESOPs, rather than replacing cash salary with ESOP stocks, cash conservation is unlikely a motive for establishing ESOPs in China. In our unreported analysis, we find the degree of cash constraint to be unrelated to the likelihood of ESOP adoption or to long-term firm performance after establishing ESOPs.

In our sample, firms with diluted ownership are more likely to provide funding to ESOPs than those with concentrated ownership. Although private enterprises account for 86% of the firms adopting ESOPs, only 74% of the firms providing funding to employees are private enterprises. Public enterprises account for 4% of total sample, but account for 18% of firms providing funding to employees. Public enterprises refer to companies with diluted ownership in China, usually former SOEs partially purchased by private individuals. The concentrated ownership in private enterprises place the firms' costs of funding ESOPs mainly on the owners, which might explain the lower proportion of ESOP funding in private enterprises.

We note that leveraged ESOPs tend to be used when employees buy stocks in the secondary market or in bulk from large shareholders. Out of our full sample, 23.6% of firms use leveraged ESOPs. However, out of those firms using private placements, only 10.89% use leveraged ESOPs.

Although the proportion of ESOP shares to total shares outstanding is small in China, the number of ESOP participants to total employees is disproportionately large. In our sample, the average number of ESOP participants is 444, the median is 180, and the 90th percentile is 1000. The ratio of ESOP participants to the number of employees has a mean of 21.86% and a median of 12.59%, and a 90th percentile of 51.17%. The wide divergence in ESOP participation rate might reflect owners' different motives. ESOPs with high participation rate are often used for purposes other than motivating employees, because rank-and-files employees generally have a limited effect on stock performance and the free-rider problem is more salient if a large group of workers participate.

2.2. Hypotheses

From the Chinese ESOP characteristics above, we hypothesize that some corporate owners use ESOPs for non-incentive purposes. Because the Chinese listed firms typically have concentrated ownership, and management is either the owner or is appointed by the owner, takeover concerns are virtually non-existent. Claessens et al. (2000, 2002) and Lemmon and Lin (2003) argue that the discrepancy between control right and cash flow right increases tunneling motives and decreases firm value. Family-controlled and state-owned firms in China are often organized as groups, which have higher separation between ownership and control than non-groups. The weak legal protection for investors, coupled with the high separation of cash flow right and control right, likely leads to tunneling problem for certain firms in China.

Friedman, Johnson, and Mitton (2003) have a model in which the controlling shareholder chooses to prop up the firm when it is under a mild adverse shock and to loot when there is a large adverse shock. Literature shows the existence of propping in Chinese listed firms (Peng, Wei, and Yang, 2011; Jian and Wong, 2010), where the owner injects assets into the firm to avoid delisting. Propping is mainly done for long-term tunneling, otherwise it is against the owner's personal interests to manage earnings upwards using personal assets. Because firms adopting ESOPs are not ST/ST* designated or facing immediate risk of delisting in announcement year, we expect ESOP adoption to be certain owners' device for tunneling rather than propping.

Anecdotal evidences abound that the corporate owners immediately cash out after luring employees and other investors in. The controlling shareholder personally gains at the cost of the public investors by inflating the stock price through ESOP adoption announcement and selling stocks soon after. Due to information asymmetry, other market participants don't expect the large equity sales soon after ESOP adoption announcement, which helps the controlling shareholder to lock in gains. Out of the 559 firms adopting ESOPs, 179 owners sell their personal shares within three months of ESOP adoption announcements, and 260 owners sell equity within six months of announcements.

We hypothesize that the tunneling owners manage earnings upward in previous years, raise the share prices through ESOP adoption announcements, and eventually cash out. Under this hypothesis, the tunneling owners are more likely to sell equity soon after ESOP adoption announcement. After cashing out, the controlling shareholders likely announce less positive news and engage in less earnings management, which put downward pressure on the stock price. After successfully cashing out, these owners are likely to neglect the business. In addition, if employees are swindled into the game, their morale is likely dampened rather than boosted. Under the tunneling hypothesis, the firm has declining operating performance after ESOP adoption.

Because our sample firms operate in roughly the same macro environment, the differentiating factors for tunneling and non-tunneling owners might be the intensity of previous tunneling and corporate governance condition. We expect firms with better corporate governance and cleaner track records to suffer less from tunneling during ESOP adoption in China.

The discussions above lead to the following hypotheses:

H1. The owners of firms with tunneling history and poor corporate governance tend to increase the short-term stock return through ESOP adoption announcements, and likely cash out soon afterwards.

H2. The long-term stock performance and operating performance both deteriorate for those firms identified in H1.

3. Data and methodology

3.1. Descriptive summary

Our sample includes Chinese non-financial firms that announced ESOP adoption from July 10, 2014 to April 27, 2018. CSRC issued official approval for ESOPs on June 20, 2014, and the first case of ESOP adoption occurred 20 days later. Because CSRC issued new asset management rules on 27 April,

2018, we only study the ESOPs announced on or before 27 April, 2018. We collect ESOP and financial data from the Wind Financial Terminal, and we collect company ownership data from the Chinese Stock Market Research (CSMAR) database. We exclude financial firms, firms designated ST/*ST before ESOP adoption announcements, firms announcing ESOP adoption within one year of listing and firms that issued A-shares and B-shares or H-shares, because these may not be comparable to the majority of firms adopting ESOPs in the Chinese market. We also drop firms which suspend trading for more than 10 out of 30 trading days after ESOP adoption announcements. Our sample contains 559 firms and 811,394 firm-day observations, although sample sizes vary due to missing data for some firms. For the companies that establish ESOPs in steps or announce ESOP adoption multiple times, we only study the first ESOP announcement for each company.

We use the industry classification provided by Wind Information Co., Ltd., which follows the Global Industry Classification Standard (GICS). Table 1 summarizes the distribution of firms adopting ESOPs by industry and by ownership types. Manufacturing firms accounted for 25.4% of total sample, which is followed closely by IT. Private enterprises account for the majority of ESOP-adopting firms during this period- 86.58% of sample firms are privately owned and SOEs only account for 9.48% of total sample. Since the official approval in June 2014, a total of 26 cases of ESOP adoption announcements occurred in 2014, 207 in 2015, 114 in 2016, 158 in 2017, and 54 in the first five months of 2018. The number of ESOP adoption announcements peaked in 2015, possibly due to the optimism for Chinese stock market during this period.

Table 1

This table reports distribution of firms adopting ESOPs by industry and ownership category. The sample consists of 559 companies listed on Shanghai and Shenzhen exchanges announcing ESOP adoption from July 10, 2014 to April 27, 2018. The industries are classified by Wind Information Co., Ltd. using Global Industry Classification Standard (GICS). In ownership types, the category “public enterprise” is different from western definition and is specially defined by Chinese government as neither controlled by the state nor by the private sector.

Industry	Number of firms	Percentage	Ownership type	Number of firms	Percentage
Healthcare	55	9.84%	Local SOE	45	8.05%
Consumer staples	39	6.98%	Central SOE	8	1.43%
Real estate	16	2.86%	Private enterprise	484	86.58%
Information technology	126	22.54%	Public enterprise	22	3.94%
Manufacturing	142	25.40%			
Consumer discretionary	88	15.74%			
Materials	82	14.67%			
Utilities	7	1.25%			
Energy	3	0.54%			

3.2. Short- and long-term abnormal returns surrounding ESOP announcement

We use standard event study methodology to study the short-term abnormal return surrounding ESOP announcements. We select the initial board meeting announcement date as the event date for ESOP adoption event. If the announcement was made during non-trading days, we use the next trading day as the announcement date. We obtain the daily closing prices of sample firms and of the market index from Wind Financial Terminal. Wind A-share Index is used as the market proxy. All the prices are adjusted for stock splits. We use both the market adjusted model and the market model to compute daily abnormal return (AR). For the market model, estimation window is between 220 days and 20 days before the event date. For each method, the cumulative abnormal return between dates T1 and T2 is as follows:

$$CAR_i(T_1, T_2) = \sum_{t=T_1}^{T_2} AR_{it}$$

For the long-term abnormal return, we use the buy-and-hold abnormal return approach (BHAR). In BHAR calculation, the beginning of the holding period is the event date for each ESOP adoption, and the end of the holding period is the lockup expirations date. According to CSRC regulation, the lock-up period for ESOPs is at least 12 months and should be 36 months for ESOPs involving non-public offering. Using information from Wind, we differentiate between those ESOPs that involve private placements and those that do not, and calculate the unlock date to be the sum of lockup date and lockup period. Due to data availability, we use December 13, 2019 as the unlock date for 50 firms, as their lockup expiration dates occur after 2019/12/13. The minimum holding period for each company is 12 months.

According to Barber, Lyon, & Tsai (1999), the unadjusted BHAR suffers from new listing, rebalancing and skewness bias. Following their methodology, we first remove 559 sample firms from non-financial A-shares and create a benchmark group, and then divide the benchmark into five size groups using each company's average market cap between 2012 and 2014, and further divide each size group into five book-to-market groups using their average book-to-market ratios between 2012 and 2014. Then we calculate the average size and book-to-market values for each of the 25 control groups. Each ESOP-adopting sample firm is then matched to a control group with the closest average size and book-to-market values, using each sample firm's average market cap and book-to-market ratio in the

three years before the event date. BHAR is calculated as the difference between each ESOP adopting sample firm's holding return and the equally weighted holding return of its matched control group.

3.3. Variables in cross-sectional regressions

Our empirical tests seek to understand whether ESOP adoption is associated with tunneling for certain Chinese firms. We use both the long-term stock performance and operating performance to evaluate firms' condition after ESOP adoption announcements. To test for our hypotheses, we examine whether certain firm and ESOP characteristics are associated with positive CAR but negative BHAR and negative operating performance, as represented by the regression models below. In addition, we test whether the controlling shareholders in such firms are more likely to sell their stocks in the company within one month of ESOP adoption announcements.

$$CAR_i = a + b(\text{firm characteristics}_i) + c(\text{ESOP characteristics}_i) + d(\text{control variable}_i) \quad (1)$$

$$\text{Logit}(\text{Equity sales})_i = a + b(\text{firm characteristics}_i) + c(\text{ESOP characteristics}_i) + d(\text{control variable}_i) \quad (2)$$

$$BHAR_i = a + b(\text{firm characteristics}_i) + c(\text{ESOP characteristics}_i) + d(\text{control variable}_i) \quad (3)$$

$$\text{Operating performance}_i = a + b(\text{firm characteristics}_i) + c(\text{ESOP characteristics}_i) + d(\text{control variable}_i) \quad (4)$$

In logistic regression (2), the dependent variable is equal to 1 if the controlling shareholders sell the company's stocks within one month of ESOP adoption announcements and to 0 otherwise. We collect the transaction data of controlling shareholders (including their family members) from Wind Financial Terminal, and we find companies whose controlling shareholders sell nonzero numbers of stocks within one month of ESOP adoption announcements. The dummy Equity sales is set to 1 for those companies. We run logistic regression first on the whole sample, and then on three sets of subsamples which are created by dividing the full sample in half based on the median of Accounting accruals, ESOP_participation, and Other receivables/assets, respectively.

To measure operating performance, we divide each sample firm's operating cash flow by total assets for three years before and after ESOP adoption announcement, and then adjust each sample firm's OCF/total assets by subtracting the control group's OCF/total assets for each year, which is represented by both the industry average according to Wind Level 1 Industry Classification, and by Propensity Score Matching (PSM) control average. PSM adjustment helps to alleviate the sample selection bias in

our ESOP adopting sample firms. We use pooled logistic regression with book-to-market, leverage, industry, size, and year as independent variables to predict the probability of adopting ESOPs for Chinese A-share firms. Using five nearest neighbors as controls, we calculate each control group's OCF/total assets as the five control firms' average for each year. The dependent variable in (4) is defined both as the difference in the average PSM control adjusted OCF/total assets for two years after and before ESOP adoption announcements, and as the cumulative PSM control adjusted OCF/total assets for three years after ESOP adoption announcements. We call the former "marginal operating performance from ESOP adoption", and the latter "cumulative operating performance from ESOP adoption".

The explanatory variables in the regression models include both firm characteristics and ESOP characteristics. Under the tunneling hypotheses, we would expect b and/or c to be positive in (1) and (2), but negative in (3) and (4). Specifically, firm characteristics include CC_separation、 Other receivables/assets、 Accounting accruals、 Non-recur income/profits、 Leverage、 Independent board、 Salary_Nonmgt、 Profit/employees; ESOP characteristics include ESOP_leverage、 ESOP_participation、 Log(ESOP_participants)、 ESOP_Mgt、 ESOP_stock; our control variables include Industry、 Owner category、 Log(size)、 Book to market. We measure all the financial variables as the three-year average before ESOP adoption announcements.

Control and cash-flow right separation is the difference between the controlling shareholder's share of control rights and share of cash-flow rights, where control rights are defined as the minimum stake and cash flow rights as the product of each stake in each chain of ownership, following Claessens et al. (2002). We define CC_separation as the average control and cash-flow right separation for three years before ESOP adoption announcements. We expect this variable and its interaction terms to be positively associated with CAR but negatively with BHAR.

Besides considering controlling shareholders' motivation for tunneling, we also include variables which could reflect previous tunneling. Other receivables/assets is the three-year average of other receivables divided by total assets before the announcement of ESOP adoption. Jiang, Lee, and Yue (2010) show the high ratios of other receivables to total assets in Chinese listed firms, which result after controlling shareholders siphon funds through intercorporate loans. The two variables Accounting accruals and Non-recur income/profits are associated with earnings management. As with Liu and Lu (2007), we calculate Accounting accruals as the three-year average of (net income-operating cash

flow)/total assets prior to ESOP adoption announcements. The other measure Non-recur income/profits is defined as the three-year average of non-recurring income divided by net profit prior to ESOP adoption announcements. Bertrand, Mehta, and Mullainathan (2002) find that the controlling shareholders use the non-operating profit account to disguise the tunneled profit. As the non-operating items are mainly non-recurring, we use the ratio of non-recurring profit to total profit as a proxy for previous tunneling before ESOP adoption. The last variable to proxy for tunneling behavior is Leverage. Liu and Tian (2012) show that the controlling shareholders in China use excess leverage to tunnel. According to Bae, Kang, and Wang (2011), employee-friendly firms are more likely to have lower debt ratios. If a company doesn't treat the employees fairly, it is unlikely to motivate them through ESOPs. We test whether ESOP adoption in highly levered firms is more likely a tunneling device. We expect the firm to experience higher short-term and lower long-term abnormal return surrounding the ESOP event, if the owner demonstrates more tunneling behavior before ESOP adoption announcement.

We also consider variables which are negatively associated with tunneling behavior. Independent board is defined as the three-year average of the number of independent board members divided by the total number of board members prior to ESOP adoption announcements. Salary_Nonmgt is the three-year average of non-management employees' salary divided by net income prior to ESOP adoption announcements, where non-management employees exclude board members and upper managers. As the remuneration to directors could be used for tunneling (I., 2009), we subtract management salary and bonus from total salary expense to better measure average salary level. If a firm pays more competitive salary before ESOP adoption announcements, the controlling shareholder more likely uses ESOPs to motivate employees, rather than to tunnel. We expect both Independent board and Salary_Nonmgt to be positively associated with a firm's long-term performance after ESOP adoption.

The interpretation on Profit/employees is trickier, which is defined as the three-year average of net income divided by the number of employees prior to ESOP adoption announcements. Higher profit per employee signals the importance of human capital for the firm, but it could also be due to earnings manipulation. Firms with severe tunneling could have fewer employees than industry average but report inflated profits to avoid being delisted, resulting in higher Profit/employees.

Finally, we include ESOP characteristics as explanatory variables. ESOP_leverage is a dummy variable and equals 1 if the controlling shareholder or financial institutions provide loans to employees for ESOP implementation. ESOP_participation is the number of ESOP participants divided by the

number of employees in the year of ESOP adoption. An alternative variable used in separate regressions is $\text{Log}(\text{ESOP_participants})$, which is the natural logarithm of the number of ESOP participants. ESOP_Mgt is the percentage of an ESOP owned by management. ESOP_stock is a dummy variable which equals 1 if the controlling shareholder transfers shares to the ESOP via block sales. Because ESOP_stock overlaps in part with the dependent variable of regression (2), they will not be used together. Out of those ESOP characteristic variables, we expect $\text{ESOP_participation}$ or $\text{Log}(\text{ESOP_participants})$ to be positively correlated with tunneling. Similarly, ESOP_leverage is likely associated with tunneling, because the ESOPs funded by additional loans may increase stock prices more. ESOP_stock is also likely a signal for expropriation, because direct block sales to the ESOPs are unlikely associated with owners' positive expectation for the companies, but rather could be a way to cash out. However, the interpretation of ESOP_Mgt is less clear-cut, since higher management participation could either be a signal of positive expectation for the firm, or could be a way to cajole non-management employees and public investors to purchase the stocks.

3.4. Summary statistics

Table 2 presents descriptive statistics of the explanatory variables for the sample firms. We report the mean, the standard deviation, the 25th, 50th, 75th percentile for each variable in Panel A, and the correlation matrix in Panel B. $\text{Log}(\text{ESOP_participants})$ is not included in this correlation matrix for its similarity with $\text{ESOP_participation}$. Except for Profit/employees and Accounting accruals, all other variables in Table 1 have correlation less than 0.25. Because of the strong positive correlation between Profit/employees and Accounting accruals, they will not be used in the same regression. Interestingly, a high level of earnings per employee is associated with higher chance of earnings management in our sample. We replace $\text{ESOP_participation}$ with $\text{Log}(\text{ESOP_participants})$, recalculate the correlations, and find the maximum absolute value of its correlation with other variables to be 0.491.

Table 2

Summary statistics of ESOP and firm characteristics. Panel A presents summary statistics of ESOP and firm characteristic variables for companies with ESOP announcement date between 2014 to 2018. Data are from the Wind Financial Terminal and the Chinese Stock Market Research (CSMAR) database. The variables are defined in Appendix A and in the text (see Section 3.3). Panel B reports the correlation matrix for the variables.

Panel A: Basic statistics					
Variable	Mean	StDev	Median	25%	75%
Other receivables/assets	0.016	0.023	0.010	0.005	0.019
Accounting accruals	0.076	1.673	0.003	-0.027	0.037
Non-recur	0.373	1.100	0.119	0.052	0.303

income/profits					
ESOP_participation	0.219	0.326	0.126	0.044	0.259
ESOP_Mgt	0.283	0.223	0.246	0.098	0.412
Log(size)	8.824	0.820	8.792	8.260	9.313
Leverage	0.398	0.197	0.383	0.236	0.535
Salary_Nonmgt	3.117	42.216	1.040	0.558	1.998
Profit/employees	1.831	16.084	0.671	0.326	1.283
Book to market	0.311	0.168	0.285	0.193	0.395
CC_separation	5.687	8.021	0.699	0.000	10.220
Independent board	0.378	0.054	0.364	0.333	0.429
Log(ESOP_participants)	5.206	1.288	5.193	4.394	6.001

Panel B:Correlations

	Other receivables/assets	Accounting accruals	ESOP_leverage	Non-recur income/profits	ESOP_participation	ESOP_Mgt
Accounting accruals	-0.017					
ESOP_leverage	-0.070	0.080				
Non-recur income/profits	0.099	-0.004	-0.083			
ESOP_participation	0.022	0.001	-0.033	-0.012		
ESOP_Mgt	-0.021	0.040	-0.058	-0.023	-0.198	
Log(size)	0.073	-0.001	-0.023	-0.120	-0.089	-0.157
Leverage	0.204	-0.021	-0.177	0.143	-0.047	0.000
Salary_Nonmgt	-0.028	-0.005	-0.032	-0.005	-0.011	-0.002
Profit/employees	-0.023	0.993	0.076	-0.010	0.014	0.039
Book to market	-0.059	-0.051	-0.056	0.202	-0.099	-0.036
CC_separation	-0.017	-0.019	0.007	-0.015	-0.007	0.042
ESOP_stock	0.010	0.027	0.026	0.071	0.084	-0.066
Independent board	-0.004	0.042	0.023	0.007	0.033	-0.067

Panel B:Correlations

Continued	Log(size)	Leverage	Salary_Nonmgt	Profit/employees	Book to market	CC_separation	ESOP_ stock
Leverage	0.233						
Salary_Nonmgt	-0.076	-0.057					
Profit/employees	0.029	-0.009	-0.008				
Book to market	-0.189	0.105	0.046	-0.047			
CC_separation	0.065	0.073	-0.031	-0.021	0.175		
ESOP_stock	0.090	-0.025	0.035	0.024	-0.084	-0.052	
Independent board	-0.015	-0.012	-0.048	0.048	-0.094	-0.095	-0.005

4. Empirical results

In this section, we examine the short-term and the long-term performance of ESOP-adopting firms, as well as the probability of controlling shareholders cashing out soon after ESOP adoption announcements, to evaluate the tunneling hypotheses.

4.1. Short-term and long-term abnormal returns

The short-term market reaction to ESOP adoption announcements is strongly positive. We test CAR with event windows spanning between the ten days before and the 30 days after ESOP adoption announcement day, all of which are significantly positive. For example, $CAR(-5,5)$, which is the CAR with event window spanning between the five days before and the five days after ESOP adoption announcement day, has a mean of 2.2% and t-statistic of 3.7. The positive short-term market reaction could reflect expectation of productivity gains. The additional insider buyers also bring a positive signaling effect if the employees contribute cash to the plan, as is almost always the case in China. The short-run stock price rise is more impressive when the controlling shareholder guarantees minimum return to the employees.

Undeniably, not all owners have evil motives when establishing ESOPs, and we do find the long-term abnormal return from ESOP adoption announcement to be insignificantly different from zero for the whole sample.

By separating samples into subgroups, we find BHAR to be significantly negative when the controlling shareholder exhibits higher probability of tunneling prior to ESOP adoption. We separate the sample into three subgroups- the bottom 25 percentile, the middle, and the top 75 percentile, based on grouping criteria, and then test the BHAR and CAR of firms falling in the top 75 percentile and bottom 25 percentile. For example, we test the BHAR and CAR of firms when both Other receivables/assets and Accounting accruals are in the top 75 percentile, denoted as the “High Other receivables/assets & high Accounting accruals” group, and then test the BHAR and CAR when both criteria are in the bottom 25 percentile, denoted as the “Low Other receivables/assets & low Accounting accruals” group. Table 3 reports the mean value, the t-statistic and Wilcoxon signed-rank z-statistic for the BHAR and CAR (-5,5) of the sample firms in the top and bottom subgroups. In Table 3, BHAR is significantly negative with a mean of -11.8% when the firm’s Other receivables/assets and Accounting accruals are both high prior to ESOP adoption announcement, but BHAR is not significantly different from zero when the grouping criteria are both low. BHAR is significantly negative with a mean of -5.3% when the ESOP is leveraged, but BHAR is insignificantly different from zero when the ESOP is not leveraged.

This pattern continues for the combined criteria of Profit growth and Accounting accruals, as well as for Non-recur income/profits and Accounting accruals. Although the pattern for CAR is less clear, CAR is significant at 10% level with a mean of 2.9% when both Profit growth and Accounting accruals is high, but CAR is insignificantly different from zero when both of the criteria are low.

The overall results in Table 3 support the hypothesis that controlling shareholders in firms with high levels of earnings manipulation use ESOP adoption announcements to tunnel, and a possible channel is through increasing short-term abnormal return. Investors seem to expect ESOP adoption to reduce the agency costs between the employees and shareholders, but they likely have neglected the agency costs between the controlling and the minority shareholders.

Table 3

Summary of long-term abnormal return BHAR and short-term abnormal return CAR(-5,5) for 559 firms announcing ESOP adoption during the period between July 10, 2014 and April 27, 2018, based on ESOP and firm characteristics, where "high" refers to more than the 75th percentile and "low" refers to less than the 25th percentile based on the grouping criteria in the leftmost column. *, **, and ***denote significance at the 10%, 5%, and 1% levels, respectively.

Subgroup	Number of firms	BHAR				CAR			
		Mean	t-statistic	Percent positive	Wilcoxon signed-rank z-statistic	Mean	t-statistic	Percent positive	Wilcoxon signed-rank z-statistic
High Other receivables/assets & high Accounting accruals	48	-11.8%***	-3.28	29.2%	-3.33	-0.6%	-0.25	45.8%	-0.24
Low Other receivables/assets & low Accounting accruals	43	0.6%	0.12	46.5%	0.06	3.1%	1.26	55.8%	0.91
ESOP_leverage=1	132	-5.3%***	-1.77	36.4%	-3.01	2.1%*	1.90	55.3%	2.07
ESOP_leverage=0	426	2.0%	0.95	45.1%	-1.58	2.2%***	3.18	58.0%	3.76
High Profit growth & high Accounting accruals	43	-9.2%**	-1.72	30.2%	-2.54	2.9%*	1.91	58.1%	1.69
Low Profit growth & low Accounting accruals	44	8.0%	1.84	109.5%	1.38	4.1%	1.51	56.8%	1.12
High Non-recur income/profits & high Accounting accruals	30	-8.1%**	-1.94	30.0%	-2.09	3.6%*	1.67	50.0%	1.57
Low Non-recur income/profits & low Accounting accruals	39	-0.8%	-0.15	48.7%	-0.42	3.2%*	1.73	59.0%	1.34

4.2. Operating performance after ESOP adoption

Table 4 reports the summary statistics of operating performance of sample firms for three years before and after ESOP adoption. From the industry average adjusted approach, the operating performance of sample firms is indistinguishable from benchmark before ESOP adoption, except for the worse performance than that of benchmark one year before ESOP adoption at 10% significance level.

However, the operating performance of sample firms considerably deteriorates afterwards, being 1.4% and 1.3% lower than that of benchmark for two and three years after ESOP adoption, respectively, both at 1% significance level. Our results from Propensity Score Matching approach are similar: sample firms' performance is not significantly different from benchmark before ESOP adoption, but is worse than that of benchmark for two years and three years after ESOP adoption, both at the 5% significance level. The two- and three- year average operating performance before and after ESOP adoption confirm this pattern for the industry average approach, but only the three-year average for the PSM approach. The three-year post-ESOP cumulative OCF/TA is -3.9% at 1% significance level for the industry adjusted approach, and is -1.6% at 10% significance level for PSM approach.

The results support our tunneling hypotheses, since controlling shareholders with strong tunneling motives would divert resources away from operations after reaping personal benefits through ESOP adoption, thereby hurting the firms' long-term operating performance.

Table 4

Operating performance for pre-ESOP and post-ESOP period. This table reports the mean, standard deviation, and t-statistic of the operating performance of 559 sample firms for three years before and three years after announcing ESOP adoption, where operating performance is proxied by both the industry adjusted and the Propensity Score Matching (PSM) control adjusted Operating Cash Flow/Total Assets. For the industry adjusted operating cash flow to total assets (OCF/TA), the benchmark for adjustment is the arithmetic average OCF/TA in each industry according to Wind Industry Classification. For the PSM control adjusted OCF/TA, the benchmark for adjustment is the arithmetic average OCF/TA of five control firms with the closest probability of adopting ESOP as each sample firm, where the probability of adopting ESOP is estimated from pooled logistic regression with book-to-market, leverage, industry, size, and year as independent variables. This table also summarizes the average adjusted OCF/TA for three and two years before and after ESOP adoption, as well as the cumulative adjusted OCF/TA over three years after ESOP adoption. *, **, and *** indicate statistical significance at 10%, 5%, and 1% levels respectively.

Year Relative to ESOP	Industry adjusted operating cash flow to total assets (ESOP firm- Industry Avg.)			PSM adjusted operating cash flow to total assets (ESOP firm- PSM control)		
	Mean	Std. Err.	T Stat	Mean	Std. Err.	T Stat
3	-0.013***	0.061	-4.342	-0.007**	0.003	-1.985
2	-0.014***	0.003	-4.864	-0.007**	0.003	-2.25
1	-0.008***	0.003	-2.909	0.001	0.003	0.328
-1	-0.005*	0.003	-1.664	-0.001	0.003	-0.299
-2	-0.004	0.003	-1.16	-0.003	0.004	-0.661
-3	-0.013	0.019	-0.7	-0.018	0.019	-0.937
Three-year Post-ESOP Average	-0.013***	0.002	-5.226	-0.005*	0.003	-1.918
Three-year Pre-ESOP Average	-0.007	0.007	-1.081	-0.007	0.007	-1.041
Two-year Post-ESOP Average	-0.011***	0.002	-4.684	-0.003	0.003	-1.162
Two-year Pre-ESOP Average	-0.004	0.003	-1.599	-0.002	0.003	-0.594
Three-year Post-ESOP Cumulative	-0.039***	0.007	-5.226	-0.016*	0.008	-1.918

4.3. Cross-sectional regression analyses

To find firm and ESOP characteristics associated with tunneling, we present the results from the multivariate regressions Eq. (1) - Eq. (4).

Table 5 reports the regression results for our sample from Eq. (1). From both Model I and Model II, we can see that the coefficient of Accounting accruals is positively significant at the 1% level. From Model III, the interaction term Leverage \times Non-recur income/profits has a coefficient that's positively significant at the 5% level. The results are consistent with our expectation that firms with more earnings manipulation and higher leverage are more likely to boost short-term return via ESOP adoption announcements.

Investors probably don't foresee the tunneling consequences of those corporate owners, as those firms experience higher short-term abnormal return than other sample firms. A possible reason is that institutional investors tend to avoid those firms since their owners already demonstrate a history of tunneling, and that the naive investors assume those owners intend to motivate employees by establishing ESOPs. This might explain the significantly positive return for those firms with tunneling history, but not their higher abnormal return than other sample firms. More likely, the controlling shareholders use different tactics to puff up the stock prices when their firms adopt ESOPs.

From Model II, the interaction of ESOP_leverage with Owner category resulted in non-zero value when the firm is a Private enterprise, because only four public enterprises use leveraged ESOPs and no SOEs use leveraged ESOPs in our sample, the latter two of which are dropped in the regression. The interaction term Private enterprise \times ESOP_leverage is significantly positively correlated with CAR at the 1% level. Private enterprises use leveraged ESOPs to raise CAR to a higher level than that of SOEs.

Table 5

Regression results of cumulative abnormal returns on firm and ESOP characteristics. This table reports the regression results of the market adjusted CAR (-5, 5) on firm and ESOP characteristics. All the financial variables are measured as the three-year average before ESOP adoption announcements. Salary_Nonmgt is the three-year average of non-management employees' salary divided by net income prior to ESOP adoption announcement. Log(size) is the natural logarithm of the three-year average of market capitalization prior to ESOP announcement. Accounting accruals is the three-year average of (net income-operating cash flow)/total assets prior to ESOP announcement. ESOP_stock is equal to 1 if the controlling shareholder transfers shares to the ESOP via block sale, and to 0 otherwise. ESOP_participation is the number of ESOP participants divided by the number of employees at the firm. ESOP_Mgt is the management ownership percentage of an ESOP. Book to market is the three-year average of equity book value divided by market capitalization prior to ESOP announcement. Leverage is the three-year average of total liabilities divided by total assets prior to ESOP announcement. ESOP_leverage is equal to 1 if the controlling shareholder or financial institutions provides loans to employees for implementation of ESOP, and to 0 otherwise. Non-recur income/profits is defined as the three-year average of non-recurring income divided by net profit prior to ESOP adoption announcement. Profit/employees is the three-year average of net income divided by the number of employees prior to ESOP announcement. Model I does not include interaction terms. Model II includes the interaction term of ESOP_leverage with Owner category. Model III includes the interaction term of Leverage with Non-recur income/profits. We obtain similar results for CAR (-5,5) using the market model. Standard errors are in parenthesis. *, **, and ***denote significance at the 10%, 5%, and 1% levels, respectively.

Model	I	II	III
Salary_Nonmgt	0.000 (0.000)	0.000 (0.000)	
Log(size)	-0.015 (0.009)	-0.015* (0.009)	-0.014 (0.009)
Accounting accruals	0.002*** (0.000)	0.002*** (0.000)	
ESOP_stock	0.040*** (0.013)	0.041*** (0.013)	0.038*** (0.013)
ESOP_participation	0.021 (0.023)		0.025 (0.023)
ESOP_Mgt	0.027 (0.028)	0.014 (0.028)	0.027 (0.028)
Owner category (ref.= local SOE)			
Central SOE	0.129 (0.087)	0.125 (0.088)	0.126* (0.067)
Private enterprise	0.060** (0.026)	0.050** (0.025)	0.060** (0.025)
Public enterprise	0.099** (0.042)	0.100** (0.042)	0.100** (0.041)
Book to market	0.098** (0.044)	0.078* (0.042)	0.073* (0.039)
Industry (ref.=Healthcare)			
Consumer staples	0.013 (0.028)	0.007 (0.027)	0.019 (0.027)
Real estate	-0.062* (0.033)	-0.063* (0.033)	-0.049 (0.033)
IT	0.000 (0.024)	0.004 (0.024)	0.007 (0.024)
Manufacturing	-0.011 (0.022)	-0.013 (0.021)	-0.004 (0.021)
Consumer discretionary	0.007 (0.024)	0.005 (0.023)	0.012 (0.024)
Materials	0.007 (0.023)	0.009 (0.023)	0.013 (0.023)
Utilities	0.037 (0.041)	0.046 (0.039)	0.045 (0.040)
Energy	-0.048 (0.107)	-0.047 (0.102)	-0.043 (0.116)
Leverage	0.045 (0.034)	0.035 (0.035)	0.007 (0.036)
ESOP_leverage		-0.131*** (0.044)	
Private enterprise ×ESOP_leverage		0.133*** (0.046)	

Non-recur income/profits			-0.052*
			(0.027)
Leverage \times Non-recur income/profits			0.109**
			(0.043)
Profit/employees			0.000***
			(0.000)
Intercept	0.006	0.036	0.015
	(0.093)	(0.084)	(0.093)
Observations	488	508	488
R-squared	0.073	0.067	0.088

Table 6 reports the regression results for our whole sample from Eq. (2). From Model I, CAR is positive at 10% significance level. From Model III, the interaction term $CAR \times ESOP_participation$ is significantly positive at 5% level. Similar to the findings of Kim and Quimet (2014), we find that ESOPs with high participation rate may be associated with non-incentive motives. The higher the short-term return and ESOP participation rate, the more likely the controlling shareholder will sell the firm's stocks soon after ESOP adoption announcement. From Model II, the interaction term $CAR \times Accounting\ accruals$ is significantly positive at 1% level. From Model IV, the interaction term $Accounting\ accruals \times ESOP_participation$ is significantly positive at 5% level. From Model VI, we can see the interaction term $Non-recur\ income/profits \times Log(ESOP_participants)$ is positive at 10% significance level. Model V shows the interaction term $ESOP_leverage \times ESOP_participation$ to be positively significant at 5% level. The results support our tunneling-by-cashing-out hypothesis that controlling shareholders in Chinese listed firms use ESOP adoption announcements to raise stock prices in the short run and then sell their stocks to expropriate minority shareholders. The higher the occurrence of earnings management in the past, the higher the probability of tunneling via ESOP adoption. Leveraged ESOP is likely a tool for tunneling and deserves more regulatory attention. The high ESOP participation rate in China is likely a tactic to boost short-term return. There are anecdotal evidences that some listed firms in China require each employee to participate in ESOPs, and the controlling shareholders disappear after siphoning billions of RMB out of the stock market.

We also find tunneling to be negatively correlated with good corporate governance. Both Model I and Model IV shows that Independent board is negatively correlated with the probability of equity sales at significance level 10% and 5%, respectively. Consistent with the findings of Liu and Lu (2007), an independent board may help to protect the minority investors in Chinese stock market.

Table 6

Logistic regression results of equity sales by controlling shareholders on firm and ESOP characteristics: The whole sample. This table reports the logistic regression results of the probability of controlling shareholders' equity sales within one month of ESOP adoption announcement on firm and ESOP characteristics for the whole sample. The dependent variable is a dummy variable that equals 1 if the controlling shareholder sells the company's stock within one month of ESOP adoption announcement and 0 otherwise. All the financial variables are measured as the three-year average before ESOP adoption announcements. Log(size) is the natural logarithm of the three-year average of market capitalization prior to ESOP announcement. ESOP_participation is the number of ESOP participants divided by the number of employees at the firm. Book to market is the three-year average of equity book value divided by market capitalization prior to ESOP adoption announcement. Accounting accruals is the three-year average of (net income-operating cash flow)/total assets prior to ESOP adoption announcement. ESOP_Mgt is the management ownership percentage of an ESOP. ESOP_leverage is equal to 1 if the controlling shareholder or financial institutions provides loans to employees for implementation of ESOP, and to 0 otherwise. Non-recur income/profits is defined as the three-year average of non-recurring income divided by net profit prior to ESOP adoption announcement. CAR refers to CAR (-10, 30) using the market model. Log(ESOP_participants) is the natural logarithm of the number of ESOP participants. Independent board is the three-year average of the number of independent board members divided by the total number of board members prior to ESOP adoption announcement. Model I does not include interaction terms. Model II to Model VI include interaction terms. Standard errors are in parenthesis. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Model	I	II	III	IV	V	VI
CAR	1.127*	1.104*	-0.022			
	(0.660)	(0.598)	(0.791)			
Independent board	-5.358*			-6.694**		
	(2.775)			(3.160)		
Owner category (ref.= local SOE)						
Private enterprise	0.197	0.260	-0.009	-0.108	-0.015	-0.110
	(0.484)	(0.499)	(0.513)	(0.486)	(0.510)	(0.518)
Public enterprise	0.373	0.415	0.050	-0.099	-0.040	0.114
	(0.745)	(0.738)	(0.761)	(0.775)	(0.744)	(0.735)
Log(size)	0.348**	0.355**	0.332**	0.273*	0.305*	0.149
	(0.148)	(0.149)	(0.152)	(0.157)	(0.157)	(0.162)
Book to market	-0.293	-0.102	0.198	-0.054	0.130	-0.071
	(0.819)	(0.841)	(0.867)	(0.876)	(0.866)	(0.871)
Industry (ref.=Healthcare)						
Consumer staples	0.147	-0.037	0.160	0.270	0.263	0.134
	(0.606)	(0.620)	(0.610)	(0.610)	(0.601)	(0.600)
IT	0.252	0.238	0.370	0.387	0.343	0.266
	(0.460)	(0.472)	(0.472)	(0.468)	(0.465)	(0.455)
Manufacturing	0.105	0.176	0.065	0.027	0.021	0.012
	(0.463)	(0.476)	(0.488)	(0.481)	(0.485)	(0.468)
Consumer discretionary	-0.104	-0.139	-0.255	-0.305	-0.332	-0.388
	(0.504)	(0.510)	(0.525)	(0.533)	(0.541)	(0.543)
Materials	0.464	0.463	0.459	0.350	0.327	0.261
	(0.490)	(0.497)	(0.503)	(0.516)	(0.511)	(0.509)
Accounting accruals		-2.771***		-3.764**		
		(0.790)		(1.656)		
CAR×Accounting accruals		28.723***				
		(8.398)				
ESOP_participation			0.062	0.119	0.351	
			(0.360)	(0.420)	(0.348)	

CAR ×ESOP_participation			5.558**			
			(2.366)			
ESOP_Mgt			0.451	0.586	0.707	
			(0.625)	(0.615)	(0.702)	
Accounting accruals ×ESOP_participation			18.061**			
			(8.117)			
ESOP_leverage				-0.791**		
				(0.394)		
ESOP_leverage ×ESOP_participation				1.775**		
				(0.902)		
Non-recur income/profits						-3.131**
						(1.521)
Log(ESOP_participants)						0.074
						(0.137)
Non-recur income/profits ×Log(ESOP_participants)						0.465*
						(0.267)
Intercept	-3.075*	-5.260***	-4.933***	-1.824	-4.680***	-3.398**
	(1.824)	(1.569)	(1.622)	(2.020)	(1.687)	(1.709)
Observations	514	514	487	458	458	458
Pseudo R ²	0.033	0.043	0.037	0.046	0.033	0.032

Table 7 reports the regression results for our subsamples from Eq. (2). From Model I and Model II, CAR is significantly positive at 5% when Accounting accruals is high, but is not significantly different from zero when Accounting accruals is low. We argue that controlling shareholders are more likely to tunnel via ESOP adoption after managing earnings in prior years. By managing earnings upwards, the controlling shareholders raise market expectation for future growth, and consequently, the share price. The inflated stock prices are further raised by ESOP adoption announcements, which ultimately assist in the firm owners' cashing out. Instead of tunneling existing corporate assets directly, the controlling shareholders expropriate minority shareholders through siphoning cash in the secondary market and through private placements. However, the siphoned cash is not put to productive uses, as can be seen in the firms' deteriorating performance relative to control groups shown above.

From Model III and Model IV, CAR is significantly positive at 1% when ESOP_participation is high, but is not significant when ESOP_participation is low. This suggests that the tunneling owners persuade as many employees to participate as possible so as to sell stocks at better prices, similar to the results before. From Model V and Model VI, the coefficient of CAR is positively significant at 5% level when Other receivables/assets is high, but it is not significant when Other receivables/assets is low. Consistent with previous research, our results show that a high level of other receivables is associated

with tunneling. High levels of intercorporate loans could also reflect previous tunneling, which may predict controlling shareholders' expropriation through ESOPs.

Table 7

Logistic regression results of equity sales by controlling shareholders on firm and ESOP characteristics: subsamples. This table reports the logistic regression results of the probability of controlling shareholders' equity sales within one month of ESOP adoption announcements on firm and ESOP characteristics for the subsample. The whole sample is divided into three sets of subsamples based on the grouping criteria Accounting accruals, ESOP_participation, and Other receivables/assets, respectively. In the table, the level "High" refers to being more than the median of the grouping criteria, and the level "Low" refers to the opposite. The dependent variable is a dummy variable that equals 1 if the controlling shareholder sells the company's stocks within one month of ESOP adoption announcement and to 0 otherwise. All the financial variables are measured as the three-year average before ESOP adoption announcements. Log(size) is the natural logarithm of the three-year average of market capitalization prior to ESOP announcement. Book to market is the three-year average of equity book value divided by market capitalization prior to ESOP announcement. Accounting accruals is the three-year average of (net income-operating cash flow)/total assets prior to ESOP announcement. ESOP_participation is the number of ESOP participants divided by the number of employees at the firm. Other receivables/assets is the three-year average of other receivable divided by total assets before the announcement of ESOP adoption. CAR refers to CAR (-10, 30) using the market model. Independent board is the three-year average of the number of independent board members divided by the total number of board members prior to ESOP adoption announcement. Model I and Model II show the regression results for the subsamples with "High" and "Low" Accounting accruals, respectively. Model III and Model IV show the regression results for the subsamples with "High" and "Low" ESOP_participation, respectively. Model V and Model VI show the regression results for the subsamples with "High" and "Low" Other receivables/assets, respectively. Standard errors are in parenthesis. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Model	I	II	III	IV	V	VI
Grouping criteria	Accounting accruals		ESOP_participation		Other receivables/assets	
Level	High	Low	High	Low	High	Low
CAR	1.976** (0.900)	0.383 (0.956)	2.421*** (0.909)	0.549 (0.977)	1.824** (0.765)	0.413 (1.077)
Independent board	-6.656 (4.255)	-3.783 (3.470)	-0.812 (3.248)	-15.731*** (5.441)	-5.131 (4.107)	-5.848 (3.854)
Owner category (ref.= local SOE)						
Private enterprise	-1.001 (0.827)	-0.330 (0.540)	1.154 (0.789)	-0.979 (0.653)	0.538 (0.798)	0.118 (0.611)
Public enterprise		-1.344 (1.087)	1.669 (1.039)	-1.483 (1.275)	1.319 (1.194)	-0.678 (1.196)
Log(size)	0.257 (0.241)	0.487** (0.201)	0.525*** (0.192)	0.253 (0.248)	0.427* (0.219)	0.279 (0.222)
Book to market	-0.938 (1.783)	0.310 (1.018)	0.935 (1.240)	-1.620 (1.384)	-0.762 (1.255)	0.188 (1.127)
Industry (ref.=Healthcare)						
Consumer staples	0.936 (1.076)	-0.292 (0.745)	-0.196 (0.884)	0.906 (0.950)	-0.900 (1.201)	0.772 (0.848)
IT	0.758 (0.721)	-0.156 (0.604)	0.213 (0.578)	0.685 (0.848)	0.446 (0.584)	-0.074 (0.787)
Manufacturing	0.668 (0.713)	-0.494 (0.686)	-0.145 (0.590)	0.838 (0.851)	0.030 (0.584)	0.274 (0.778)
Consumer discretionary	0.252 (0.899)	-0.581 (0.626)	0.288 (0.680)	0.302 (0.855)	-1.101 (0.845)	0.389 (0.750)

Materials	1.151 (0.826)	-0.196 (0.627)	0.602 (0.592)	0.368 (1.103)	0.855 (0.735)	0.430 (0.741)
Intercept	-0.976 (2.849)	-4.017* (2.425)	-7.454*** (2.477)	2.380 (2.999)	-4.076 (2.883)	-2.404 (2.599)
Observations	241	258	266	248	256	258
Pseudo R ²	0.064	0.039	0.070	0.084	0.087	0.032

Table 8 reports the regression results for our sample from Eq. (3). From both Model I and Model III, we can see that the coefficient of Accounting accruals is negatively significant at the 1% level. From Model III, the interaction term Leverage \times Non-recur income/profits has a coefficient that's significantly negative at the 5% level. From Model VI, the interaction term Private enterprise \times ESOP_leverage is negative at the 10% significance level. These results, together with previous regression results, suggest that firms with more earnings management and higher leverage likely announce ESOP adoption to tunnel, and that leveraged ESOPs may be a tunneling device for private enterprises. From Model II, the interaction term Accounting accruals \times CC_separation is significantly negatively correlated with the dependent variable at the 1% level. As expected, firms with higher separation of ownership and control, as well as higher earnings management, suffer more from tunneling.

Controlling shareholders in these firms are likely to manage earnings upward, use ESOP adoption announcements to further raise the stock price, and then sell the stocks to lock in gains. After successfully cashing out, the controlling shareholder likely sends out less positive news, which lowers the expected growth rate, and hence the stock price of the firm. We note that the higher leverage doesn't discipline the corporate owners, perhaps because of the weak protection for both equity and debt holders in China. For these owners, the costs of breaching contracts are lower than the benefits of tunneling, likely due to the lack of legal punishment.

We find that corporate owners tend to use several tactics in tunneling. From Model I to Model IV, the coefficient of ESOP_Mgt is negatively significant at the 1% level. The coefficient of ESOP_Mgt suggests that the higher rate of management participation could be a tactic to send positive signals to the market, rather than real faith in the firm's long-term outlook. However, we hesitate to conclude that higher management participation is detrimental, because previous regression results don't support this view. From Model IV, the interaction term ESOP_participation \times CAR is significantly negative at the 5% level, which means that the larger the number of ESOP participants and the better the short-run stock performance, the lower the long-term holding return. Controlling shareholders with strong tunneling

motives likely cajole as many employees to participate as possible, so as to maximize personal gains from the stock price increase. As mentioned above, some corporate owners persuade employees to participate in ESOP by promising to compensate them in case of any losses. Unfortunately, those promises are seldom kept. Because laws for investor protection are not adequately enforced in China, the private benefits exceed the private costs of tunneling for some corporate owners.

From Model V and Model VII, the interaction terms of ESOP_stock \times Private enterprise and Public enterprise \times CAR are both negative at the 10% significance level. The former suggests that the direct transfer of stocks to ESOP could be a way for the large shareholders to sell stocks without negative price impact in the secondary market. The latter result suggest that public enterprises also suffer from the “cashing out” form of tunneling described above, since the large shareholders in public enterprises are not prevented from stock selling like those in SOEs. Block sales to ESOP could be a way for controlling shareholder to tunnel through the loopholes in China’s regulatory restriction on equity sale. Although the regulatory guideline China Securities Regulatory Commission stated that employees should have the choices on whether or not to participate in ESOP, the regulations may not be enforced in practice.

From Model I to Model VII, the coefficient of Salary_Nonmgt is positively significant at the 1% level. Controlling shareholders in firms with more competitive salary level prior to ESOP adoption more likely use ESOPs to incentivize employees, rather than to tunnel.

Table 8

Regression results of buy-and-hold abnormal returns on firm and ESOP characteristics. This table reports the regression results of BHAR on firm and ESOP characteristics. BHAR is size and book-to-market adjusted, with holding period from ESOP adoption announcement date to the unlock date. All the financial variables are measured as the three-year average before ESOP adoption announcements. Salary_Nonmgt is the three-year average of non-management employees' salary divided by net income prior to ESOP adoption announcement. Log(size) is the natural logarithm of the three-year average of market capitalization prior to ESOP announcement. Accounting accruals is the three-year average of (net income-operating cash flow)/total assets prior to ESOP announcement. ESOP_stock is equal to 1 if the controlling shareholder transfers shares to the ESOP via block sale, and to 0 otherwise. ESOP_participation is the number of ESOP participants divided by the number of employees at the firm. ESOP_Mgt is the management ownership percentage of an ESOP. Book to market is the three-year average of equity book value divided by market capitalization prior to ESOP announcement. Leverage is the three-year average of total liabilities divided by total assets prior to ESOP announcement. ESOP_leverage is equal to 1 if the controlling shareholder or financial institutions provides loans to employees for implementation of ESOP, and to 0 otherwise. Non-recur income/profits is defined as the three-year average of non-recurring income divided by net profit prior to ESOP adoption announcement. CC_separation is the difference between the controlling shareholder’s share of control rights and share of cash-flow rights. Other receivables/assets is the three-year average of other receivable divided by total assets before the announcement of ESOP adoption. CAR refers to CAR (-5, 5) using the market adjusted model. Model I does not include interaction terms. Model II includes the interaction term of Accounting accruals with CC_separation. Model III includes the interaction term of Leverage with Non-recur income/profits. Model IV includes the interaction term of ESOP_participation with CAR. Model V includes the interaction term of ESOP_stock with Owner category. Model VI includes the interaction term of Owner category with ESOP_leverage. Model VII includes the interaction term

of Owner category with CAR. Standard errors are in parenthesis. *, **, and ***denote significance at the 10%, 5%, and 1% levels, respectively.

Model	I	II	III	IV	V	VI	VII
Accounting accruals	-0.004*** (0.001)		-0.005*** (0.001)				
ESOP_participation	-0.012 (0.049)	-0.025 (0.051)	-0.021 (0.048)	-0.006 (0.048)			
ESOP_leverage	-0.059 (0.041)	-0.057 (0.041)	-0.056 (0.041)				
ESOP_Mgt	-0.206*** (0.073)	-0.202*** (0.075)	-0.203*** (0.072)	-0.209*** (0.077)			
Owner category (ref.= local SOE)							
Central SOE	0.185 (0.233)	-0.007 (0.185)	0.199 (0.245)	-0.036 (0.180)	-0.085 (0.263)		0.001 (0.168)
Private enterprise	0.000 (0.122)	0.005 (0.121)	-0.001 (0.122)	-0.007 (0.102)	0.392* (0.215)		0.021 (0.089)
Public enterprise	-0.029 (0.153)	-0.022 (0.140)	-0.034 (0.153)	-0.018 (0.126)	0.141 (0.244)		-0.015 (0.128)
Log(size)	0.014 (0.047)	0.020 (0.047)	0.016 (0.047)	0.016 (0.044)	0.014 (0.037)	0.007 (0.037)	0.019 (0.039)
Leverage	-0.128 (0.155)	-0.141 (0.155)	-0.083 (0.163)				
Salary_Nonmgt	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)		0.002*** (0.000)
Book to market	0.328** (0.135)	0.326** (0.135)	0.348** (0.136)	0.295** (0.144)	0.401*** (0.134)	0.380*** (0.130)	0.388*** (0.144)
Industry (ref.=Healthcare)							
Consumer staples	0.113 (0.134)	0.152 (0.138)	0.111 (0.135)	0.145 (0.133)	0.135 (0.124)	0.076 (0.125)	0.113 (0.119)
Real estate	0.031 (0.143)	0.024 (0.152)	0.022 (0.144)	-0.000 (0.148)	-0.007 (0.139)	-0.050 (0.133)	-0.045 (0.133)
IT	-0.014 (0.060)	-0.044 (0.061)	-0.027 (0.060)	-0.034 (0.060)	-0.034 (0.061)	-0.001 (0.060)	-0.035 (0.060)
Manufacturing	-0.061 (0.057)	-0.070 (0.058)	-0.067 (0.058)	-0.078 (0.056)	-0.071 (0.056)	-0.057 (0.055)	-0.066 (0.056)
Consumer discretionary	0.054 (0.066)	0.049 (0.067)	0.046 (0.066)	0.046 (0.067)	0.035 (0.066)	0.032 (0.064)	0.027 (0.065)
Materials	-0.030 (0.065)	-0.033 (0.066)	-0.037 (0.065)	-0.036 (0.065)	-0.061 (0.063)	-0.031 (0.065)	-0.054 (0.062)
Utilities	0.132 (0.124)	0.132 (0.126)	0.132 (0.129)	0.108 (0.129)	0.109 (0.115)	0.098 (0.113)	0.104 (0.115)
Energy	-0.008 (0.295)	-0.019 (0.290)	-0.028 (0.284)	-0.029 (0.267)	-0.129 (0.228)	-0.110 (0.250)	-0.072 (0.206)
Accounting accruals xCC_separation		-0.002*** (0.001)					
CC_separation				0.001	-0.001		-0.002

				(0.002)	(0.002)	(0.002)	
Non-recur income/profits		0.137*					
		(0.072)					
Leverage ×Non-recur income/profits		-0.224**					
		(0.101)					
CAR				0.417***			0.392
				(0.155)			(0.455)
ESOP_participation ×CAR				-0.597*			
				(0.360)			
Other receivables/assets				-0.381			
				(0.893)			
ESOP_stock					0.439*		
					(0.234)		
ESOP_stock ×Central SOE					0.127		
					(0.268)		
ESOP_stock ×Private enterprise					-0.425*		
					(0.238)		
ESOP_stock ×Public enterprise					-0.185		
					(0.269)		
Private enterprise ×ESOP_leverage						-0.063*	
						(0.037)	
Central SOE ×CAR							-0.170
							(0.717)
Private enterprise ×CAR							-0.124
							(0.477)
Public enterprise ×CAR							-0.942*
							(0.553)
Intercept	-0.093	-0.135	-0.133	-0.149	-0.629	-0.158	-0.292
	(0.338)	(0.348)	(0.340)	(0.366)	(0.406)	(0.352)	(0.319)
Obs.	488	474	488	474	534	547	534
R-squared	0.096	0.102	0.102	0.107	0.088	0.038	0.081

As ESOP participants may not sell stocks immediately on unlock day, we replace the end of holding period as one year after ESOP lockup expiration date if observations are available. The regression results for BHAR with extended holding period are in Appendix A. As expected, the following variables have negative impacts on BHAR: Other receivables/assets, CC_separation ×ESOP_participation, ESOP_Mgt, Leverage ×Non-recur income/profits, Private enterprise ×ESOP_leverage, while Salary_Nonmgt is positively associated with BHAR.

Table 9 reports the regression results for our sample from Eq. (4), which again corroborate our previous findings. From Model I, ESOP_leverage is significantly negative at 5% level. Both Model IV

and Model V show that Leverage is negatively significant at 1% level. From Model V, the interaction term $\text{Non-recur income/profits} \times \text{Log(ESOP_participants)}$ is significantly negative at 10% level. These results confirm that firms with higher leverage and more earnings management more likely use ESOP adoption announcement to tunnel, and that leveraged ESOPs are associated with tunneling in China. After cashing out, those corporate owners likely abandon the facade of robust growth and neglect the firm's operations, which lower the operating cash flow after ESOP adoption.

Table 9 also shows findings consistent with the regression results of BHAR on firms and ESOP characteristics. From Model VI, the coefficient of ESOP_participation is negative at 1% significance level, and Model IV also shows significantly negative correlation between ESOP_participation and operating performance. The more employees participate in ESOPs, possibly due to the controlling shareholder's persuasion, the worse the firm's operating performance thereafter. Model III and Model VI show the interaction term $\text{CAR} \times \text{CC_separation}$ to be significantly negative at 10% and 5% level. The higher short-term return in firms with higher cash flow / control separation is associated with worse long-term performance. From Model II, the interaction term $\text{ESOP_stock} \times \text{Private enterprise}$ is significantly negative at 10% level. If the controlling shareholders directly sell their stocks to employees, their chance of tunneling via ESOP increases. From Model I, Model II and Model III, Salary_Nonmgt is significantly positive at 1% and 5% level. Owners paying higher salaries to non-management employees are less likely to tunnel through ESOPs.

From Model V and Model VI, $\text{Other receivables/assets}$ is significantly negative at 5% and 1% level. From Model IV, the interaction term $\text{ESOP_participation} \times \text{Other receivables/assets}$ is significantly negative at 5% level. If the firm has a higher level of intercorporate loans before ESOP adoption and the plan's participation rate is higher, the owner has a higher probability of tunneling through ESOPs. Again, it serves the controlling shareholder's personal interests to cajole as many employees in as possible, eventually to their detriment. Interestingly, previous tunneling through other receivables precedes tunneling through ESOPs. This could explain the declining operating cash flow after ESOP adoption from another perspective: the owners continue to tunnel after ESOP adoption. Since the legal environment in China has not changed these years, present tunneling could persist into the future, too.

Table 9

Regression results of marginal and cumulative operating performance on firm and ESOP characteristics. This table reports the regression results of the marginal and the cumulative operating performance since ESOP adoption on firm and ESOP characteristics. The dependent variable for the Model I, Model II, and Model III is Marginal operating performance from ESOP adoption, which is calculated as the-average PSM adjusted operating cash flow to total assets (OCF/TA) for two years after ESOP adoption minus the average PSM adjusted OCF/TA for two years before ESOP adoption. The dependent variable

for Model IV, Model V, and Model VI is Cumulative operating performance from ESOP adoption, which is calculated as the sum of PSM adjusted OCF/TA each year for three years after ESOP adoption. All the financial variables are measured as the three-year average before ESOP adoption announcements. Salary_Nonmgt is the three-year average of non-management employees' salary divided by net income prior to ESOP adoption announcement. Log(size) is the natural logarithm of the three-year average market capitalization prior to ESOP announcement. ESOP_stock is equal to 1 if the controlling shareholder transfers shares to the ESOP via block sale, and to 0 otherwise. ESOP_participation is the number of ESOP participants divided by the number of employees at the firm. Book to market is the three-year average of equity book value divided by market capitalization prior to ESOP announcement. Leverage is the three-year average of total liabilities divided by total assets prior to ESOP announcement. ESOP_leverage is equal to 1 if the controlling shareholder or financial institutions provides loans to employees for implementation of ESOP, and to 0 otherwise. Non-recur income/profits is defined as the three-year average of non-recurring income divided by net profit prior to ESOP adoption announcement. CC_separation is the difference between the controlling shareholder's share of control rights and share of cash-flow rights. Other receivables/assets is the three-year average of other receivable divided by total assets before the announcement of ESOP adoption. CAR refers to CAR (-10, 30) using the market model. Log(ESOP_participants) is the natural logarithm of the number of ESOP participants. Independent board is the three-year average of the number of independent board members divided by the total number of board members prior to ESOP adoption announcement. Model I does not include interaction terms. Model II includes the interaction term of ESOP_stock with Owner category. Model III and Model VI include the interaction term of CAR with CC_separation. Model IV includes the interaction term of ESOP_participation with Other receivables/assets. Model V includes the interaction term of Non-recur income/profits with Log(ESOP_participants). Standard errors are in parenthesis. *, **, and ***denote significance at the 10%, 5%, and 1% levels, respectively.

Model	I	II	III	IV	V	VI
Dependent variable	Marginal operating performance from ESOP adoption			Cumulative operating performance from ESOP adoption		
ESOP_leverage	-0.013** (0.006)					
Log(size)	0.001 (0.004)	0.001 (0.004)	0.001 (0.004)	0.030** (0.013)	0.037*** (0.014)	0.019 (0.013)
Book to market	0.003 (0.019)	-0.001 (0.019)	0.004 (0.019)	0.017 (0.054)	0.073 (0.056)	0.040 (0.053)
Industry (ref.=Healthcare)						
Consumer staples	-0.014 (0.012)	-0.013 (0.012)	-0.014 (0.013)	0.038 (0.040)	0.045 (0.042)	0.040 (0.043)
Real estate	0.007 (0.025)	0.014 (0.026)	0.006 (0.026)	0.093 (0.066)	0.054 (0.068)	0.021 (0.068)
IT	0.015 (0.009)	0.013 (0.009)	0.012 (0.010)	0.080*** (0.027)	0.079*** (0.030)	0.088*** (0.029)
Manufacturing	0.003 (0.009)	0.003 (0.009)	0.004 (0.009)	0.060** (0.025)	0.051* (0.028)	0.052* (0.027)
Consumer discretionary	0.003 (0.011)	0.005 (0.011)	0.004 (0.011)	0.074** (0.030)	0.071** (0.032)	0.067** (0.032)
Materials	0.010 (0.010)	0.010 (0.010)	0.009 (0.010)	0.060** (0.029)	0.053* (0.030)	0.047 (0.030)
Utilities	0.010 (0.032)	0.013 (0.032)	0.015 (0.032)	0.137 (0.090)	0.093 (0.074)	0.100 (0.076)
Energy	-0.017 (0.026)	-0.020 (0.027)	-0.018 (0.031)	0.180*** (0.028)	0.159*** (0.025)	0.198*** (0.041)
Owner category (ref.= local SOE)						
Central SOE	-0.041 (0.025)	-0.035 (0.024)	-0.030 (0.028)	-0.055 (0.070)	-0.045 (0.074)	-0.060 (0.081)

Private enterprise	0.008 (0.011)	0.041* (0.022)	0.004 (0.011)	-0.052* (0.032)	-0.040 (0.033)	-0.016 (0.032)
Public enterprise	0.009 (0.018)	0.059 (0.037)	-0.009 (0.027)	-0.048 (0.047)	-0.075 (0.060)	-0.058 (0.061)
Salary_Nonmgt	0.000*** (0.000)	0.000*** (0.000)	0.000** (0.000)			
ESOP_stock		0.039 (0.024)				
ESOP_stock×Central SOE		-0.007 (0.037)				
ESOP_stock×Private enterprise		-0.046* (0.025)				
ESOP_stock×Public enterprise		-0.066 (0.041)				
CAR			0.006 (0.018)			0.082 (0.053)
CC_separation			-0.000 (0.000)			0.000 (0.001)
CAR×CC_separation			-0.002* (0.001)			-0.011** (0.004)
Independent board			0.042 (0.057)			
Leverage				-0.175*** (0.051)	-0.145*** (0.053)	
ESOP_participation				-0.099*** (0.026)		-0.108*** (0.025)
Other receivables/assets				-0.284 (0.558)	-1.111** (0.544)	-1.394*** (0.500)
ESOP_participation× Other receivables/assets				-2.000** (0.789)		
Non-recur income/profits					0.119 (0.076)	
Log(ESOP_participants)					-0.002 (0.009)	
Non-recur income/profits×Log(ESOP_participants)					-0.024* (0.014)	
Intercept	-0.023 (0.038)	-0.048 (0.041)	-0.032 (0.044)	-0.193 (0.126)	-0.287** (0.132)	-0.186 (0.133)
Observations.	546	547	533	386	386	375
R-squared	0.028	0.026	0.021	0.152	0.101	0.129

5. Conclusions

This paper investigates whether controlling shareholders in China tunnel through ESOPs. Overall, ESOP adoption announcements create positive abnormal return in the short run, but the long-term effect on shareholder wealth is detrimental for firms with several characteristics. Firms with more earnings management and higher leverage prior to ESOP adoption announcements experience higher short-term abnormal returns and lower long-term abnormal returns. Private enterprises using leveraged ESOPs also show this pattern of better short-term and worse long-term performance. Regressions on operating performance also confirm this pattern. The controlling shareholders in these firms likely expropriate minority shareholders by cashing out, because their chance of selling equity soon after ESOP adoption announcements increases significantly. Our findings support the view that high separation of cash flow right and control right leads to tunneling motives. Firms with higher separation of ownership and control experience worse long-term stock return and deteriorating operating performance after ESOP adoption. The controlling shareholder is more likely to tunnel if the firm already has a higher level of intercorporate loans prior to ESOP adoption announcement, resulting in worse operating performance in the long run. Prior tunneling could serve as a warning for tunneling via ESOPs.

Although Chinese regulations on ESOPs prohibit mandatory ESOP participation, the lack of legal enforcement gives owners the incentive to mislead and to expropriate employees and public investors. Firms' long-term performance deteriorates and the controlling shareholders are more likely to sell stocks soon after ESOP adoption announcements if both the short-term abnormal return and ESOP participation rate are high. Operating performance deteriorates if the controlling shareholder directly sells personal shares to employees via ESOPs. Besides persuading more employees to participate, the tunneling owner may also conduct block trade to circumvent sales restriction. Abnormally high ESOP participation rate and direct equity sales to ESOPs both deserve regulatory attention.

On the positive side, our results support the previous findings that a more independent board may help to prevent tunneling, because the degree of board independence is negatively correlated with the probability of controlling shareholders selling equity soon after ESOP adoption announcements. A more competitive salary level also helps, because both the long-term abnormal return and the operating performance of firms paying higher salary are better after ESOP adoption.

Looking ahead, we note that the recent enactment of new regulations may not solve the tunneling problem for ESOPs in China. Before the change in regulation, many companies adopt leveraged ESOPs

as tranching products, which are prohibited under the New Asset Management Rules. However, the controlling shareholders can still create leveraged ESOPs by pledging stocks and lending the borrowed funds to employees after the regulatory change. This paper only identifies equity sales as a tunneling channel for ESOP adoption. The controlling shareholders in state-owned enterprises could adopt other forms of tunneling through ESOPs, due to their restriction of equity sales.

Appendix A

Table A 1

Definition of Variables

Variable Name	Definition
Other receivables/assets	Three-year average of other receivable divided by total assets prior to ESOP announcement.
Accounting accruals	Three-year average of (net income-operating cash flow)/total assets prior to ESOP announcement.
ESOP_leverage	Dummy variable equal to 1 if ESOP uses loans from controlling shareholder or financial institution, and to 0 otherwise.
Profit growth	Three-year geometric average of net profit growth prior to ESOP announcement.
Non-recur income/profits	Three-year average of non-recurring income divided by net profit prior to ESOP announcement.
ESOP_participation	The number of ESOP participants divided by the number of employees at the firm.
ESOP_Mgt	Management ownership percentage of an ESOP.
Owner category	Categorical variable equal to 1 for local SOE (state-owned enterprise), to 2 for central SOE, to 3 for private enterprise, and to 4 for public enterprise.
Log(size)	Natural logarithm of three-year average of market capitalization prior to ESOP announcement.
Leverage	Three-year average of total liabilities divided by total assets prior to ESOP announcement.
Salary_Nonmgt	Three-year average of non-management employees' salary divided by net income prior to ESOP announcement, where non-management employees exclude board members and upper managers.
Profit/employees	Three-year average of net income divided by the number of employees prior to ESOP announcement.
Book to market	Three-year average of equity book value divided by market capitalization prior to ESOP announcement.
Industry	Category variable equal to 1 for healthcare, to 2 for consumer staples, to 3 for real estate, to 4 for IT, to 5 for manufacturing, to 6 for consumer discretionary, to 7 for materials, to 8 for utilities, to 9 for energy, and to 10 for telecom.
CC_separation	Three-year average of separation of control and cash flow rights prior to ESOP announcement.
ESOP_stock	Dummy variable equal to 1 if controlling shareholder transfers shares to ESOP via block sale, and to 0 otherwise.
Independent board	Three-year average of the number of independent board members divided by the total number of board members prior to ESOP announcement.
Log(ESOP_participants)	Natural logarithm of the number of ESOP participants.

Table A 2

Regression results of buy-and-hold abnormal returns with extended holding period on firm and ESOP characteristics. This table reports the regression results of BHAR with extended holding period on firm and ESOP characteristics. BHAR is size and book-to-market adjusted, with holding period from ESOP adoption announcement date to one-year after unlock date. All the financial variables are measured as the three-year average before ESOP adoption announcements. Salary_Nonmgt is the three-year average of non-management employees' salary divided by net income prior to ESOP adoption announcement. Log(size) is the natural logarithm of the three-year average of market capitalization prior to ESOP announcement. ESOP_participation is the

number of ESOP participants divided by the number of employees at the firm. ESOP_Mgt is the management ownership percentage of an ESOP. Book to market is the three-year average of equity book value divided by market capitalization prior to ESOP announcement. Leverage is the three-year average of total liabilities divided by total assets prior to ESOP announcement. ESOP_leverage is equal to 1 if the controlling shareholder or financial institutions provides loans to employees for implementation of ESOP, and to 0 otherwise. Non-recur income/profits is defined as the three-year average of non-recurring income divided by net profit prior to ESOP adoption announcement. CC_separation is the difference between the controlling shareholder's share of control rights and share of cash-flow rights. Other receivables/assets is the three-year average of other receivables divided by total assets before the announcement of ESOP adoption. Model I includes the interaction term of CC_separation with ESOP_participation. Model II includes the interaction term of Leverage with Non-recur income/profits. Model III includes the interaction term of Owner category with ESOP_leverage. Standard errors are in parenthesis. *, **, and ***denote significance at the 10%, 5%, and 1% levels, respectively.

Model	I	II	III
Other receivables/assets	-1.521*	-1.687***	-1.403**
	(0.845)	(0.644)	(0.595)
CC_separation	0.004		
	(0.004)		
ESOP_participation	0.078		
	(0.051)		
CC_separation × ESOP_participation	-0.012***		
	(0.004)		
Owner category (ref.= local SOE)			
Central SOE	-0.286	0.274	0.170
	(0.231)	(0.393)	(0.383)
Private enterprise	0.040	0.033	0.069
	(0.127)	(0.134)	(0.113)
Public enterprise	-0.096	-0.016	0.001
	(0.130)	(0.161)	(0.147)
ESOP_Mgt	-0.213**	-0.224**	-0.244***
	(0.102)	(0.092)	(0.092)
Log(size)	0.067	0.053	0.049
	(0.063)	(0.067)	(0.059)
Salary_Nonmgt	0.003***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)
Book to market	0.453**	0.458***	0.417**
	(0.176)	(0.159)	(0.163)
Industry (ref.=Healthcare)			
Consumer staples	0.242	0.167	0.177
	(0.191)	(0.184)	(0.176)
Real estate	0.068	0.081	0.079
	(0.177)	(0.152)	(0.163)
IT	0.011	0.000	0.028
	(0.069)	(0.064)	(0.065)
Manufacturing	0.029	0.007	0.020
	(0.072)	(0.070)	(0.066)
Consumer discretionary	0.002	-0.023	-0.017
	(0.073)	(0.069)	(0.070)
Materials	-0.020	-0.049	-0.040

	(0.072)	(0.068)	(0.068)
Utilities	-0.011	-0.028	-0.034
	(0.165)	(0.177)	(0.170)
Energy	-0.573***	-0.547***	-0.582***
	(0.063)	(0.071)	(0.053)
Leverage		0.019	
		(0.215)	
Non-recur income/profits		0.211**	
		(0.089)	
Leverage ×Non-recur income/profits		-0.376***	
		(0.134)	
ESOP_leverage			0.233**
			(0.114)
Private enterprise ×ESOP_leverage			-0.290**
			(0.124)
Intercept	-0.749	-0.595	-0.559
	(0.521)	(0.490)	(0.483)
Observations	419	449	449
R-squared	0.110	0.105	0.097

References

- Atanasov, V., Black, B., Ciccotello, C., & Gyoshev, S., 2010. How does law affect finance? An examination of equity tunneling in Bulgaria. *Journal of Financial Economics*, 96 (1), 155-173.
- Bae, K. H., Kang, J. K., Wang, J., 2011. Employee treatment and firm leverage: A test of the stakeholder theory of capital structure. *Journal of Financial Economics*, 100 (1), 130-153.
- Bae, K., Kang, J., Kim, J., 2002. Tunneling or value added? Evidence from mergers by Korean business groups. *Journal of Finance*, 57, 2695–2740.
- Bae, K.H., Baek, J.S., Kang, J.K., Liu, W.L., 2012. Do controlling shareholders' expropriation incentives imply a link between corporate governance and firm value? Theory and evidence. *Journal of Financial Economics*, 105 (2), 412-435.
- Baek, J., Kang, J., Lee, I., 2006. Business groups and tunneling: evidence from private securities offerings by Korean Chaebols. *Journal of Finance*, 61, 2415–2449.
- Beatty, A., 1995. The cash flow and informational effects of employee stock ownership plans. *Journal of Financial Economics*, 38 (2), 211–240.
- Bertrand, M., Mehta, P., Mullainathan, S., 2002. Ferreting out tunneling: an application to Indian business groups. *Quarterly Journal of Economics* CXVII (1), 121–148.
- Blasi, J., Conte, M., & Kruse, D., 1996. Employee Stock Ownership and Corporate Performance among Public Companies. *Industrial and Labor Relations Review*, 50 (1), 60-79.
- Chang, S. J., 2003. Ownership structure, expropriation, and performance of group-affiliated firms in Korea. *The Academy of Management Journal*, 46, 238–253.
- Chang, S., & Mayers, D., 1992. Managerial vote ownership and shareholder wealth. Evidence from employee stock ownership plans. *Journal of Financial Economics*, 32 (1), 103-131.
- Chaplinsky, S., Niehaus, G., & Van de Gucht, L., 1998. Employee buyouts: Causes, structure, and consequences. *Journal of Financial Economics* 48, 283–332.
- Chaplinsky, S., & Niehaus, G., 1994. The Role of ESOPs in Takeover Contests. *The Journal of Finance*, 49 (4), 1451.
- Cheung, Y., Jing, L., Rau, R., & Stoutaitis, A., 2006. Tunneling, propping, and expropriation: evidence from connected party transactions in Hong Kong. *Journal of Financial Economics* 82, 343–386.

- Claessens, S., Djankov, S., Fan, J. P. H., & Lang, L. H. P., 2002. Disentangling the Incentive and Entrenchment Effects of Large Shareholdings. *The Journal of Finance*, 57 (6), 2741-2771.
- Claessens, S., Djankov, S., Lang, L., 2000. The separation of ownership and control in East Asian corporations. *Journal of Financial Economics* 58, 81–112.
- Friedman, E., Johnson, S., & Mitton, T., 2003. Propping and tunneling. *Journal of Comparative Economics*, 31 (4), 732–750
- Gordon, L. A., & Pound, J., 1990. ESOPs and corporate control, *Journal of Financial Economics*, 27, 525–555.
- I, F. U., 2009. Too few dividends? Groups tunneling through chair and board compensation. *Journal of Corporate Finance*, 15 (2), 245–256.
- Ittner, C. D., Richard A. L., and David F. L., 2003. The structure and performance consequences of equity grants to employees of new economy firms, *Journal of Accounting and Economics* 34, 89–127.
- Jian, M., & Wong, T. J., 2010. Propping and tunneling through related party transactions. *Review of Accounting Studies* 15,70–105.
- Jiang, G., Lee, C., & Yue, H., 2010. Tunneling through inter-corporate loans: the China experience, *Journal of Financial Economics*, 98 (1), 1-20.
- Jiang, G., Rao, P., & Yue, H., 2015. Tunneling through Non-Operational Fund Occupancy: An investigation based on officially identified activities. *Journal of Corporate Finance*, 32, 295-311.
- Johnson, S., La Porta, R., Lopez-de-Silanes, F. & Shleifer, A., 2000. Tunneling. *The American Economic Review*, 90 (2), 22-27.
- Jones, D. C., & Kato T., 1995. The productivity effects of employee stock-ownership plans and bonuses: Evidence from Japan. *American Economic Review* 85, 391–414.
- Kim, E. H. and Ouimet, P., 2014. Broad-Based Employee Stock Ownership: Motives and Outcomes. *The Journal of Finance*, 69, 1273-1319.
- La Porta, R., Lopez-de-Silanes, F., & Shleifer, A., 1999. Corporate ownership around the world. *Journal of Finance* LIV (2), 471–517.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 2000. Investor protection and corporate governance. *Journal of Financial Economics* 58 (1–2), 3–28.
- Lemmon, M. L. & Lins, K. V., 2003. Ownership Structure, Corporate Governance, and Firm Value: Evidence from the East Asian Financial Crisis. *The Journal of Finance*, 58: 1445-1468.
- Liu, Q., & Lu, Z., 2007. Corporate governance and earnings management in the Chinese listed companies: A tunneling perspective. *Journal of Corporate Finance*, 13 (5), 881–906
- Liu, Q., Tian, G., 2012. Controlling shareholder, expropriations and firm's leverage decision: evidence from Chinese non-tradable share reform. *Journal of Finance*, 18 (2012), 782-803
- Livingston, D., & Henry, J., 1980. The Effect of Employee Stock Ownership Plans on Corporate Profits. *The Journal of Risk and Insurance*, 47 (3), 491-505.
- Lyon, J. D., Barber, B. M., & Tsai, C. L., 1999. Improved methods for tests of long-run abnormal stock returns. *The Journal of Finance*, 54 (1), 165-201.
- O'Boyle, E. H., Patel, P. C., & Gonzalez-Mul é E., 2016. Employee ownership and firm performance: a meta-analysis: employee ownership: a meta-analysis. *Human Resource Management Journal*, 26 (4), 425-448.
- Peng, W. Q., Wei, K. J., & Yang, Z., 2011. Tunneling or propping: Evidence from connected transactions in China. *Journal of Corporate Finance* 17 (2), 306–325.
- Pinkowitz, L., Stulz, R., & Williamson, R., 2006. Does the Contribution of Corporate Cash Holdings and Dividends to Firm Value Depend on Governance? A Cross-country Analysis. *The Journal of Finance*, 61 (6), 2725–2751.
- Rauh, J. D., 2006. Own company stock in defined contribution pension plans: A takeover defense? *Journal of Financial Economics* 81, 379–410.
- Shleifer, A., & Wolfenzon, D., 2002. Investor protection and equity markets. *Journal of Financial Economics* 66, 3–27.