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Exit of Small Businesses: Differentiating between Insolvency, Voluntary Closures and M&A

XU, Peng
Hosei University

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Exit of small businesses: differentiating between insolvency, voluntary closures and M&A[1]

Peng Xu
Hosei University

Abstract

In this paper, we examine the determinants of M&A, voluntary business closure and bankruptcy of mature SMEs in Japan between 2002 and 2015, using nested logit models. We show that high leverage and extremely poor operating performance are major reasons for exits in the cases of voluntary closures or bankruptcies, while firms involved in M&A are less leveraged and profitability is not as poor as for exited firms. Consistent with previous studies on internal capital markets, group firms or subsidiaries are more likely to be involved in M&A and less likely to go bankrupt. Bankrupt firms have more debt but low cash holdings in comparison with voluntarily closures. Additionally, smaller firms with aging entrepreneur founders are more likely to voluntarily close their businesses, probably due to lack of successors. Our results are driven by independent SMEs.

Keywords M&A, Business exit, Insolvency, Closedown, Nested logit
JEL Classifications G33 G34 D21

[1]This study is conducted as a part of the Project "Study Group on Corporate Finance and Firm Dynamics" undertaken at the Research Institute of Economy, Trade, and Industry (RIETI). This study utilized a RIETI firm level database on bankruptcies, M&A and business closures provided by Tokyo Shoko Research (TSR) Ltd. Research support from RIETI and financial support from JSPS Grant-in-Aid for Scientific Research are gratefully acknowledged. The authors are grateful for helpful comments and suggestions from seminar participants at RIETI. Any remaining errors are solely the author's responsibility.

1 Introduction

Prompt downsizing and exit are necessary for economic growth. Difficulty of exit has been pointed since Jensen (1993), however. Though a firm ought to exit, the owner might have perverse incentives to continue business but risk interests of creditors. In particular, the entrepreneur is more likely to stick to the underperforming firm, if continuing business is the only way to earn a living. In the late 1990s, misallocation of bank credit suggest the perverse incentives of troubled banks resulted in delay of exit of the weakest industrial firms in Japan (Peek and Rosengren, 2005; Caballero et al., 2008). Inactive downsizing or exit for unprofitable firms result in sluggish intra and inter industry reallocation of resources. Nonetheless, it is irreversible for inefficient firms to go bankrupt sooner or later.

Recently, bankruptcies are decreasing, while voluntary business closures are increasing probably partially due to lack of successors for aging entrepreneurs in Japan. Voluntary closures of profitable SMEs appear to be inefficient. At the same time, more SMEs are merged or acquired. Different from business closures, M&A preserves survivable business and only transfers ownership to a new entrepreneur. The capital market pressures non-distressed but less profitable firms to restructure their businesses at earlier stage through M&A (Jensen 1986, 1989, 1993). Particularly, aggressive

closings and sales of acquired plants following a merger. At the same time, redundant workers are laid off with plant closing and sales (Maksimovic, Phillips, and Prabhala, 2011).

Capital markets are integrals as a screening process designed to force inefficient firms to exit. Little is known to date, however, on whether SMEs exit efficiently. Answering this question requires to examine whether exited firms such as voluntary closures and bankruptcies have different profitability compared with firms which business is preserved through M&A. In this paper, we examine determinants of M&A, voluntary liquidation and bankruptcy, using nested logit models and a sample of M&As, voluntary closures and bankruptcies of mature SMEs in Japan during 2002-2015.

We find that high leverage and extremely poor operating performance are major reasons for exits, either voluntary closures or bankruptcies, while M&A preserves business of low leveraged underperforming firms but their profitability is not as extremely poor as exited firms. Also, group firms or subsidiaries are more likely to be involved in M&A. In comparison with voluntary closures, bankrupt firms have more debt but low cash holdings. Additionally, smaller firms with an aging entrepreneur are prone to voluntarily close their business, probably due to lack of a successor.

Previous empirical research on firm exit mainly consider exits of young firms or of

listed firms. As an exception, Balcaen et al. (2013) is the closest to ours. Based on a sample of distress-related exits in Belgium, they examine determinants of mature firm M&A, voluntary liquidation and bankruptcy, using two step nested logit models. Their study focuses on mature firms and mainly contains private SMEs. They provide insightful evidence on the determinants of the eventual exit of distressed firms. Complementary to their study, we shed new light by including extremely low profitable, distressed firms as well as underperforming firms.

Our findings indicate that in Japan SMEs is naturally selected: high leveraged, extremely poor profitable firms exit voluntarily or are forced to exit. Japan is in the midst of a serious labor force shortage and decrease in domestic demand and thus excess capacity due to aging and declining population. Exits eliminate excess capacity, and this in turn helps survivable firms to recover profitability. Otherwise, inactive exits of unprofitable SMEs would depress the investment and employment growth of efficient firms and widen the productivity gap between distressed firms and non-distressed firms. Though business failures such as voluntary exits or bankruptcies are viewed as job destruction, currently it is more important to redeploy resources of unprofitable SMEs. And the M&A market play an important role to preserve less profitable SMEs while probably eliminating overlapping capacity at earlier stage.

The remaining of the paper is organized as follows. In section2, we review literature concerning M&A and exits. Section 3 provides descriptions on method and summary statistics. In Section 4, we investigate the determinants of exits. Section 5 concludes.

2 Literature Review

As consequences of negative industrial shocks such as changes in technology, entries of new economies into global markets excess capacity occurs (Jensen, 1993). Excess capacity results in declining profitability and eventually weaker firms have to downsize or exit as they prolong losses. Without frictions, firms exit efficiently and there would be no bankruptcies. However, entrepreneurs have incentives to stick to the underperforming firms at the expenses of creditors if information is incomplete. In case of contractual incompleteness, debt contracts shift control rights from entrepreneurs to creditors when profitability is low (Agihon and Bolton, 1992) and firms may be forced to exit though filing for bankruptcy rather than M&A or voluntary business closures.

If a firm has enough cash or marketable assets to pay off all creditors, it can dissolve the company or cease operations without filing for bankruptcy. Moreover, it is easier for an entrepreneur with more outside job options to make decision of "flight from losses". Similarly, the group owner or the ultimate owner is less likely to stick on an

underperforming member firm or an unprofitable subsidiary. Also, it is possible for a group or a parent company to dissolve an underperforming group firm or a low profitable subsidiary, while inheriting debt upon agreements of creditors. Voluntary liquidation is efficient and orderly asset reallocation. According to research on voluntary liquidation, liquidating firms have low profitability but high liquidity and marketability of assets in Kim and Schatzberg (1987), Hite, Owers, and Rogers (1987), Ghosh et al. (1991) and Fleming and Moon (1995). Additionally, liquidation firms have high inside ownership, takeover pressure, and low debt levels. The stock market favorably reacts to voluntary liquidation since resources are redeployed for higher-valued uses. Consistent with theories of real option, Berger et al. (1996) find that investors price such options to abandon a firm for its liquidation value.

Voluntary liquidation is the optimal choice when the alternatives are hostile takeover or bankruptcy. Takeovers are also directly related to excess capacity caused by economic shocks and M&A is a means to eliminate overlapping capacity. M&A is distinguished from business closures because the firm is preserved as a going concern wholly or partially. In M&A, debt can be inherited by the new owner upon agreements of creditors. For a group or a parent company, it is easier to sell an underperforming group firm or a low profitable subsidiary, while inheriting debt upon agreements of

creditors. Also, it is possible for the group or the parent company to reshape a troubled affiliated firm through the internal capital market.

Jensen (1988) argues that the capital markets play a major role in eliminating excess capacity. Firms with excess capacity may be reluctant to downsize or exit in response to excess capacity caused by changes in the regulatory, technological and market environment (Shleifer and Vishny, 1986, 1988; Jensen, 1993). In the 1980s the capital markets pressured such firms to eliminate excess capacity through leveraged acquisitions, stock buybacks, hostile takeovers, leveraged buyouts, and divisional sales. In Palepu (1986), in addition to firms with low growth, high liquidity and low leverage, firms with high growth, low liquidity and high leverage are also more likely to be targeted. Probably, the costs of financing growing projects are greater than financing costs to potential acquires (Gilson et al., 2015).

However, either extremely poor profitability, or a high leverage makes M&A less likely. Extremely poor profitability implies lower going concern value, while deep financial distress increases buyers' legal risks (Gilson et al., 2015). Moreover, the owner of a high leveraged firm may get nothing from M&A after it pays off all creditors. In the real world, entrepreneurs of underperforming firms may avoid to file for bankruptcy until depletion of the firm's working capital. In particular, the entrepreneur is more

likely to stick to the underperforming firm, if continuing business is the only way to earn a living. Once a firm defaults on its debts, however, secured creditors may seize collaterals, and, banks may offset the borrowings and the deposits since the defaulted company shall forfeit the benefit of time. To seek protection, the defaulted firm files for bankruptcy or reorganization. Thorburn (2000) reports that, the firm, rather than creditors, in 90% of the Swedish cases. In Japan, it is rare for creditors to file for bankruptcy or civil rehabilitation (Xu, 2004,2007).

Bankrupt firms can be sold piecewise or as a going concern partially or wholly. Also, court supervised debtor-in-possession procedures such as Chapter 11 in U.S. also provide resolution for reorganization[1]. In Sweden, three-quarters of the firms were auctioned as going concerns and that was similar to Chapter 11 survival rates (Thorburn, 2000). Either in bankruptcy or in reorganization, creditors are not fully repaid. The institutional framework and insolvency laws differ across countries. Based on U.S. data, there is a large body of literature on bankruptcy prediction In Altman's Z-score introduce in Altman (1983), the ration of market value of equity/total liabilities, earnings before interests and taxes/total assets, retained earnings/total assets, working

[1] Recently, however, distinction between "reorganization" and "liquidation" in terms of ways in which assets are restructured in bankruptcy disappeared in U.S. (Baired, 2016; Gilson et al., 2015).

capital/total assets tend to serve as the most important indicators of predicting bankruptcy. Later, replacing market value of equity with book value of equity, the four ratios and firm size are worldwide significantly related to financial distress for privately held firms (Altman et al., 2016).

Bankruptcy is a costly and time-consuming procedure (Altman, 1984; Weiss, 1990; Bris et al., 2006; Xu, 2004, 2007). Since the late 1980s, quite a number of studies focus on bankruptcy costs and bankruptcy reform (Bebchuk, 1988; Hart et al., 1992). Also, either out-of-court or court-driven sales of assets can be costly for asset illiquidity (Shleifer and Vishny, 1992). Additionally, debt overhang may prevent a firm to undertake profitable investment if outstanding senior long term debt level is high. Ex ante capital structure and debt composition such as seniority and maturity of debt are optimally determined (Bolton and Sharfstein, 1996; Diamond, 2004) and ex post outcomes of M&A or voluntary liquidations or bankruptcy depend on assets liquidity and debt composition as well as macro-economic conditions.

Besides research on bankruptcy prediction, quite a number of papers predict multivariate outcomes of financial distress or alternative exits[2]. Methodologies are

[2] Different from research focusing on outcomes of financial distress or types of exit, Lawrence and Arshadi (1995) use a multinomial logit model to discriminate problem loan resolutions. Limited to takeovers, Powell (1997) uses a multinomial logit model to predict whether a takeover will be hostile or friendly.

different across studies. Pastena and Ruland (1986) use a binary probit model to explain merger/bankruptcy decision. Using three separate binary models to compare two groups while excluding the third, Peel and Wilson (1989) distinguish three groups of firms: failed, non-failed and distressed-acquired. Åstebro and Winter (2012) discuss methodological issues regarding forecasts of the outcome of financial distress. The above studies mainly consider M&A as alternatives of business failures and voluntary business closures are often collapsed with bankruptcies. Schary (1991), Jones and Hensher (2007), and Balcaen et al. (2012) are notable exceptions studying bankruptcy, voluntary liquidation and M&A. Further, Greenaway et al. (2009) distinguish survivors within an industry with closedown, acquired and merged and firms that switch industry. Different from other studies Jones and Hensher (2007), Balcaen et al. (2012) use nested logit, two step nested logit respectively.

In addition to firm characteristics, Bhattacharjee et al. (2009) find that macroeconomic instability has a positive effect on bankruptcy hazard but a negative effect on acquisition hazard. Besides profitability, asset liquidity and debt structure, entrepreneur characteristics also have influences on choices of exit. Harhoff et al. (1998) find that the propensity to declare insolvency is not affected by the owner's age while firms whose owners are approaching retirement age have relatively high hazards of

voluntary liquidation. Based on survey data, Leroy et al. (2010) confirm that transfer intentions and perceived control over the transfer are the main drivers of the likelihood to transfer business including intergenerational transfer, sale to a third party, liquidation and Bankruptcy. Prantl (2003) observes a non-linear, U-shaped effect of age of the owner-managers on the voluntary liquidation hazard and a linear negative effect of age on the bankruptcy hazard in German. According to Jenter and Lewellen (2015), the likelihood of receiving a successful takeover bid is sharply higher when target CEOs in USA are close to age 65. Focusing on entrepreneurial exit, Wennberg et al. (2010) find that entrepreneurial age differs substantially across exit routes and DeTienne (2010) contends that entrepreneurial exit is critical to understanding the entrepreneurial process.

3 Data and Method

Now we turn to choices between M&A and exits of Japanese mature SMEs. This study utilizes RIETI firm level database on bankruptcies, M&A, business closures of a randomly selected sample during 2002-2015 provided by Tokyo Shoko Research (TSR) Ltd. We first describe the sample. Next, we describe nested logit approach by distinguishing between exit from ownership and exit from business. After description of

the variables, the last section includes univariate tests between M&A, voluntary closedowns and bankruptcies.

3.1 Data of M&A and exits of SMEs

As Table 1 indicates, M&A, voluntary business closure and bankruptcy are mostly equated. As voluntary liquidation of Belgian distressed SMEs, voluntary closure is a major type of exit of SMEs in Japan. 590 SMEs voluntarily closed business and 572 firms were forced to exit. The majority of insolvent exits involved 457 bankruptcies, with 115 cases of civil rehabilitation. 505 firms were merged or acquire and their business was preserved. Business closures consist of 336 dissolution and 254 closedowns. Probably because we include both distressed and near-distressed firms, our M&A rate compared to insolvency rates is much higher than that for Belgian distressed firms in (2013), but much lower than that in Köke (2002) for Germany or Bhattacharjee et al. (2009) for the United Kingdom.

Though Japan does not have an active M&A market (Simintzi and Volpin, 2015), the 2018 White Paper on Small and Medium Enterprises reports that the number of M&A agreements concluded with the 3 major brokerage firms for SMEs in 2017 has more than tripled since 2012. Conventionally, in Japan SMEs were prone to establish subsidiaries or affiliated companies to expand business or develop new business. After 2006, however,

more SMEs are opting to acquire other companies rather than newly incorporate new companies from scratch. At the same time, M&A could be an option for aging owners without a successor. This suggests that M&A is increasing its importance to redeploy resources while eliminating overlapping capacity of SMEs. Because the business is preserved, the target obtains going concern value minus costs charged by the intermediator. Here, we should be cautious that M&A is costly as M&A intermediation for SMEs is increasing its importance.

Some SMEs may choose to dissolve companies based on extraordinary resolutions for dissolution of shareholders meeting. If no creditors lodge an objection against the dissolution, the company is dissolved. In other words, the SME or the related parties need to repay all creditors or the liabilities should be inherited upon creditors' agreements. It is a legal procedure but it is much cheaper than M&A, bankruptcy or Civil Rehabilitation. Different from M&A, however, dissolution yields liquidation value because the company is liquidated.

Besides M&A and dissolutions, the TSR also examines whether SMEs have ceased operations based on following information. First, a SME may close business without dissolving its legal entity, but it needs to send a notification to tax offices for exemption of corporate income tax, corporate resident tax and business tax. Additionally, as licensed

business, a construction company needs to send a notification of termination of construction business unless it submits annual construction activities, annual financial statements as well as business tax payment certification to the Regional Development Bureau General of Ministry of Land, Infrastructure, Transport and Tourism or the prefectural governor. Like dissolution, a SME is more likely to choose business closure if the going concern value (minus potential costs of M&A intermediation) is below liquidation value.

With regard to insolvency resolution, two court driven procedures are available. First, bankruptcy act provides liquidation resolutions for business failure. It is equivalent to USA Chapter 7 of Bankruptcy Code. A court appointed receiver distributes cash obtained by converting the bankruptcy estate to creditors according to the priorities and the amount of the receivables. The remaining debt is discharged. Often the owners of SMEs are required to provide collateral or/and personal guarantees for corporate debt. To discharge personal debt, the owners file for personal bankruptcy. The entrepreneurs are able to keep assets below a fixed bankruptcy exemption level (daily necessities and cash below 990,000 yen) and future earnings are entirely exempt. But deposits belong to the bankruptcy debt[3]. Bankruptcy costs including prepaid court expenses and attorney

[3] Also, financial institutions can legally offset the borrowings and the deposits, since an insolvent company shall forfeit the benefit of time once the company defaults on its

money to file for bankruptcy and additional compensation charged for converting properties of bankruptcy estate to cash after the commencement.

Alternatively, Civil Rehabilitation Act provides insolvent resolutions for reorganization. Roughly, it is similar to USA Chapter 11 of Bankruptcy Code (Xu, 2004, 2007). It is a debtor-in-possession procedure unless the management is incompetent. Recently, TSR reports that out of companies applied for the Civil Rehabilitation about 70% are not successful. The breakdowns contain 3.6% merged or acquired, 11.9% dissolutions, 36.6% subsequent bankruptcies, 0.6% special liquidations, and 47.1% closed or unknown. Eventually, about 70% of Civil Rehabilitation firms were forced to close business as bankrupt firms.

3.2 Nested Logit Approach

Going bankrupt can be viewed as delayed exits. Though a firm ought to exit, the owner might have perverse incentives to continue business but risk interests of creditors. In particular, the owner without outside options of an independent SME is more likely to stick to the company and to bet on fortune while ignoring downside risk even if the going concern value is lower than the liquidation value. Meanwhile, due to excess

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debt such as a delay of scheduled payments.

banking, bank lenders may have few incentives to lift money unless the firm is not able to pay interests anymore. This is because withdrawing loans only results in increases in nonperforming loans while a banker in excess banking is more likely to stick to the bank. Sooner or later such inefficient firms and their supporting banks will fail as cash holdings drain. Usually, a large negative economic shock results in substantial shortfalls in cash flow and a wave of bankruptcies occurs subsequently. Notably, bankrupt firms would have chosen to continue business rather than to exit at earlier stage if they had had more cash holdings. In other words, extremely poor performance and low cash holdings are consequences of delayed exits, and, in turn, diminished cash holdings force such firms into bankruptcy.

A firm may close business for personal reasons such as lack of successors, if it is more costly to sell the firm as going concern. Of course, to voluntarily close a firm, it is necessary to have enough cash to pay off creditors. Otherwise, the entrepreneur files for bankruptcy to discharge debt. On the other hand, it is possible for a bank lender to offset loans to a distressed firm with its enough deposits with the bank. In such cases, out-of-court business closures are essentially forced exits rather than voluntary exits, while entrepreneurs have enough cash or wealth to pay off creditors. In sum, in voluntary business closures, the going concern value (net M&A costs) is lower than liquidation

value. And, big differences between court-driven exit and voluntary closedown is cash holding and outstanding debt.

In comparison with voluntary business closures, M&A is costly. M&A costs consist of intermediation costs and due-diligence costs. The costs include a fixed retainer fee and compensation in proportion to the proceeds. In particular, the costs of M&A are more expensive for smaller firms. Given M&A costs, some small firms with going concern value slightly above liquidation value may choose voluntary liquidation rather than sales of business. In short, firms that are merged or acquired are distinct from bankruptcies or voluntary closedowns in terms of differences between going concern value and liquidation value. In this paper, we distinguish between transfer of ownership and exits from business.

Bankruptcies and voluntary business colures are caused by difficulties to continue business since the going concern value is below the liquidation value. But the liquidation proceeds is not enough to repay all creditors in bankruptcies. In this paper, we distinguish between M&A and exit at the top level. At the bottom level, we distinguish between voluntary closures and bankruptcies, as shown in Figure 1. We contribute to scarce literature studying bankruptcy, voluntary liquidation and merger or acquisition (Schary, 1991; Jones and Hensher, 2007; and Balcaen et al., 2013).

3.3 Variables

The explanatory and control variables are measured at the time of exit. All data are obtained from a randomly selected sample of firms used for surveys from the TSR database during the period of 2002-2015. Table 2 provides descriptive statistics for the explanatory variables. Firm size (SIZE) is measured as the natural log of the book value of total assets (in ¥1000), which is a main variable used in previous studies. Debt is measured as the natural log of the book value of total liabilities (in ¥1000). The cash holdings (CASH) are measured as the ratio of cash and cash equivalents on total assets. Leverage (LEVERAGE), loan (LOAN) is measured as the ratio of the book value of total debt, borrowing on total assets respectively. Profitability (ROP) is measured as the ratio of operating profit over total assets. Additionally, sales assets turnover ratio (TURNOVER) is measured as the ratio of sales to total assets. The dummy variable Unappropriated Loss takes value of 1 if there is an unappropriated loss in the year and 0 otherwise. CASH, LEVERAGE, LOAN, ROP and RUENOVER are winsorized at 5% of two sides. Firm age (FIRM AGE) is measured by the years from incorporation at the exit time. The TSR database also provides birth year of CEOs. CEO age (CEO AGE) is measured as the age of CEO at the exit time. The elderly CEO dummy (OLD CEO) takes

value of 1 if the CEO is older than 70 years and 0 if younger.

Two dummy variables for group relations are included. The TSR database provides information on group relations such common ownership of a group of firms as well as parent subsidiary relations. The first dummy variable (GOURP) takes value of 1 if the firm belongs to a group of companies and 0 if it is independent or a subsidiary. The second dummy variable (SUBSIDIARY) takes value of 1 if the firm is a subsidiary and 0 otherwise. If an owner horizontally holds a group of SMEs, the dummy variable GROUP takes value of 1 for each owned SME, while the dummy variable SUBSIDIARY takes value of 0. Likewise, being a subsidiary and belonging to a group is distinguished. In addition to group relation dummy variables, a time dummy variable (AFTER2008) takes value of 1 after 2008 and 0 before 2008.

3.4 Univariate Tests between groups

Table 2 shows descriptive statistics on firm characteristics by M&A, bankruptcy, voluntary closedowns. It is notable that our sample firms are very old with average age more than 30 years, in comparison with average frim age of 10.376 years for Belgian mature firms in Balcaen et al. (2012). It is consistent with less startups and more exits due to aging problem. Also, our sample firms are high leveraged and underperforming.

In particular, the mean leverage among firms of voluntary closures is 88%, it is much higher than the mean leverage of 66.4% for the distressed Belgian firms which exited through voluntary liquidation during 1998 - 2000. On average, the bankrupt firms are severely financially distressed with liabilities exceeding assets. Though non-distressed are included, on average voluntary closures and bankrupt firms have negative operating profit or negative earnings before interest payments, tax and depreciation. M&A firms have similar leverage and better performance than the distressed acquired or merged Belgian firms in Balcaen et al. (2012).

Compared to exited firms, companies involved in M&A are larger and they have a lower leverage, a lower ratio of loan over assets, a higher sales assets turnover ratio, more employees, lower cash holdings and more group relations. It is notable that acquired or merged firms are not profitable but they are not as low as extremely underperforming exited firms. M&A firms are older but their CEOs are younger. Whitney U-tests and t-tests indicate that the differences in size, CEO age, profitability, sales assets turnover ratio and the use of bank debt are significant at the 1% level. The difference in firm age has a significance at the 1% level in t-test but at the 5 level in Whitney U-test. Chi-square tests for the group dummy variables exhibits a higher proportion of group member, or a subsidiary in M&A firms. Also, M&A firms have a

higher proportion of post 2008 events.

Though we do not limit our sample firms to distressed cases, a main reason for exists, either forced exits or voluntary exits, is poor profitability, as expected. In comparison with voluntary closures, bankruptcies are associated with larger size, larger debt, more employees, a higher operating profitability, a lower turnover ratio, smaller cash holdings, weaker group relations. The differences in size, profitability and sales assets turnover have a significance at the 1% level in Whitney U-tests and t-tests. Bankrupt firms are older but the difference is significant at the 10% for Whitney U-test and significant at the 5% level for t-test. CEOs of bankrupt firms, on average, are younger than CEOs of voluntary closedowns.

The features of our M&A firms are quite similar to that in Balcaen et al. (2013), since their sample mainly contains Belgian unquoted SMEs[4]. First, M&A firms are larger in comparison with voluntary liquidation firms or bankrupt firms. Next, 57.43% of our M&A firms are a group firm or a subsidiary. Comparably, the proportion of group members in Belgian M&A firms is 35.25%. With regard to voluntary exits, our closedown firms are cash-rich and on average they hold 19.48% (median 13.30%) of total assets in cash. Similarly, in Belgium voluntarily exited firms on average have 12.7% of assets in

[4] Previous empirical work on firm exit that have either mainly considered exits of young firms or of quoted firms.

cash. Also, bankrupt firms have smaller cash holdings in comparison with firms exited voluntarily. It is somewhat different that bankrupt firms are much larger than voluntary closedown firms in Japan, while in Belgium the mean size of voluntarily exited firms is twice as large as that of court driven exits.

4 Empirical Results

To estimate nested logit model, we include firm size, leverage, sales asset turnover ratio, operating profit rate, group membership and being subsidiary for the top level and firm age, CEO age, dummies for group affiliation, cash holdings, the natural log of total liabilities, unappropriated loss and the interaction of old CEO and sales asset turnover.

4.1 M&A versus exits (voluntary liquidation and bankruptcy)

The results of the nested logit model, differentiating between M&A, voluntary closures and court driven exit are reported in Table 3. The model respectively correctly classifies 82.00% of the observations between M&A and exit, 74.96% between bankruptcy and voluntary closures. In Balcaen et al. (2013), 79.92% of their observations are correctly classified between out-of-court exit (voluntary liquidation and M&A) versus court driven exit, 82.7% are correctly classified between voluntary liquidation and M&A.

Probably, the predictive accuracy is high since we take firm characteristics at the time of exit, as argued in Åstebro and Winter (2012). EXIT_tau in Table 3 indicates that model-fit for nested logit is statistically higher than a standard multinomial logit model.

Consistent with previous studies except Balcaen et al. (2013), operating performance differentiates between M&A and exit. This is because inclusion of profitable M&A firms, while only distressed firms are included in Balcaen et al. (2013). Moderately poor levels of operating profitability, sales turnover ratio are associated with a significantly higher probability of M&A, compared to exit. This suggests that M&A firms are less likely to have going concern value lower than liquidation value, while it is more likely for firms with liquidation value higher than going concern value to exit voluntarily or to file for bankruptcy. Bankruptcy is designed as a screening process to eliminate inefficient firms. In addition to inefficient firms forced into bankruptcy, quite a number of inefficient small firms opt to voluntarily exit.

As expected, leverage is important in differentiating between exits and M&A. Firms with high leverage have a lower probability of M&A with significance at the 1% level. Leverage is a main firm characteristic advanced in exit studies. Results, however, are mixed. Balcaen et al. (2013), Fleming and Moon (1995) find that leverage is only important in differentiating between out-of-court exits and court driven exits. In Åstebro

and Winter (2012), Maksimovic and Phillips (2001), Kanatas and Qi (2004), it distinguishes between voluntary liquidations and M&A. the result remains similar when we include ratio of loans to assets instead of leverage.

Additionally, smaller firms have a higher probability of exits rather than preserving business through M&A. In Balcaen et al. (2013), large firms have a higher probability of M&A exit compared to voluntary liquidation but firm size does not differentiate between court-driven exit and out-of-court exit. In contrast, Bhattacharjee et al. (2009) find that the probability of acquisition decreases with size. Greenaway et al. (2009) report that the probability of acquisition does not depend on firm size.

Group dummy variable and subsidiary dummy variable are included in the top level to distinguish between M&A and exits. Belonging to a group, or, being a subsidiary of a corporation significantly increases the probability of M&A at the 1% level. Bhattacharjee et al. (2009) report that the probability of a voluntary exit increases with the strength of the group relationships increases and being part of a group significantly increases the probability of M&A versus a voluntary liquidation. Though we do not have data on the level of financial interactions with affiliated firms and firms with holding interests to measure the strength of the group relationships, TSR data provides information on group relations such common ownership of a group of firms as well as parent subsidiary

relations.

When cash holding is included in the top level, it does not significantly differentiate M&A and exits. In contrast, Åstebro and Winter (2012) show that listed US firms with higher cash positions are more likely to be acquired in comparison with bankruptcy. Also, Peel and Wilson (1989), Pastena and Ruland (1986), Kanatas and Qi (2004), and Balcaen et al. (2013) provide evidence that firms with small cash holdings are more likely to exit through a court procedure. Additionally, Balcaen et al. (2012) show that higher levels of cash are associated with a significantly higher probability of voluntary liquidation, at the level of M&A versus voluntary exits.

Neither firm age significantly discriminates M&A versus exits when it is included in independent variables. Results in previous studies are mixed. Haltiwanger et al. (2008) find that job destruction rates in bankruptcy fall by firm age, while there is no robust effect of firm age on the probability of an acquisition or merger in Åstebro and Winter (2012), and Pagano et al. (1998). Using data on Swedish manufacturing firms, Greenaway et al. (2009) find that age is significant for the 1990s for the decision to closedown. In Balcaen et al. (2013), younger distressed Belgian firms have a lower probability of exiting through voluntary liquidation or M&A in comparison with filing for bankruptcy, but age does not differentiate between M&A exit and voluntary

liquidation.

Nor CEO age is related to the probability of M&A, compared with exits. Recently, it is argued that the motivation to opt for M&A may be higher in SMEs with an aging owner and lack of successors. Different from listed firms, an aging owner of small business without a successor has to consider to sell the company or to exit. This result suggest that recent increase in M&A is not driven by lack of a successor for aging owners, consistent with Tsuruta (2019) which reports that in Japan smaller, high leveraged SMEs are more likely to confront with lack of successors.

4.2 Voluntary Closures versus Bankruptcies

With regard to the bottom alternatives, the second equation delimiter indicates that firm age and CEO age distinguish between voluntary exits from M&A or bankruptcy. Here we constrain the parameters of the two variables to equal zero for bankruptcy. The two variables are not significantly related to M&A when the constraint on the parameters for bankruptcy is relaxed. Probably, an aging CEO without a successor is more likely to close her/his smaller company. Also, we find elderly CEOs tend to close the companies with a higher sales assets turnover ratio, as indicated by the positive effect of the interaction of elderly dummy variable and sales assets turnover ratio. Tsuruta (2019)

reports that firms with no successors have lower sales growth than their peers. Elderly entrepreneurs without successors might choose to close their companies before sales deteriorate. However, including the interaction of elderly dummy variable and profitability yields no significant coefficients.

Group firms and subsidiaries have a higher probability of voluntary exit. But the coefficient of each variable is smaller than the corresponding coefficient in differentiating between M&A and exits. Even if group firms and subsidiaries are not sold, they are more likely to be closed. The owner of a group or the parent company of a subsidiary is required to provide guarantees for debt, even businesses are incorporated. It is not probable for a subsidiary or a group firm to solely file for bankruptcy, while other group firms or parent company survives. The parameters of group membership or subsidiary is constrained to equal zero for bankruptcy, because it is insignificant when it is included.

Cash is negatively related to the probability of bankruptcy significantly at the 1% level. In contrast, cash is not related to M&A or voluntary closedown. In short, cash enables firms to avoid bankruptcy, consistent with previous studies. Debt increases the probability of bankruptcy, as expected. Bankruptcy procedure is costly but necessary for a fresh start, because corporate debt and personal debt are discharged through filing for corporate bankruptcy and personal bankruptcy. We constrain the parameters of debt to

equal zero for voluntary closedown. But relaxing this constraint yield no significant impact of debt on the probability of voluntary closedown.

Finally, both bankruptcies and voluntary closedowns decreased after 2008, since Japan implemented policies to protect SMEs from the shock of the global financial crisis. In 2008, the Emergency Guarantee Program was established in order to significantly expand funding support measures for SMEs, as the 2008 first and second supplementary budget proposal was decided by the Cabinet. The scale of 6 trillion yen guarantee with the first supplementary budget, it is expanded to the scale of 20 trillion yen with the second supplementary budget to ease credit availability for SMEs. Also, the scale of Safety Net Loan Program by government financial institutions was also expanded to 20 trillion yen. In the next year, the SME Finance Facilitation Act took effect. This act required financial institutions to implement measures to reduce the debt repayment burden, such as, for example, extending the repayment period, refinancing, or debt equity swap for SMEs. These policy measures significantly reduced bankruptcies and voluntary closedowns, consistent with Hancock et al. (2007). In USA, the Small Business Administration guaranteed loan disbursements tended to reduce the numbers of business failures and business bankruptcies.

4.3 Nested Logit analysis for independent firms

We compare exited firms (voluntary closedown or bankruptcy) with acquired or merged firms. It is efficient to eliminate inefficient firms which liquidation value is above going concern value and preserve businesses of efficient firms through M&A. About 30% of firms exited through M&A. Merged or acquired companies are large, low leveraged, not extremely poor profitable. M&A plays important roles to transfer ownership of profitable SMEs. In particular, groups or parent companies reshape their business structure through restructuring group firms and subsidiaries. Indeed, more than 60% of merged or acquired firms are subsidiaries or have group membership. In comparison, smaller, high leveraged, less profitable SMEs exit voluntarily or are forced into bankruptcy. Since our sample includes distressed firms, and non-distressed underperforming firms, our findings might be more valid in a context of selecting business.

It is possible that the choices of an affiliated firm rely on the decisions of the group or the parent company. Rajan, Servaes and Zingales（2000）provide a model that resources can flow toward the most inefficient division as diversity in resources and opportunities increases with consistent empirical evidence. Scharfstein and Stein(2000）develop a two-tiered agency model that weaker divisions get subsidized by stronger ones for rent-

seeking behavior on the part of division managers. as stand-alone firms. Shin and Stulz (1998) find that the investment by segments of highly diversified firms is less sensitive to their cash flow than the investment of comparable single-segment firms. Dewaelheyns and Van Hulle (2006) show that business groups support subsidiaries in distress. Also, acquisitions and mergers involving affiliated firms may include more intra-group transactions rather than sales to an independent third party. For instance, other group members may rescue an inefficient group member through M&A. As a result, the firm characteristics are not relevant to choices between M&A and exits for affiliated firms.

To examine the differences between independent firms and affiliated firms, we estimate nested logit models respectively. Table 4 reports the result for independent firms. The result is quite similar to the specification (2) in Table 3. However, we cannot obtain a similar result for affiliated firms and the result is not consistent with nested logit model. We omit the outcome but it is available upon request. In sum, the results in Table 3, especially, the specification (2) is driven by the decisions of independent firms. As a part of the internal capital market, affiliated firms' decisions concerning M&A and exits are less sensitive to leverage and operating performance in comparison with independent firms. Our finding is consistent with previous studies on credit allocation of internal capital market.

5 Conclusions

In this paper, we examine determinants of M&A, voluntary liquidation and bankruptcy, using nested logit models and a sample of M&As, voluntary closures and bankruptcies of mature SMEs in Japan during 2002-2015. We find that high leverage and poor operating performance are major reasons for exits, either voluntary closures or bankruptcies, while M&A preserves business of low leveraged, moderately low profitable firms. Also, group firms or subsidiaries are more likely to be involved in M&A. Similar to distressed firms going bankrupt in Belgium, bankrupt firms have more debt but low cash holdings. Consistent with previous studies on internal capital market, we find group firms and subsidiaries are more likely to be acquired or merged but less likely to go bankrupt. Additionally, smaller firms with an aging entrepreneur are prone to voluntarily close their business, probably due to lack of a successor. Moreover, our results are driven by independent SMEs. We contribute to scarce literature studying bankruptcy, voluntary liquidation and merger or acquisition for SMEs.

The choices of M&A and exits depend on capital structure and cash holdings as well as level of liabilities. M&A can be resolutions to preserve business of SMEs without successors. It is important to investigate M&A costs for SMEs including matching

potential acquirers and target, and, credit constraints imposed on potential acquirers. To enhance less costly prompt voluntary exits, it would be fruitful for future research is to examine how firms manage cash, leverage, and bank loans dynamically. Also, it is important to examine the effects of M&A and exits on survivors. We know keeping zombie firms alive is harmful for efficient firms. We need know whether survivors benefit from exits of inefficient firms. Finally, including banking factors and macro-economic factors such as negative interest rate policy and declining in population might be also fruitful future research.

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Table 1 Composition of M&A, voluntary closures and insolvency procedure

Type	Procedures	Number of frims	Percentage
M&A		505	30.29%
Volutary closuires	All procedures	590	35.39%
	Disolution	336	20.16%
	Closedowns	254	15.24%
Insonvency	Alll procedures	572	34.31%
	Liquidation	457	27.41%
	Civil rehabilitatic	115	6.90%
Total		1,667	

Figure 1 The nested structure

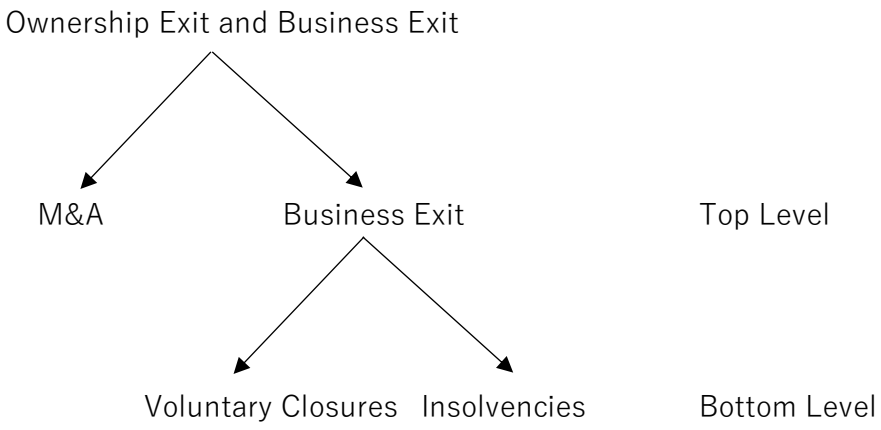

Table 2 Descriptive statistics

Variable	Mean	Median	Stadrad deviation	Mann–Whitney U-test	t-test
M&A				M&A versus exit	
EMPLOYEES	229.3149	50	618.8331	***	***
ASSETS	3866559	984041	9073627	***	***
LIABILITIES	2631859	675828	6682628	***	***
FIRM AGE	35.64158	35	18.92886	***	***
CEO AGE	57.37624	59	9.072953	***	***
LN(ASSETS)	7.500703	7.334215	2.035504	***	***
CASH	13.99%	9.59%	14.07%	***	***
LEVERAGE	74.55%	75.36%	38.01%	***	***
LOAN	32.21%	22.17%	34.92%	***	***
TURNOVER	178.09%	149.10%	120.53%	**	***
EBITDA	2.48%	3.33%	10.05%	***	***
ROP	1.34%	2.06%	7.97%	***	*
				Chi2-test	
GROUP_D	29.70%	0.00%	45.74%	***	-
SUBSIDIARY_D	36.83%	0.00%	48.28%	***	-
OLD CEO	4.55%	0.00%	20.87%	***	-
Voluntary closures				Volutarry closures versus insolvencies	
EMPLOYEES	17.72373	7	34.11361	***	***
ASSETS	828428.4	152296.5	4213023	***	***
LIABILITIES	775386.8	115288.5	4262425	***	***
FIRM AGE	32.03898	32	16.43757	*	**
CEO AGE	59.97458	61	10.94644	***	***
LN(ASSETS)	5.117314	5.060285	1.659438	***	***
CASH	19.48%	13.30%	17.57%	***	***
LEVERAGE	88.10%	82.01%	57.23%	***	***
LOAN	53.50%	43.48%	50.19%	***	***
TURNOVER	168.12%	134.62%	127.11%	*	
EBITDA	-2.79%	0.80%	13.63%	***	***
ROP	-5.29%	-1.60%	12.37%	***	***
				Chi2-test	
GROUP_D	12.71%	0.00%	33.34%	***	-
SUBSIDIARY_D	10.68%	0.00%	30.91%	***	-
OLD CEO	15.93%	0.00%	36.63%	**	-
Insolvencies					
EMPLOYEES	41	16.5	94.3		
ASSETS	1544712	469155.5	3103548.0		
LIABILITIES	1528976	469721.5	3249139.0		
FIRM AGE	34.14685	34	17.86903		
CEO AGE	57.57343	59	11.00867		
LN(ASSETS)	6.260679	6.158429	1.542367		
CASH	10.29%	6.50%	11.25%		
LEVERAGE	105.86%	94.19%	40.91%		
LOAN	70.33%	65.43%	38.39%		
TURNOVER	147.27%	125.18%	104.42%		
EBITDA	-2.08%	1.98%	12.25%		
ROP	-3.10%	0.63%	10.03%		
GROUP_D	4.55%	0.00%	20.85%		
SUBSIDIARY_D	0.52%	0.00%	7.23%		
OLD CEO_D	11.36%	0.00%	31.76%		

*,**,*** indicates significance at the 10%, 5%,,1% level respectively

Table 3 Results of nested logit models for all firms

Type: M&A versus exits					
	(1)	(2)			
LN(ASSETS)	0.624	0.593			
	(9.48)***	(9.14)***			
TURNOVER	0.295	0.221			
	(4.68)***	(3.52)***			
ROP	2.953	3.055			
	(3.47)***	(3.68)***			
LEVERAGE	-0.563				
	(2.90)***				
LOAN		-0.904			
		(4.45)***			
GROUP	1.82	1.762			
	(8.01)***	(7.75)***			
SUBSIDIARY	3.427	3.227			
	(6.78)***	(6.56)***			
Alternatives: voluntary closures	(1)	(2)	Alternatives: insolvencies	(1)	(2)
OLD CEO*TURNOVER	0.266	0.268	OLD CEO*TURNOVER	0.226	0.23
	(1.68)*	(1.69)*		(1.40)	(1.43)
AFTER2008	-0.841	-0.809	AFTER2008	-0.605	-0.592
	(4.73)***	(4.55)***		(3.56)***	(3.48)***
FIRM AGE	0.007	0.006	LN(LIABIILITIES)	0.259	0.236
	(2.31)**	(2.22)**		(2.78)***	(2.63)***
CEO AGE	0.01	0.009	CASH	-0.988	-0.886
	(2.14)**	(2.06)**		(2.34)**	(2.25)**
SUBSIDIARY	1.678	1.536	UNAAPPROPRIATED LOSS	-0.27	-0.247
	(2.63)***	(2.50)***		(1.94)*	(1.88)*
GROUP	0.64	0.588	CONSTANT	2.505	2.506
	(2.59)***	(2.46)***		(2.61)***	(2.65)***
CONSTANT	4.811	4.612			
	(11.29)***	(10.97)***			
M&A_tau	1	1			
EXIT_tau	0.409	0.373			
	(2.74)***	(2.60)***			
Log likelihood	-1274.93	-1268.82			
Observations	5,001	5,001			

Table 4 Result of nested logit model for independent firms

Type: M&A versus exits			
LN(ASSETS)	0.739		
	(7.33)***		
TURNOVER	0.329		
	(3.97)***		
ROP	4.27		
	(3.57)***		
LOAN	-1.331		
	(4.54)***		
Alternatives: voluntary closures		Alternatives: insolvencies	
OLD CEO*TURNOVER	0.277	OLD CEO*TURNOVER	0.193
	(1.29)		(0.89)
AFTER2008	-1.116	AFTER2008	-0.758
	(4.57)***		(3.43)***
FIRM AGE	0.01	LN(LIABIILITIES)	0.355
	(2.29)**		(2.84)***
CEO AGE	0.012	CASH	-0.995
	(2.16)**		(2.29)**
COSTANT	5.292	UNAAPPROPRIATED LOSS	-0.3
	(9.54)***		(1.80)*
		CONSTANT	2.004
			(1.70)*
M&A_tau	1		
EXIT_tau	0.505		
	(2.82)***		
Log likelihood	-954.545		
Observations	3,684		