The Fire Sale Enigma: Revealing Long-term Benefits of Divestiture Amid Financial Turmoil

(Extended Abstract)

1. Introduction

Prior studies examining corporate restructuring strategies during financial crisis periods generally views divestiture as a value-diminishing strategy, often employed under fire sale conditions (Shleifer & Vishny, 1992; Asquith, Gertner, & Scharfstein, 1994; Maksimovic & Phillips, 2001; Schlingemann, Stulz, & Walkling, 2002).[1] This perceived value destruction elucidates the decrease in divestitures in response to economic or industry shocks (Shleifer and Vishny, 2011; Zhou, Li, and Svejnar, 2011).[2] Consequently, the potential long-term benefits of divestiture amid financial crises have been overlooked in the literature.

In this study, we argue that divestiture may present a valuable opportunity for firms with limited borrowing capacity when raising external capital is exceedingly challenging. Firstly, studies suggest that divestiture effectively eases financial constraints for highly levered firms without exacerbating existing financial risks and is a less costly way to arrange financing than alternative options[3] (Shleifer and Vishny, 1992; Denis and Shome, 2005; Arnold, Hackbarth, and Puhan, 2018). Secondly, since divestiture enables financial flexibility when external financing is unavailable, the proceeds from asset sales can be reallocated toward investments that foster long-term growth (Dittmar and Shivdasani, 2003; Hovakimian and Titman, 2006; Kalay, Singhal, and Tashjian, 2007; Arnold, Hackbarth, and Puhan, 2018). Empirical evidence shows that financially distressed firms during the 2008 financial crisis relinquished promising investment opportunities (Campello, Graham and Harvey, 2010). However, those which continued to invest outperformed those that hoarded cash and focused on cost-cutting tactics (Gulati, Nohria, Wohlgezogen, 2010; Mann and Byun, 2017).

Accordingly, this study aims to investigate whether divestiture constitutes a viable long-term strategy during crisis periods for mitigating financial constraints and enhancing long-term

[1] Fire sale refers to a forced sale of assets at severe discounts under illiquid market conditions (Shleifer and Vishny, 1992; 2011). Fire sale conditions are defined by the increase in the number of distressed firms, external market instability, and shortage of natural (industry) buyers.

[2] EY (2020) reports that amid the 2008 global financial crisis, many companies halted divestitures and, instead, focused on cost reduction and cash preservation, as assets tend to be valued at sharp discounts.

[3] Alternative methods of financing include extending line of credit from banks, debt rescheduling, or issuing corporate debts or new equity.

performance. Using a sample of the 2008 global financial crisis, we examine the impact of divestiture on long-term operating performance of financially distressed firms. In contrast to the prevailing fire sale theory, which posits that divestiture in periods of economic crisis leads to value destruction, our results reveal a positive association between divesting firms and their long-term performance recovery. Over a 3-year post-divestiture period, firms significantly improve their long-term operating performance compared to non-divesting benchmarks, by easing financial constraints and maintaining pre-crisis investment levels. Moreover, firms with divestiture outperform those using other restructuring strategies that prioritize short-term cash flow enhancements and cost-cutting measures.

This study contributes to the fire sale literature by reassessing the fire sale theory, which assumes that asset sales under fire sale conditions negatively impact a firm's performance. Our findings present contrasting evidence, revealing that firms improve their long-term operating performance following divestitures. This research also adds to the literature on corporate restructuring by considering the effect of economic crisis on distressed asset sales. So far, divestitures have been undermined in crisis-related restructuring studies because of the pervasive notion of liquidity discounts. Thus, distressed asset sales lacked theoretical implications and empirical validations as a suitable turnaround strategy in a depressed economy. The evidence provided in this study suggests that divestiture helps firms not only recover from financial distress amid economic downturns, but also realize long-term profitability through improvement in operating performance. Lastly, this research urges firms to base their choice of crisis-driven strategy upon its long-term effects as over-pursuing retrenchment strategies can be short-sighted. We believe that evaluating effective long-term restructuring strategies can be particularly resourceful and timely with the potential economic turmoil induced by COVID-19 pandemic, ongoing war between Russia and Ukraine, and current banking crisis.

2. Data and methodology

2.1. Sample collection

The sample of divestitures is collected from the SDC Mergers & Acquisitions database based on announcements made between the third quarter of 2007 and the first quarter of 2009 over the global financial crisis (Ben-David, Franzoni, and Moussawi, 2012). After restricting the sample to completed transactions by US firms listed on NYSE, AMEX, and Nasdaq only, 800 deals remain. The accounting data is obtained from Compustat between the fiscal year of 2007 and 2008; this period corresponds to June 2007 through May 2009 in calendar time, which

coincides with the financial crisis period. To measure pre-crisis distress condition and post-crisis (or post-divestiture) long-term operating performance, the sample is further required to have relevant accounting data two years before and three years after the crisis period. Companies meeting these criteria have non-missing financial information over fiscal years between 2005 and 2012, and the final sample has 6,822 firm-year observations. The sample of managerial restructurings is obtained from the S&P Executive Compensation database, and the data on stock prices is collected from CRSP.

2.2. Definition of financial distress

There are several ways to measure financial distress, but we use Altman's Z-score Bankruptcy Model (Altman, 1968) to determine whether a firm is distressed, as it is a widely adopted methodology in empirical research with high precision of predicting defaults (Graham, 2000; Coles, Daniel, and Naveen, 2006; Bhagat and Bolton, 2008; Lemmon, Roberts, and Zender, 2008). Among variations of Z-score formulae based on the industry and a firm's public status, we use the formula which can also be applied to non-manufacturer industrial firms as follows:

$$Z = 6.56T_1 + 3.26T_2 + 6.72T_3 + 1.05T_4$$

where T_1 = (Current Assets-Current Liabilities) / Total Assets
T_2 = Retained Earnings / Total Assets
T_3 = Earnings Before Interest and Taxes / Total Assets
T_4 = Book Value of Equity / Total Liabilities.

Based on the Z-scores computed using the formula, a firm with Z-score less than 1.1 is considered financially distressed.[4]

Prior literature implies that restructuring strategies that firms employ might vary depending on the cause of financial distress. For example, O'Neill (1986b) suggests that firms with strong strategic positioning without an exogenous shock may opt for retrenchment strategies rather than strategic reorientation while waiting for cyclical upturns. Thus, in defining financially

[4] A Z-score of greater than 2.6 indicates the firm is safe while that of less than 1.1 means the firm is financially distressed and is in danger of going bankrupt.

distress firms, we differentiate between those experiencing distress during the crisis regardless of their pre-crisis status (denoted as *distress 1*) and those entering distress only after the crisis begins, but not within two years prior to the crisis (denoted as *distress 2*).

We find that approximately 30% (2,010 firm-year observations) of the firms in the sample were distressed during the fiscal year of 2007 and 2008 (FY 2007/08). Moreover, 9% (615 firm-year observations) of the sample and about a third of distressed firms fell into distress only subsequent to the beginning of the financial crisis.

2.3. Restructuring strategies

Restructuring strategies, often referred to as turnaround strategies for financially distress firms, fall largely into four categories: asset, managerial, operational, and financial restructuring (Kang and Shivdasani, 1997; Zhou, Li, and Svejnar, 2011; Koh et al., 2015; Finlay et al., 2018). For asset restructuring, we focus on divestitures of a partial or full business unit to measure the impact of asset sales under fire sale conditions. Following Bhagat and Bolton (2008) and Atanassov and Kim (2009), managerial restructuring (also referred to as management turnover) is defined by the replacement of top-tier managements, such as the CEO and managing director, in year t or year t+1 for reasons except for death or retirement. Operational restructuring includes investment reduction, COGS reduction, fixed asset reduction, and layoffs. Lastly, financial restructuring involves dividend cut or omission and debt or equity issue. Definition of these restructuring strategies are available in Panel A of Appendix A.

We find that only 8.8% of financially distressed firms undertook divestitures while most firms opted for investment reduction (57.6%) along with other operational or financial restructuring strategies. Overall, consistent with the fire sale literature[5], divestitures were employed relatively less than other restructuring strategies during the financial crisis.

2.4. Long-term operating performance

[5] Studies on fire sale reckon that asset sales are negatively affected by economic downturn due to lack of buyers and market illiquidity and more firms espouse retrenchment strategies.
.

We estimate the long-term operating performance of firms which undertook divestitures during the crisis period using OIBD, operating income before depreciation plus interest income divided by the book value of total assets, and ROA, net income (loss) divided by the book value of total assets, following Prezas and Simonyan (2015). We adopt the methodology used in the event study by Loughran and Ritter (1997) and adjust each divesting firm's performance with that of its matched benchmark. The matching procedure is as follows: i) each divesting firm is matched with a firm which has not divested for the 6 years surrounding the year of divestiture (-3, +3), ii) the matching firm is from the same industry as the divesting firm based on the first 2-digit SIC code, iii) the size of the matching firm based on the book value of its total asset at the end of the fiscal year prior to the divestiture announcement is between 25 and 200% of the divesting firm's size, and iv) the matching firm has the closest OIBD to that of the divesting firm. If no matching firm is found with these criteria, we withdraw the industry requirement and apply size criterion between 90 and 110% of the divesting firm and closest but higher OIBD ratio.

3. Empirical results

Table 1 presents the changes in median operating performance of divesting firms and of matched firms. The change in operating performance was measured from the fiscal year prior to divestiture to the year of divestiture (year -1 to 0), one year after divestiture (year -1 to 1), two years after divestiture (year -1 to 2), three years after divestiture (-1 to 3), and average of year 1, 2, and 3 after divestiture (year -1 to average 1, 2, 3). Overall, firms which undertook divestitures during the crisis outperform their non-divestor benchmark in the long run based on both OIBD and ROA. Specifically, financially distressed firms experience an average of 5.8% to 6.0% improvement in operating performance following divestiture, based on the analysis of distress 1 and distress 2 subsample, respectively.

We also measure the impact of divestiture on the post-divestiture operating performance using multivariate quantile (median) regression model (see Table 2).[6] The dependent variable is the change in ROA and OIBD from year -1 to year 1, 2, and 3. The variable of interest in this regression is *divest* which is a dummy equal to one if a firm implemented a divestiture in

[6] For multivariate regression analyses, we use median comparison instead of mean value due to the strong presence of outliers in operating performance. Quantile regression is more robust to extreme values and is more efficient than OLS for non-normal errors (Healy, Palepu, and Ruback, 1992; Barber and Lyon, 1996; Loughran and Ritter, 1997; Lee and Li, 2012; Prezas and Simonyan, 2015).

the fiscal year of 2007/08. Consistent with the matched firm-adjusted performance estimations in Table 1, firms realize significantly greater improvements in long-term operating performance post-divestiture relative to non-divesting firms. The median improvement in OIBD and ROA of divesting firms in excess of non-divestors' ranges from 0.8% to 14% over the 3 years post-divestiture, with the highest improvement being achieved by distressed firms as a consequence of the financial crisis (distress 2 subsample). Further, the analysis of the change in Z-score reveals that divesting firms significantly lessen their financial distress over the 3 years following divestiture (see Table 5). These findings imply firms affected by the economy-wide distress can benefit from the use of divestiture strategy by diminishing default risk and enhancing long-term performance.

On the contrary, other restructuring strategies do not seem to be effective at neither enhancing long-term operating performance, nor alleviating financial distress, based on the results presented in Table 3 and Table 5. However, undertaking these strategies in conjunction with divestiture appears to have significantly positive effects on firm performance.

We investigate why divestiture is much more effective at achieving long-term performance turnaround for firms experiencing financial distress in periods of economic turmoil. According to the financing hypothesis (Dittmar and Shivdasani, 2003; Hovakimian and Titman, 2006; Arnold, Hackbarth, and Puhan, 2018; Finlay et al., 2018), divestiture is useful at increasing efficiency by reallocating corporate resources from underperforming divisions to more valuable assets. More importantly, given the overwhelming market frictions in crisis periods, funds raised from divestitures can be used to finance projects, control leverage, and maintain investment for the remaining divisions. To substantiate the financing benefits of divestiture, we estimate how the leverage and segment investment ratio change between a fiscal year before and after the divestiture. The leverage ratio for divesting firms is computed as total debt divided by the book value of total assets. The segment investment ratio is estimated by capital expenditures as a proportion of sales using the data obtained from the Compustat Historical Segments file. Following Dittmar and Shivdasani (2003), divesting firms' segment investment ratio was generated using retained segments only to eliminate the influence of divested unit on the firm's overall investment policy in case it was capital-intensive.

We find that leverage of non-divesting firms significantly increases during the crisis while that of divesting firms does not. Especially, those with financial restructuring increase leverage by 5.6%, which is a stark contrast to 0.6% decrease in leverage for divesting firms.[7] As for the

[7] The mean difference tests show qualitatively indifferent results from the median difference tests.

investment policy, divesting firms maintain similar level of investment in their remaining divisions as the segment investment ratio is indifferent before and after divestiture. However, non-divesting firms, especially firms with operational restructuring, significantly decrease investment (see Table 6). Considering being able to maintain investment is crucial to achieve performance turnaround, these findings demonstrate why firms with divestiture strategy effectively resolve financial distress and improve long-term operating performance.

Appendix A Variable definition

Panel A Variables for restructuring strategies		
Asset restructuring (AR)	Divest	A dummy equal to one if a firm divested (SDC divestiture announcements) during the crisis period (fiscal year 2007 and 2008).
Managerial restructuring (MR)	Management turnover	A dummy equal to one if a firm replaced its CEO and/or top-tier managers during the crisis period. Management is considered replaced when executives leave the firm in year t or year t+1 (COMPUSTAT Execucomp item LEFTCO) and the reason for a departure (COMPUSTAT Execucomp item REASON) is not 'DECEASED' or 'RETIRED'.
Operational restructuring (OR)	Investment reduction	A dummy equal to one if the firm experienced more than 15% reduction in investment activities (COMPUSTAT item IVNCF) from year t−1 to year t or t + 1 over the crisis period.
	COGS reduction	A dummy equal to one if a firm's COGS (scaled by sales) is above the industry median in year t−1 but falls to the bottom quartile in year t or year t + 1 (COMPUSTAT item COGS/SALE) over the crisis period.
	Fixed asset reduction	A dummy equal to one if fixed assets of a firm (COMPUSTAT item PPENT) fall more than 15% between year t−1 and year t or year t + 1 over the crisis period.
	Layoffs	A dummy equal to one if more than 20% of employees have been reduced (COMPUSTAT item EMP) between year t−1 and year t or t+1 over the crisis period.
Financial restructuring (FR)	Dividend cut/omission	A dummy equal to one if a firm experienced more than a 25% decrease in dividends paid between year t−1 and year t or t + 1 (COMPUSTAT item DVT) over the crisis period.
	Debt issue	A dummy equal to one if a firm's net debt (COMPUSTAT item DLTIS less DLTR) exceeds 5% of the book value of its total assets at year t or t+1 over the crisis period.
	Equity issue	A dummy equal to one if a firm's net equity (COMPUSTAT item SSTK less PRSTKC) exceeds 5% of the book value of its total assets at year t or t+1 over the crisis period.
Panel B Control variables		
COMPUSTAT	Size	The natural log of the book value of total assets (AT).
	Leverage	A financing ratio measured by long-term debt (DLTT) plus short-term debt (DLC) over the book value of total assets (AT).
	Liquidity	The ratio of cash and short-term investments (CHE) divided by the book value of total assets (AT).
	Cash flow	A profitability ratio measured by operating income before depreciation (OIBDP) minus interest (XINT) minus taxes (TXT) over the book value of total assets (AT).
	Tobin's Q	A measure of firm's market value in comparison with its intrinsic value estimated by the book value of total assets (AT) minus book value of common equity (CEQ) plus the market value of common equity (CSHO*PRCC_F) over the book value of total assets (AT).
	Capex	The ratio of capital expenditure (CAPX) divided by total assets (AT).
	Sales growth	The change in a firm's sales (SALE) from time t-1 to t.
	NWC	The ratio of working capital (WCAP) minus cash (CHE) divided by the book value of total assets (AT).
	OIBD	A measure of a firm's operating performance estimated by operating income before depreciation (OIBDP) plus interest income (IDIT) over the book value of total assets (AT).
	Return on asset (ROA)	A measure of a firm's operating performance estimated by net income (loss) (NI) over the book value of total assets (AT).
	Change in OIBD	A firm's OIBD in t+1, t+2, or t+3 minus OIBD in year t-1.
	Change in ROA	A firm's ROA in t+1, t+2, or t+3 minus ROA in year t-1.

Table 1 Change in post-divestiture operating performance

Panel A, Panel B, and Panel C exhibit performance of divesting firms in the *all-firms* sample and *distress 1* (a dummy equal to one if a firm is distressed) and *distress 2* subsamples (a dummy equal to one if a firm enters distress only within the financial crisis period), respectively. We present two operating performance measures: OIBD/Assets (operating income before depreciation plus interest income over the book value of total assets) and ROA (net income over the book value of total assets). N is the number of divesting and matched firm observations. Column 3 and 4 are median changes in operating performance for divesting firms and matched firms, respectively. The matching firm is assigned to each divesting firm based on the following algorithm: i) each divesting firm is matched with a firm which has not divested for the 6 years surrounding the year of divestiture (-3, +3), ii) the matching firm is from the same industry as the divesting firm based on the first 2-digit SIC code, iii) the size of the matching firm based on the book value of total assets at the end of the fiscal year prior to the divestiture announcement is between 25 and 200% of the divesting firm's size, and iv) the matching firm has the closest OIBD to that of the divesting firm. If no matching firm is found with these criteria, we withdraw the industry requirement and apply size criterion between 90 and 110% of the divesting firm and closest but higher OIBD ratio. Median difference is calculated by deducting matched firms' performance from that of divesting firms to generate matched firm-adjusted performance. Significance levels are computed using the Wilcoxon signed-rank (rank-sum) test for the median performance. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Performance measures	N	Divesting firms	Matched firms	Median difference	*p*-value
Panel A All firms					
OIBD/Assets					
Year -1 to 0	451	-0.003	-0.003	0.000	0.684
Year -1 to 1	453	-0.007	-0.010	0.003**	0.028
Year -1 to 2	447	-0.002	-0.011	0.009***	0.000
Year -1 to 3	431	0.003	-0.005	0.008	0.114
Year -1 to average 1, 2, 3	431	-0.002	-0.009	0.007***	0.001
ROA					
Year -1 to 0	451	-0.005	-0.009	0.004***	0.007
Year -1 to 1	453	-0.001	-0.022	0.021***	0.000
Year -1 to 2	447	0.007	-0.019	0.026***	0.000
Year -1 to 3	431	0.007	-0.004	0.011***	0.000
Year -1 to average 1, 2, 3	431	0.000	-0.017	0.017***	0.000
Panel B Distress 1 subsample					
OIBD/Assets					
Year -1 to 0	120	0.002	-0.003	0.005	0.183
Year -1 to 1	121	0.012	-0.005	0.017**	0.012
Year -1 to 2	118	0.020	-0.002	0.022***	0.002
Year -1 to 3	113	0.019	0.007	0.012	0.232
Year -1 to average 1, 2, 3	113	0.013	0.000	0.013***	0.009
ROA					
Year -1 to 0	120	0.011	-0.013	0.024***	0.000
Year -1 to 1	121	0.029	-0.015	0.044***	0.000
Year -1 to 2	118	0.069	-0.006	0.075***	0.000
Year -1 to 3	113	0.045	0.008	0.037***	0.000
Year -1 to average 1, 2, 3	113	0.049	-0.009	0.058***	0.000
Panel C Distress 2 subsample					
OIBD/Assets					
Year -1 to 0	44	-0.010	-0.001	-0.009	0.762
Year -1 to 1	44	0.024	0.011	0.013*	0.082
Year -1 to 2	44	0.051	0.002	0.049***	0.004
Year -1 to 3	43	0.029	0.007	0.022	0.134
Year -1 to average 1, 2, 3	43	0.020	0.008	0.012**	0.034
ROA					
Year -1 to 0	44	0.004	-0.019	0.023	0.123
Year -1 to 1	44	0.091	-0.022	0.113***	0.000
Year -1 to 2	44	0.065	-0.023	0.088***	0.000
Year -1 to 3	43	0.071	-0.003	0.074***	0.000
Year -1 to average 1, 2, 3	43	0.039	-0.021	0.060***	0.000

Table 2 Quantile (median) regressions of post-divestiture operating performance

Panel A, Panel B, and Panel C compare the operating performance of divesting firms vs. non-divesting firms using the *all-firms* sample and *distress 1* (a dummy equal to one if a firm is distressed) and *distress 2* subsamples (a dummy equal to one if a firm enters distress only within the financial crisis period), respectively. Dependent variables include the change in ROA and OIBD from year -1 to year 1, 2, and 3. Year -1 is the fiscal year prior to the divestiture announcement for divesting firms. The key independent variable is *divest* which is a dummy equal to one if a firm divested during the crisis period and zero, otherwise. Size is the natural log of the book value of total assets. Leverage is the ratio of long-term debt plus short-term debt divided by the book value of total assets. Liquidity is the ratio of cash and short-term investments divided by the book value of total assets. Cash flow is the ratio of operating income before depreciation, interest, and taxes over the book value of total assets. Tobin's Q is the ratio of the book value of total assets minus book value of common equity plus the market value of common equity divided by the book value of total assets. Capex is the ratio of capital expenditure divided by total assets. Sales growth is the change in a firm's sales from time t-1 to t. NWC is the ratio of working capital minus cash divided by the book value of total assets. All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix A. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: All firms						
Dependent variable:	ΔROA_{t+1}	ΔROA_{t+2}	ΔROA_{t+3}	$\Delta OIBD_{t+1}$	$\Delta OIBD_{t+2}$	$\Delta OIBD_{t+3}$
	(1)	(2)	(3)	(4)	(5)	(6)
Divest	0.0162***	0.0176***	0.0132***	0.0038	0.0107***	0.0083***
	(0.0000)	(0.0000)	(0.0000)	(0.1939)	(0.0000)	(0.0002)
Size	-0.0000	-0.0016***	-0.0012***	-0.0013***	-0.0019***	-0.0015***
	(0.9470)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Leverage	0.0179***	0.0245***	0.0189***	0.0226***	0.0210***	0.0198***
	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Liquidity	-0.0480***	-0.0469***	-0.0380***	-0.0427***	-0.0398***	-0.0331***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0007)
Cash Flow	0.0328***	-0.1039***	-0.1624***	-0.0006	-0.1600***	-0.1821***
	(0.0050)	(0.0000)	(0.0000)	(0.9590)	(0.0000)	(0.0000)
Tobin's Q	0.0082***	0.0057***	0.0054***	0.0060***	0.0051***	0.0040***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0059)
Capex	-0.0350***	-0.0503***	-0.0397***	-0.0363***	-0.0395***	-0.0403***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Sales growth	0.0665***	0.0323***	0.0228***	0.0850***	0.0607***	0.0586***
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)
NWC	-0.0424***	-0.0471***	-0.0181***	-0.0545***	-0.0605***	-0.0271***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Constant	-0.0352***	0.0012	0.0097***	-0.0110**	0.0086*	0.0130***
	(0.0000)	(0.7916)	(0.0063)	(0.0120)	(0.0515)	(0.0049)
Observations	5,657	5,287	4,944	5,653	5,286	4,942
Pseudo R-squared	0.0231	0.0202	0.0198	0.0388	0.0369	0.0380
Panel B: Distress 1						
Divest	0.0484**	0.0354*	0.0233**	0.0086**	0.0040	0.0012
	(0.0173)	(0.0637)	(0.0422)	(0.0427)	(0.4256)	(0.8162)
Size	-0.0018	-0.0042***	-0.0036***	-0.0039***	-0.0051***	-0.0036***
	(0.1620)	(0.0022)	(0.0085)	(0.0000)	(0.0000)	(0.0005)
Leverage	0.0033	0.0181	-0.0078	0.0044	0.0057	0.0140
	(0.8192)	(0.2228)	(0.6141)	(0.6538)	(0.5121)	(0.2429)
Liquidity	-0.0261	0.0006	0.0290	-0.0197	-0.0284	0.0159
	(0.5210)	(0.9903)	(0.5585)	(0.4998)	(0.3762)	(0.6646)
Cash Flow	0.1062***	-0.0530	-0.0574	0.0970***	-0.0931***	-0.0823***
	(0.0015)	(0.2204)	(0.2124)	(0.0000)	(0.0018)	(0.0069)
Tobin's Q	0.0083	0.0161*	0.0210**	0.0068**	0.0183***	0.0152**
	(0.1541)	(0.0646)	(0.0122)	(0.0473)	(0.0000)	(0.0338)
Capex	-0.0173	-0.0787***	-0.0501***	-0.0330***	-0.0506***	-0.0432***
	(0.2014)	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Sales growth	0.0585***	0.0138	0.0338**	0.0660***	0.0567***	0.0476***
	(0.0004)	(0.3970)	(0.0402)	(0.0000)	(0.0000)	(0.0000)
NWC	-0.0256	-0.0428*	0.0527*	-0.0056	0.0119	0.0289
	(0.3095)	(0.0961)	(0.0788)	(0.7500)	(0.4973)	(0.1145)
Constant	-0.0165	0.0179	0.0262	0.0197*	0.0352***	0.0232*
	(0.2931)	(0.3457)	(0.1795)	(0.0535)	(0.0000)	(0.0937)
Observations	1,493	1,308	1,183	1,491	1,308	1,183
Pseudo R-squared	0.0212	0.0223	0.0246	0.0314	0.0342	0.0368

Panel C: Distress 2						
Divest	0.1403**	0.0839**	0.0700*	0.0280***	0.0374*	0.0147
	(0.0127)	(0.0210)	(0.0637)	(0.0008)	(0.0730)	(0.1303)
Size	-0.0013	0.0005	-0.0032	-0.0018	-0.0033*	-0.0030*
	(0.7919)	(0.7662)	(0.1854)	(0.2962)	(0.0554)	(0.0920)
Leverage	0.1190***	0.0320	0.0312	0.0448***	0.0322*	0.0422**
	(0.0010)	(0.1299)	(0.1936)	(0.0078)	(0.0881)	(0.0209)
Liquidity	-0.2674***	-0.0252	0.0080	-0.1245**	-0.1011	0.0555
	(0.0063)	(0.7440)	(0.9223)	(0.0194)	(0.1218)	(0.4242)
Cash Flow	-0.0858	-0.0371	-0.0236	0.0179	-0.1115**	-0.0509
	(0.2246)	(0.4661)	(0.7134)	(0.6576)	(0.0287)	(0.3248)
Tobin's Q	-0.0003	-0.0020	-0.0050	-0.0050	0.0032	0.0012
	(0.9722)	(0.7703)	(0.2891)	(0.4340)	(0.4801)	(0.8250)
Capex	-0.0294**	-0.0253	-0.0256**	-0.0482**	-0.0388***	-0.0257**
	(0.0256)	(0.2236)	(0.0257)	(0.0173)	(0.0026)	(0.0463)
Sales growth	0.0247	-0.0096	-0.0112	0.0743***	0.0763***	0.0666***
	(0.4643)	(0.6194)	(0.7062)	(0.0000)	(0.0002)	(0.0001)
NWC	-0.1787***	-0.0349	0.0317	-0.0629***	-0.0239	0.0416
	(0.0000)	(0.1223)	(0.2944)	(0.0001)	(0.4101)	(0.1019)
Constant	-0.0719	-0.0226	0.0227	-0.0044	0.0196	0.0090
	(0.1426)	(0.3563)	(0.4250)	(0.8116)	(0.3269)	(0.6609)
Observations	517	466	427	517	466	427
Pseudo R-squared	0.0678	0.0254	0.0228	0.0703	0.0314	0.0286

Table 3 Quantile (median) regressions of post-restructuring operating performance

This table presents regression results on the effectiveness of other restructuring strategies without divestiture. Dependent variables include the change in ROA and OIBD from year -1 to year 1, 2, and 3. MR is a dummy equal to one if a firm undertakes managerial restructuring (management turnover). OR is a dummy equal to one if a firm undertakes operational restructuring (investment reduction, COGS reduction, fixed asset reduction, and layoffs). FR is a dummy equal to one if a firm undertakes financial restructuring (dividend cut/omission, debt issue, and equity issue). All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix A. p-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Firms with managerial restructurings (MR)						
Dependent variable:	ΔROA_{t+1}	ΔROA_{t+2}	ΔROA_{t+3}	$\Delta OIBD_{t+1}$	$\Delta OIBD_{t+2}$	$\Delta OIBD_{t+3}$
	(1)	(2)	(3)	(4)	(5)	(6)
MR	-0.0041	-0.0025	0.0044***	-0.0004	-0.0037	0.0034*
	(0.3555)	(0.4137)	(0.0073)	(0.8484)	(0.1201)	(0.0622)
Observations	5,567	5,200	4,861	5,563	5,199	4,859
Pseudo R-squared	0.0231	0.0188	0.0185	0.0402	0.0366	0.0374
Control variables	YES	YES	YES	YES	YES	YES
Panel B: Firms with operational restructurings (OR)						
OR	-0.0060***	-0.0042***	-0.0020*	-0.0029**	-0.0056***	-0.0034**
	(0.0001)	(0.0019)	(0.0591)	(0.0485)	(0.0001)	(0.0244)
Observations	5,305	4,962	4,639	5,301	4,961	4,637
Pseudo R-squared	0.0267	0.0190	0.0205	0.0457	0.0384	0.0402
Control variables	YES	YES	YES	YES	YES	YES
Panel C: Firms with financial restructurings (FR)						
FR	-0.0189***	-0.0160***	-0.0146***	-0.0186***	-0.0146***	-0.0115***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Observations	5,450	5,097	4,767	5,446	5,096	4,765
Pseudo R-squared	0.0289	0.0221	0.0237	0.0487	0.0408	0.0421
Control variables	YES	YES	YES	YES	YES	YES

Table 4 Quantile (median) regressions on operating performance of divesting firms with other restructurings

This table presents regression results on the effectiveness of combined strategies between divestiture and other restructuring strategies. Dependent variables include the change in ROA and OIBD from year -1 to year 1, 2, and 3. Year -1 is the fiscal year prior to the divestiture announcement for divesting firms. Divest * MR is a dummy equal to one if a firm undertakes both divestiture and managerial restructuring. Divest * OR is a dummy equal to one if a firm undertakes both divestiture and operational restructuring. Divest * FR is a dummy equal to one if a firm undertakes both divestiture and financial restructuring. All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix A. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Firms with divestitures & managerial restructurings (MR)						
Dependent variable:	ΔROA_{t+1}	ΔROA_{t+2}	ΔROA_{t+3}	$\Delta OIBD_{t+1}$	$\Delta OIBD_{t+2}$	$\Delta OIBD_{t+3}$
	(1)	(2)	(3)	(4)	(5)	(6)
Divest * MR	0.0349	0.0409	0.0247**	0.0136**	0.0129	0.0163***
	(0.1299)	(0.1460)	(0.0424)	(0.0446)	(0.1901)	(0.0000)
Observations	5,282	4,943	4,620	5,278	4,942	4,618
Pseudo R-squared	0.0259	0.0200	0.0217	0.0443	0.0378	0.0405
Control variables	YES	YES	YES	YES	YES	YES
Panel B: Firms with divestitures & operational restructurings (OR)						
Divest * OR	0.0202***	0.0178***	0.0179***	0.0059**	0.0120***	0.0105***
	(0.0002)	(0.0000)	(0.0000)	(0.0443)	(0.0000)	(0.0005)
Observations	5,544	5,181	4,842	5,540	5,180	4,840
Pseudo R-squared	0.0231	0.0201	0.0202	0.0391	0.0370	0.0379
Control variables	YES	YES	YES	YES	YES	YES
Panel C: Firms with divestitures & financial restructurings (FR)						
Divest * FR	0.0148***	0.0152***	0.0124***	0.0060*	0.0144***	0.0101***
	(0.0012)	(0.0000)	(0.0012)	(0.0700)	(0.0000)	(0.0015)
Observations	5,399	5,046	4,714	5,395	5,045	4,712
Pseudo R-squared	0.0246	0.0199	0.0199	0.0425	0.0380	0.0384
Control variables	YES	YES	YES	YES	YES	YES

Table 5 Change in Z-score: Effectiveness of divestitures in firms' recovery from distress

This table estimates the change in Z-score from year -1 to year 1, 2, and 3 after each restructuring strategy using a sample of distressed firms. Divest is a dummy equal to one if a firm divested during the crisis period and zero, otherwise. MR is a dummy equal to one if a firm undertakes managerial restructuring (management turnover). OR is a dummy equal to one if a firm undertakes operational restructuring (investment reduction, COGS reduction, fixed asset reduction, and layoffs). FR is a dummy equal to one if a firm undertakes financial restructuring (dividend cut/omission, debt issue, and equity issue). All accounting ratios are generated at the end of the fiscal year prior to a divestiture announcement and winsorized at the 1%. All variables are defined in Panel B of Appendix A. *p*-values are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Firms with divestitures (AR)			
Dependent variable:	ΔZ_{t+1}	ΔZ_{t+2}	ΔZ_{t+3}
	(1)	(2)	(3)
Divest	0.5657***	0.4356***	0.4212**
	(0.0029)	(0.0008)	(0.0142)
Observations	1,488	1,300	1,176
Pseudo R-squared	0.140	0.0824	0.0676
Control variables	YES	YES	YES
Panel B: Firms with managerial restructurings (MR)			
MR	-0.2427	-0.3961	-0.5858***
	(0.2374)	(0.2801)	(0.0070)
Observations	1,463	1,277	1,153
Pseudo R-squared	0.139	0.0819	0.0684
Control variables	YES	YES	YES
Panel C: Firms with operational restructurings (OR)			
OR	-0.4425***	-0.2328*	-0.0480
	(0.0000)	(0.0660)	(0.7413)
Observations	1,389	1,214	1,095
Pseudo R-squared	0.156	0.0897	0.0684
Control variables	YES	YES	YES
Panel D: Firms with financial restructurings (FR)			
FR	-0.0730	-0.1695	0.0229
	(0.5722)	(0.2535)	(0.8807)
Observations	1,421	1,242	1,123
Pseudo R-squared	0.147	0.0888	0.0703
Control variables	YES	YES	YES

Table 6 Comparison of the leverage and segment investment ratio for divesting vs. non-divesting firms during the financial crisis

This table shows the comparison of mean and median leverage and segment investment ratio. Panel A presents the leverage ratio of divesting firms, non-divesting firms, and firms with financial restructuring (FR) in year t-1 and year t+1. *Leverage* is measured by long-term debt plus short-term debt over the book value of total assets. Panel B presents the segment investment ratio of divesting firms, non-divesting firms, and firms with operational restructuring (OR) in year t-1 and year t+1. *Segment investment ratio* is computed as capital expenditures divided by sales using the data obtained from the Compustat Historical Segments file. For divesting firms, we only analyze retained segments to show how the investment policy has changed for the remaining divisions pre- and post-divestiture. The *p*-values are generated using Wilcoxon signed-rank (rank-sum) test.

Panel A Leverage ratio								
	Year t - 1			Year t + 1				
	N	Mean	Median	N	Mean	Median	Median difference	*p*-value
Divesting firms	574	0.264	0.244	530	0.267	0.238	-0.006	0.756
Non-divesting firms	5,798	0.187	0.133	5,307	0.204	0.153	0.020	0.000
Firms with FR	2,874	0.228	0.201	2,708	0.283	0.257	0.056	0.000
Panel B Segment investment ratio								
	Year t - 1			Year t + 1				
	N	Mean	Median	N	Mean	Median	Median difference	*p*-value
Divesting firms	98	0.081	0.034	98	0.076	0.032	-0.002	0.143
Non-divesting firms	4,250	0.125	0.039	3,924	0.092	0.031	-0.008	0.000
Firms with OR	4,989	0.127	0.036	4,621	0.101	0.029	-0.007	0.000