Fire Sales: reality or perception?

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Abstract

Focusing on acquisitions of divested assets (assets, subsidiaries, divisions) involving US nonfinancial public firms between 1997 and 2017, we investigate the existence of (asset) fire sales by studying the value creation from acquiring assets from distressed firms. Although, we started by finding that acquiring divested assets from distressed sellers create value (to the acquiring firm), suggesting the existence of fire sales, we also show that the results are driven by those deals in which the deal value is not disclosed at the announcement date and so the results suggest the value creation only occurs because investors believe fire sales exist. When the deal value is not disclosed, and contrarily to non-distressed acquisitions in which investors tend to penalize the acquiring company, in distressed acquisitions there is a statistically significant positive impact on CAR. Our results also suggest that the type of asset acquired, and the method of payment are important determinants on investors' perception of fire sales, as we only find a statistically significant positive impact on CAR for those acquisitions that investors may interpret as more likely to be done at fire-sale discounts (i.e., seller's non-core assets when the method of payment does not involve equity).

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1. Introduction

"Chesapeake Energy: Forced into fire sales? Chesapeake Energy must rapidly sell assets to keep itself afloat."

- Maureen Farrell[1], CNN Money, Apr. 20, 2012

"AMC Entertainment's Fire Sale Has Begun: AMC Entertainment (NYSE: AMC) isn't wasting any time shedding assets. (…) To help shore up its finances, which suffer from deep indebtedness in addition to that now significant net loss, AMC promised it would unload around $400 million worth of assets."

- Eric Volkman[2], The Motley Fool, Aug 12, 2017

According to the Trade-Off theory, there is an optimal amount of debt in the capital structure for each firm, which will depend on a trade-off between the benefits and the costs of debt financing. Included in these costs are the bankruptcy costs, which can be direct (e.g. administrative costs, legal fees) and indirect (e.g. lost sales, higher cost of credit, lost of bargaining power to the supplier, asset fire sales). However, contrarily to the direct, the indirect costs are not limited to firms that actually become bankrupt. Firms that have high probabilities of bankruptcy can still incur in these costs even if they do not end-up become bankrupt (Altman, 1984).

In this paper, we focus on one of the indirect costs of bankruptcy: asset fire sales by distressed firms. A fire sale is a sale of an asset below fundamental value due to the seller's financial distress condition (Shleifer and Vishny, 1992).

Despite the challenge of estimating fundamental value when investigating fire sales, several studies provide empirical evidence on its existence and show how they lead to losses for distressed sellers and gains for the acquirers (e.g., Pulvino (1998) for used aircraft; Chu (2016) for real estate owned properties; both Coval and Stanford (2007), and Edmans *et al.* (2012) for equities; Ellul *et al.* (2011) for corporate downgraded bonds).

However, for certain assets, it is not possible to accurately estimate fundamental values through hedonic regressions (e.g., Pulvino, 1998; Chu, 2016), nor to observe fundamental value ex-post through price reversals (e.g., Coval and Stafford, 2007; Edmans *et al.*, 2012).

[1] https://money.cnn.com/2012/04/20/markets/chesapeake-energy-fire-sale/index.htm
[2] https://www.fool.com/investing/2017/08/12/it-looks-like-amc-entertainments-fire-sale-has-beg.aspx

Consequently, for the heterogeneous real asset, the standard methodology is to analyse the short-term impact on seller's stock price at the asset sale announcement through event studies, but this last approach has found conflicting results. Brown *et al.* (1994) find that distressed firms that sell assets to repay debt experience negative returns, whereas Lang *et al.* (1995) find that distressed firms selling assets to repay debt lead them to positive returns. Also, both Lasfer *et al.* (1996) and Finlay *et al.* (2016) find positive returns for distressed UK firms.

Moreover, the sale announcement does not convey only information about the fire sale discount (Lang *et al.*, 1995). Fist, the amount received from the sale decreases the probability of bankruptcy (Lasfer *et al.*, 1996), thus it changes the distressed firm market value. And second, the impact on the seller's stock price only reflects the difference between the amount actually received and the one expected by the market. As such, even if the firm sells assets at fire-sale discounts, but the sale price is above to what the market was expecting, the sale announcement will be good news and a positive reaction should be expected.

However, one should always expect the impact of a fire sale on the stock price of the acquirer to lead to a positive reaction, given that it is buying assets below their fundamental value, and the higher the discount, the higher the positive return. Therefore, we investigate if asset fire sales exist by studying acquirers' short-term value creation from acquiring assets from distressed firms.

As we are investigating asset fire sales by studying the value creation from acquisitions, we rely on the M&A literature to develop our main hypothesis. Several studies provide evidence that, contrarily to acquisitions of public targets, acquisitions of unlisted targets (subsidiaries or stand-alone firms) lead to positive returns[3]. These positive returns have been attributed to unlisted targets being acquired at discount. Fuller *et al.* (2002) argue that because unlisted targets are less liquid, the acquirer is in a stronger bargaining position and, thus, it captures the discount. Officer (2007) suggests that acquisitions discounts for unlisted targets are the price paid by their owners to access an important source of liquidity and reports that unlisted targets (stand-alone and subsidiaries) were sold at an average discount of 15% to 30% when compared to acquisition multiples of comparable listed targets. Therefore, we

[3] See for example Chang (1998), Fuller *et al.* (2002), Moeller *et al.* (2004), Faccio *et al.* (2006), Jaffe *et al.* (2015). Rosenfeld (1984) and Sicherman and Pettway (1992).

expect positive returns for acquisitions of divested assets regardless of the financial condition of the seller.

However, previous studies also have shown that a weaker (stronger) bargaining condition affects negatively (positively) the prices obtained by the sellers, which affects positively (negatively) the wealth gains for the acquirers (e.g., Masulis and Nahata, 2011; Jindra and Moeller, 2015; Greene, 2017)[4]. Thus, we argue that if unlisted targets are typically acquired at discount, then for distressed firms the discount will be higher, because distressed sellers, due to its higher need for liquidity, are in a weaker bargaining position vis-à-vis non-distressed sellers, and as suggested by Officer (2007) they will be prepared to accept higher discounts compared to fair value of the assets, which will be represented in higher returns for the acquirer of the assets. As such, we expect higher returns for acquirers of divested assets from distressed sellers than the returns for acquirers of assets from non-distressed sellers, and if statistically higher there will be evidence of (asset) fire sales.

We focus on acquisitions of divested assets (assets, subsidiaries, divisions) between 1997 and 2017 involving US nonfinancial public firms, and including deals with undisclosed deal value and undisclosed method of payment at the deal announcement in order to investigate how the market reacts depending on in this lack of information. We exclude deals in which the selling firm is already in bankruptcy or in liquidation because we are interested in investigating asset fire sales as a mean to avoid bankruptcy and not asset fires sales in which the firm is required to sell assets because it is already bankrupt. Besides, the motivation/bargaining condition of a distressed firm is completely different from a bankrupt firm, as such including them would demand a separate analysis, otherwise, these deals could drive the results.

We find that, on average, acquisitions of assets from distressed sellers create significantly more value than acquisitions of assets from non-distressed sellers, which suggests that fire sales of heterogeneous real assets exist.

[4] Masulis and Nahata (2011) find a significantly lower median takeover premium received by firms backed by Venture Capital (VC) funds closer to liquidation than by those backed by VC funds further from liquidation, and a higher median CAR for acquirers of firms backed by VC funds closer to liquidation. Jindra and Moeller (2015) show that acquisitions of more financially independent targets are associated with higher takeover premia and lower acquirer announcement returns. Greene (2017) finds that the deregulation of US banking industry improved private firms' bargaining position, which led to an increase in targets valuation multiples and, therefore, a decrease in the acquirers' announcement returns.

However, dividing the sample based on whether the deal value is disclosed or not at the announcement date reveals that this result is driven by those deals in which the deal value was not disclosed. When the deal value is disclosed at the announcement date the difference between mean (median) CARs for acquisitions from distressed and non-distressed firms is not statistically significant, 2.19% (1.38%) vs. 2.00% (0.96%), respectively, but when the deal value is not disclosed the differences are statistically significant at 1% level, 3.58% (3.09%) vs. -0.13% (0.31%), respectively.

Our results also suggest that the type of asset acquired, and the method of payment are important determinants on the market perception of fire sales. We find a statistically significant positive impact on acquirer returns when acquiring assets from distressed sellers but limited to those acquisitions that the market may interpret as more likely to be a fire sale, i.e. acquisitions of seller's non-core assets when the method of payment does not involve equity.

The present work makes several contributions not only on fire sales but also on M&A literature. First, as Meier and Servaes (2015) and Oh (2018) we investigate asset fire sales by studying the value creation from acquisitions and provide evidence suggesting that from acquirers' perspective fire sales exist. However, Oh (2018) focus only in acquisitions of non-bankrupt public firms, and Meier and Servaes (2015) focus mainly on bankrupt/liquidating asset sellers, and despite also including distressed sellers in their sample, they do not make any distinction among them when analysing the returns as if the bargaining condition of a distressed seller is the same of a firm whose management is no longer fully in control of the decision making and is required to sell assets because it is already in bankruptcy or in liquidation. Also, none of them includes in their samples deals with undisclosed deal value.

Second, we analyse the effect of not disclosing the deal value in asset acquisitions from distressed sellers, Sicherman and Pettway (1992) focus on a weaker bargaining condition of the seller based on its credit downgrade, not on a distressed condition. In fact, by doing so we show that contrarily to previous work (e.g. Sicherman and Pettway, 1992; Martynova and Renneboog, 2011) the deal value non-disclosure is assessed differently by the market depending on the financial condition of the seller.

And third, we provide evidence on the wealth effects of acquiring assets from distressed sellers. In fact, contrarily to previous work (e.g. Moeller *et al.*, 2004; Slovin *et al.*, 2005; Faccio *et al.*, 2006) that does not distinguish the sample based on the financial condition

of the seller and finds higher significant returns when acquiring unlisted targets (stand-alone firms, subsidiaries only, and divested assets) with equity, we provide evidence that when the acquisition is from distressed sellers the returns are insignificant. Possibly, due to its necessity for funds, the market assumes that a distressed seller will sell the stake received rather sooner than a non-distressed seller, and thus it will not benefit from the future performance of the acquirer. Therefore, the positive signal conveyed by the acceptance of buyer's equity by the seller argued by Slovin *et al.* (2005) does not happen in a distressed acquisition.

The remainder of this paper is organized as follows. In section 2 we describe the sample and the methodology employed. Section 3 presents our results, and in section 4 we conclude.

2. Sample, Methodology, and Descriptive Statistics

2.1. Sample Construction

The sample is collected from Zephyr Bureau Van Dijk Database and is composed by completed asset acquisitions (assets, subsidiaries, divisions)[5] announced from January 1, 1997 to December 31, 2017, and between firms with a primary address in the United States of America[6]. We start in 1997 because is the first year available on Zephyr.

For a deal to be included in our sample, the following conditions have to be satisfied:

1) both sellers and acquirers are public listed firms at the time of the announcement and the assets sold/acquired unlisted;

2) at the announcement date[7] (event day 0) the acquirer has a minimum stock price of $2 and its stock is listed on AMEX, NASDAQ, or NYSE;

3) acquirer's adjusted stock prices are available on DataStream Database for the trading days for our longest event window around the announcement date [-10; +10];

4) the acquisition must be completed, the acquirer does not have any toehold position on the assets prior to the deal announcement, and it acquires 100% stake of the assets;

[5] In our analysis we do not make any distinction among acquisitions of assets, subsidiaries, or divisions, as such we use the term asset acquisition (or sale) to denote an acquisition (or sale) of assets, subsidiaries, or divisions.
[6] We only require both acquiring and selling firms to have as primary address the United States of America, as such we have in our sample a small number of cross-border acquisitions, because, given that our focus is on acquisitions of divested assets, the assets acquired can be foreign.
[7] When the deal is announced on a weekend or holiday, we use as announcement date the nearest weekday prior to the announcement.

5) none of the parties involved in a deal (acquirer/seller/assets) has a primary Standard Industry Classification (SIC) code within 6000-6999 (Financial industry)[8];

6) in each deal is involved only one seller and one acquirer;

7) the seller has to have accounting information on DataStream for at least the previous fiscal year to the deal announcement; and

8) an acquirer cannot have announced another deal (acquisition/divestiture) within our longest event window, except when the deals have the same announcement date and they are all acquisitions from the same seller. In that case, we add the deal values and consider them as one deal only.

Moreover, deals within the same firm; that resulted on reverse mergers; asset exchanges; and due to bankruptcy processes are excluded from our sample. We exclude deals in which the selling firm is already in bankruptcy or in liquidation because we are interested in investigating asset fire sales in order to avoid bankruptcy and not asset fires sales in which the firm is required to sell assets because it is already bankrupt.

We do not require a minimum deal value or a minimum relative size because since we are investigating fire sales the deal value may not represent the true value of the assets acquired. We also do not require the deal value or the method of payment to be disclosed at the announcement[9].

We require the sellers to be public to guarantee the reliability of our distress definition as it is based on the financial characteristics of the seller. Having more than one seller would lead to the problem of defining the deal as distressed or non-distressed, therefore we require only one seller per deal. Also, given that the percentage of stake acquired may influence the returns and Zephyr database does not provide information about each stake acquired when there are multiple acquirers, we require only one acquirer per deal.

As Fuller *et al.* (2002) and Masulis and Nahata (2011), we require a minimum stock price of $2 to limit the bid-ask bias[10]. We exclude clustered deals within our longest event window because we cannot isolate the announcement effects of each deal. We require no toehold positions on the assets acquired in order to try to minimize the anticipatory effects of the acquisition and we exclude partial acquisitions because the economic benefits of partial

[8] The exclusion of utilities does not affect our main conclusions.

[9] The deal value (or the method of payment) is considered to have not been disclosed at the announcement date when it is not available on Zephyr database. According to Zephyr staff, all publicly available information at the time of the announcement date is used to report the information about each deal.

[10] As with Masulis and Nahata (2011) imposing a minimum of $5 does not change our results.

acquisitions are more difficult to determine due to the high level of market anticipation (Masulis and Nahata, 2011).

To assemble our dataset, we collect the deal information from Zephyr, namely parties involved, their country code, SIC code, the deal announcement date, method of payment, deal value[11]; all firms' accounting and market data from DataStream; and the Commercial and Industrial (C&I) spread from the Board of Governors of the Federal Reserve System website[12]. Missing data was searched and collected from the firm's electronic filings on the Securities Exchange Commission's (SEC) EDGAR database[13]. We also use this last database to verify the exchange where acquirers' stock was listed at the deal announcement.

After applying all the criteria our final sample yielded 1,115 deals.

2.2. Methodology

2.2.1. Event study

We estimate abnormal returns using the Market-Adjusted Model. Brown and Warner (1985) show that for short-window event studies, weighing the market return by the firm's stock beta does not significantly improve the power of the test. As such, as Fuller *et al.* (2002), as Faccio *et al.* (2006), or as Masulis and Nahata (2011), among others, we estimate abnormal returns by using the market-adjusted model (1), where R_{it} is the return of the acquiring firm on deal i and R_{mt} is the S&P 500 index return.

$$AR_{it} = R_{it} - R_{mt} \tag{1}$$

2.2.2. Multivariate Analysis

To determine the impact of sellers' distress condition, we perform a multivariate analysis of acquirer returns. We also include variables that prior studies found to influence acquirer returns. Our main model is defined by equation (2).

$$\begin{aligned} CAR_i = {} & \beta_0 + \beta_1 Distress_i + \beta_2 Equity_i + \beta_3 CoreAssets_i + \beta_4 RelatedIndustry_i \\ & + \beta_5 RelativeSize_i + \beta_6 Size_i + \beta_7 CrossBorder_i + \beta_7 SmallSeller_i \\ & + \beta_8 C\&ISpread_i + \varepsilon_i \end{aligned} \tag{2}$$

[11] When the deal value is not available in US dollars, we use the exchange rate at the announcement date.
[12] https://www.federalreserve.gov/releases/e2/e2chart.html
[13] https://www.sec.gov/edgar/searchedgar/companysearch.html

The variables definition as well as their expected relationship with CAR, the dependent variable, are as follows[14].

CAR_i is the cumulative abnormal return of the acquirer surrounding the announcement of deal i.

$Distress_i$ is a zero-one dummy variable, one represents an acquisition of assets from a distressed seller, zero otherwise. We follow John *et al.* (1992), Lang *et al.* (1995), Bhagat *et al.* (2005), Ang and Mauck (2011), and Finlay *et al.* (2016), and define firms in distress as those with negative earnings on the previous fiscal year to the sale announcement[15]. Previous studies analysing acquirer returns show a positive coefficient for variables representing a weakened bargaining position of the seller (e.g. Sicherman and Pettway, 1992; Masulis and Nahata, 2011; Greene, 2017), which is the case of a firm in distress. As such, we expect a positive effect.

When the method of payment is available on Zephyr database we group it into two different categories: all-cash and equity. We follow Fuller *et al.*'s (2002) approach to define methods of payment that are all-cash and those that involve equity[16]. All-cash includes full payments of any combination of cash, debt, and liabilities; and equity includes payments with any element of equity. $Equity_i$ is then a zero-one dummy variable equal to one if the method of payment involves any form of equity, and zero otherwise. Contrary to what is usually observed in acquisitions of public firms, previous studies have shown that in acquisitions of unlisted subsidiaries and divested assets when the method of payment involves equity, acquirers experience higher returns than those that pay with all-cash (e.g. Moeller *et al.*, 2004; Slovin *et al.*, 2005; Faccio *et al.*, 2006). Thus, we expect a positive sign.

$CoreAssets_i$ is a zero-one dummy variable equal to one if the deal involves the acquisition of seller's core-assets, and zero otherwise. We follow Fuller *et al.* (2002) and define the assets sold as core assets if they share the same 3-digit SIC-code with the seller[17], and as

[14] See Table 1 for a summary of the variables definition.
[15] We obtain similar results when using other definitions of firms in distress. Among them: 1) including additionally selling firms with two years of negative earnings in the previous three years to the sale announcement; 2) requiring additionally for the selling firm to have lower cash flows than short-term debt (Whitaker, 1999); 3) having negative earnings in the previous two years to the sale announcement (Bhagat *et al.*, 2005; Ang and Mauck, 2011); and 4) having low coverage ratios in the previous year to the sale announcement (e.g. Lang *et al.*, 1995; Pulvino, 1998; Bhagat *et al.*, 2005).
[16] Fuller *et al.* (2002) group the methods of payment into three different categories: all-cash; all-stock; and mixed. Mixed is defined as any combination of cash and stock, and in which is included methods of payment classified by the database as "other", we follow the same approach.
[17] Fuller *et al.* (2002) use the terms "diversified seller" when the subsidiary sold does not share the 3-digit SIC code with the selling firm, and "nondiversified seller" otherwise.

non-core assets otherwise. Fuller *et al.* (2002) find higher returns for acquisitions of non-core assets, therefore, we expect a negative sign.

$RelatedIndustry_i$ is a zero-one dummy variable equal to one if the assets acquired are from a related industry, zero otherwise. As Faccio *et al.* (2006), we define an acquisition as related if the acquirer shares the same 3-digit SIC code with the assets acquired and as unrelated acquisition otherwise[18]. Sicherman and Pettway (1987) show that the acquisition of divested assets from related industries leads to higher returns, so we expect a positive sign.

$RelativeSize_i$ is the ratio between deal value and the acquirer's size. When the deal value[19] is not disclosed at the announcement, we make the assumption that investors are able to infer the relative deal size given that when the deal is announced it is provided information of which assets are going to be acquired. As such, for the deals that we are able to find the amount paid, even if only disclosed after the announcement, we use it as a proxy. It has been shown that acquirers of unlisted targets experience higher returns as the relative deal size increases (e.g. Fuller *et al.*, 2002; Slovin *et al.*, 2005; Masulis and Nahata, 2011), thus, a positive effect is expected.

$Size_i$ is the logarithm of the acquirer's size. As Masulis and Nahata (2011), we define acquirer size as the market value of equity one month before the deal announcement date. Moeller *et al.* (2004) provide evidence that the acquirer's CAR is inversely related to its size, as such we expect a negative relationship.

We also control for other factors that may influence acquirer returns. As Fuller *et al.* (2002) and Faccio *et al.* (2006), we account for the possibility that cross-border acquisitions may have a different effect than domestic ones. We define as cross-border acquisition when the assets acquired do not have the US country code on the Zephyr database. Thus, $CrossBorder_i$ is a zero-one dummy variable, one if the acquisition is cross-border, zero otherwise.

Larger firms have better access to Capital Markets (Gilchrist and Himmelberg, 1995), which may provide them with a stronger bargaining position in the negotiation process vis-à-vis smaller firms, however, asset sales by larger firms may be subject to greater discounts if bidding firms are unable to absorb larger asset sales (Finlay *et al.*, 2016), thus, we control for the seller's size. As Finlay *et al.* (2016), we define large firms as those larger than the full

[18] Faccio *et al.* (2006) use the term "within acquisition" when the acquisition is in a related industry.
[19] We take the deal value from Zephyr database. Zephyr describes deal value as "consideration paid for the actual stake acquired".

sample median and as small otherwise. We make the same assumption as with the acquirer's size and define size as the market value of equity one month before the deal announcement[20]. $SmallSeller_i$ is a zero-one dummy variable, one if the asset seller is small, zero otherwise.

$C\&ISpread_i$ is the spread between the average rate charged for commercial and industrial loans and the fed funds rate in the previous quarter to the announcement date reported in the Federal Reserve's Survey of Terms of Business Lending. Harford (2005) argues that the C&I spread is a proxy for the overall liquidity or the ease of financing in the economy and that it affects the market for corporate control[21].

We also include in all our models dummy variables that control for acquired assets industry fixed effects and deal announcement year fixed effects.

2.3. Descriptive Statistics

Panel A of Table 2 shows the deals distribution by year. Of the total 1,115 deals, 381 (34%) deals are acquisitions of assets from distressed sellers (distressed acquisitions) and 734 (66%) deals are acquisitions from non-distressed sellers (non-distressed acquisitions).

The deals distribution by year is quite balanced, the year with the highest number of deals is 2001 and it represents 9.1% of our sample. In 1997, 1998, and 1999 there is a small number of deals, but except for these years, 2017 is the year with the lowest number of deals, representing 2% of the sample. Considering distressed and non-distressed deals, their distribution is similar to the full sample and quite balanced, apart for some exceptions. In 2003 and 2009, there is a larger proportion of distressed than non-distressed, and we do not have any distressed acquisition in 1997 and 1998.

Panel B (Table 2) shows the deals distribution by the industry of the assets acquired. In our sample, 42.3% of the deals are in the Manufacturing industry, 23.5% in Services, 17.5% in Transportation, Communication, Electric, Gas and Sanitary Services (Utilities), 9.6% in Retail and Wholesale, 6.7% in Mining and Construction, and 0.4% in Agriculture and Public Administration (Other). In terms of distressed and non-distressed acquisitions,

[20] Instead of a dummy variable we could have used a similar variable to acquirer's size, i.e. the logarithm of seller's market value. However, the correlation between our distress indicator and the logarithm of seller's market value is quite higher than with the small seller indicator, therefore we opt to use this measure to avoid multicollinearity issues in our regression analysis.

[21] In unreported results, alternatively to the C&I spread we used Schlingemann *et al.* (2002)'s liquidity index and obtained similar results. However, using the liquidity index leads us to lose a larger number of observations, thus we opt for the C&I spread.

they have similar distributions to the full sample, there are a slightly larger fraction of distressed acquisitions in the Services industry, compensated by a smaller one in the Utilities.

Table 3 provides the descriptive statistics for our sample[22]. Sellers are larger than acquirers, the mean (median) seller size is $21.9 billion ($3 billion), while the mean (median) acquirer size is $11.3 billion ($1.7 billion). Considering the deal value and the relative deal size[23], the mean (median) deal size is $373 million ($67 million), the mean (median) relative deal size is 18.3% (4.5%). In regard to the type of asset sold, in 59.1% of the sample the assets sold are non-core. The majority of assets acquired are from an unrelated industry, 56.1%; and only 9.4% of the assets acquired are from a foreign country.

Out of the 653 deals in which the method of payment was disclosed, 84% are all-cash deals, which is slightly lower than the 87% of Faccio *et al.* (2006), but higher than the 75% of Fuller *et al.* (2002) also for subsidiaries and the 70% of Slovin *et al.* (2005) for divested assets; the remaining 16% involve equity as a method of payment. In 287 (25.7%) deals the deal value was not disclosed and in 462 (41.4%) the method of payment was not disclosed. In regard to the latter, by searching on firm's SEC filings we were able to find the method of payment of 322 (69.7%) deals: 96.9% were all-cash. Thus, even when the method of payment is not disclosed the great majority end-up being paid with all-cash.

Table 4 exhibits the descriptive statistics for distressed and non-distressed acquisitions. The firms involved in non-distressed deals are on average (and at the median) larger than the firms involved in distressed deals. The mean (median) acquirer size for distressed is $8.8 billion ($1.3 billion) and for non-distressed is $12.5 billion ($2 billion), the difference is significant at 10% (1%) level.

Non-distressed sellers are significantly larger than their distressed counterparts (p-value<0.01), which was expected. Whitaker (1999) finds a median industry-adjusted decline in the firm's market value of equity in the first two years of distress of 46.76%. Also, as expected, similarly to Lasfer *et al.* (1996), distressed sellers rely more on debt financing than non-distressed sellers, both means and medians are statistically different at 1% level.

The mean (median) deal value is statistically larger for non-distressed acquisitions, however, the mean relative deal size is insignificantly higher for distressed acquisitions,

[22] Each deal is considered independently. For example, according to our proxy for size the larger firm in our sample is involved in eleven deals as a seller and in three deals as an acquirer. Accordingly, as a seller its size is measured eleven times and three times as an acquirer, and all of them are then considered.

[23] In these two variables are included 147 deal values that we were able to find on firm's SEC filings.

mainly driven by the smaller size of acquirers in distressed deals. The median relative deal is significantly higher for non-distressed acquisitions.

Considering the type of assets being sold, both samples have the majority of deals as acquisitions of seller's non-core assets. However, there are a larger fraction of core-assets sold by distressed firms, the difference is statistically significant at 5% level. The results suggest that distressed sellers are more likely to sell core-assets than non-distressed sellers.

In terms of industry relatedness of the acquisition, both samples have the majority of deals as acquisitions of assets from unrelated industries. In regard to cross-border, there are a larger fraction of deals in the non-distressed than in the distressed sample (10.3% and 7.3%, respectively), and the difference is statistically significant at 10%.

In terms of deal value non-disclosure at the announcement, there are a significantly higher fraction of deals that did not disclose the deal value in the non-distressed sample.

Considering the method of payment, there are a larger fraction of deals with an undisclosed method of payment in the non-distressed sample (a difference of 10 p.p.) that drives slightly the results making the fractions for distressed larger. However, out of the deals in which the method of payment was disclosed, the fraction of deals by the method of payment is basically the same: around 84% for all-cash for both. When we consider the methods of payment that we were able to find on SEC's fillings, the fraction of deals remains quite similar to one another: all-cash 87.7% for distressed and 88.6% for non-distressed. By taking into consideration that is the higher percentage of undisclosed methods of payment in the non-distressed sample that makes the results statistically different, the results suggest that both types of acquisitions are as equally likely to be financed by all-cash.

3. Results

3.1. CARs for the Full Sample, Distressed, and Non-Distressed acquisitions

3.1.1. Univariate Analysis

The results from the event study methodology are presented in Table 5. Consistent with previous studies (e.g. Chang, 1998; Fuller *et al.*, 2002; Faccio *et al.*, 2006) we find that on average acquisitions of unlisted targets create value, the CARs are positive and significant at 1% level for all event windows: [-10;+10], [-10;+1], and [-1;+1]. The results for the full sample, independently of the event window used, are higher than the 0.5% reported by

Sicherman and Pettway (1992), but smaller than Rosenfeld's (1984) 2.1% or Moeller *et al.*'s (2004) 2.0%.

Similarly to the results for the full sample, the CARs for distressed and non-distressed acquisitions, for each event window, are on average positive and significant (p-value<0.01).

The results show that, for each of the event windows considered, the mean CAR is higher for distressed acquisitions than for non-distressed, which suggests that acquisitions of assets from distressed sellers create more value than acquisitions of assets from non-distressed sellers. However, we can only find statistically significant differences between distressed and non-distressed acquisitions for our middle event window (Panel B). The difference between the mean CARs is statistically significant at 10% level, and between the median CARs is also statistically significant, but at 5% level. As such, our hypothesis that acquisitions of assets from distressed sellers lead to higher abnormal returns for the acquiring firms than acquisitions of assets from non-distressed sellers is supported by the results for event window [-10; +1].

On figure 1 the mean CARs for the longest event window can be observed. The mean CARs for the distressed and the non-distressed samples show different behaviours both in the preceding as in the following days to the announcement day (event day 0).

In the preceding days to the announcement day, namely [-10; -2], we find that for non-distressed acquisitions the pre-announcement CAR is positive but insignificant while for distressed deals, the mean CAR for these preceding days is positive and statistically significant at 10% level (the median CAR is statistically significant at 5% level). The difference between the median CARs of distressed and non-distressed samples is significant at 10% level[24].

The results suggest different anticipatory behaviours by the market depending on whether it is a distressed or a non-distressed acquisition. It might be that for the distressed sample there was more leakage of information or rumours concerning the announcement of the acquisition of assets from distressed sellers than for the acquisition of assets from non-distressed sellers.

3.1.2. Multivariate Analysis – The effect of Distress

In this section, we test the results from the univariate analysis in a multivariate setting.

[24] These results can be found in Table 6.

Given that, on average, distressed yield higher returns than non-distressed acquisitions and the abnormal returns are statistically different for the event window [-10;+1], and that there is a statistically significant positive pre-announcement stock run-up for distressed while for non-distressed is insignificant (the difference between medians is significant at 5% level), we focus on event window [-10; +1].

Table 7 displays the regressions' results. In regression 1, we only include our explanatory variable – Distress – and the intercept, and in regression 2 we use model (2), which was introduced in sub-section 2.2.2..

Consistent with the results of the univariate analysis, in regression 1, Distress is positive and significant at 10% level. In regression 2, with the inclusion of the control variables, as expected, the Distress coefficient is positive, however, it becomes insignificant.

Regarding the control variables, the evidence confirms the findings of Moeller *et al.* (2004) and suggests that larger acquirers experience lower returns, the variable Size has a negative and statistically significant coefficient (p-value<0.01). Also in line with previous work (e.g., Fuller *et al.*, 2002; Slovin *et al.*, 2005; Masulis and Nahata, 2011) we find that the relative deal size in acquisitions of unlisted targets has a positive and significant effect on CAR (p-value<0.01), suggesting that as the relative size of the deal increases so do acquirer returns. Finally, we also find a positive and significant coefficient (p-value<0.10) for Related Industry, which suggest higher returns in acquisitions of assets from related industries.

3.2. Deal Value (Un)Disclosed

The empirical evidence on both asset sales[25] and acquisitions of divested assets consistently show that these types of operations create value. However, these studies typically require a minimum deal value or relative deal size that has been disclosed at the announcement date.

When studies do not make such type of requirement, overall, they report that when the deal value is not disclosed the returns are insignificant and statistically lower than when the deal value is disclosed at the announcement date. Klein (1986) finds that when the deal value is not disclosed the asset seller's returns are not only insignificant but also statistically lower than when the deal value is disclosed.

[25] See, for example, Rosenfeld (1984), Hite *et al.* (1987), John and Ofek (1995), Lang. *et al.* (1995).

Sicherman and Pettway (1992) find that acquirers of divested assets experience positive and significant returns when the deal value is disclosed, and positive insignificant returns when not disclosed, the difference is significant at 10% level.

Martynova and Renneboog (2011) also find that bidders in takeovers in Continental Europe and the UK experience insignificant returns when the deal value (and/or the method of payment) was undisclosed. Martynova and Renneboog (2011) suggest that the lack of information concerning the deal value makes investors pessimistic about the expected synergy value accruing to the acquirer, which is consistent with Milgrom's (1981) model in which, given incomplete information, not disclosing all information leads the uninformed to rationally expect this information to be unfavourable. As such, we study how the disclosure and non-disclosure of deal value affect the CARs and whether it is different when it is a distressed or a non-distressed acquisition while expecting a less favourable reaction for acquisitions with undisclosed deal values.

3.2.1. Univariate Analysis

Consistent with previous work, the results (displayed in Table 8) show that for the full sample the returns are higher when the deal value is disclosed, although not statistically different from when undisclosed. However, for non-distressed acquisitions, our results are consistent with previous literature (Sicherman and Pettway, 1992) since the returns are significant (p-value<0.01) when the deal value is disclosed and insignificant when not disclosed. Surprisingly, for distressed acquisitions, the returns are in both cases highly significant (p-value<0.01), and even higher (although not statistically different) when the deal value is not disclosed. Despite the deal value not being disclosed at the announcement date, the market still assesses these distressed acquisitions as a value created deal.

According to Milgrom (1981)'s model, given incomplete information, not disclosing all information leads the uninformed to rationally expect this information to be unfavourable. Thus, not disclosing at the announcement date the amount paid for the assets would be interpreted by the market as the acquirer overpaying for the assets.

Our results are consistent with not disclosing the deal value being interpreted as unfavourable information for the acquirer but only when the seller is not in distress. When the seller is in distress, disclose or not disclose the deal value does not matter, it may be even interpreted as favourable information not disclose the deal value. Given that the fire sale discount analysis relies on acquiring CARs difference between distressed and non-distressed

acquisitions, this result suggests that our initial conclusion that fire sale discount exist is driven exclusively by those deals in which the deal value is not disclosed.

When the deal value is disclosed, the returns for distressed and non-distressed acquisitions are both highly significant (p-value<0.01) but not statistically different from each other[26]. When the deal value is not disclosed both mean and median CARs are insignificant (-0.13% and 0.31%, respectively) for non-distressed acquisitions while they are both positive and significant at 1% level (3.58% and 3.09%, respectively) for distressed acquisitions.

Therefore, the results suggest that fire sales exist because investors believe that they exist, by assessing the deals in which the deal value is not disclosed at the announcement date, and only those, as acquisitions at fire-sale discounts.

3.2.2. Multivariate Analysis – The effect of Deal Value undisclosed

In order to test the results from the univariate analysis, which indicate that the deal value non-disclosure is assessed differently by the market depending on whether the acquisition of assets is from a distressed or a non-distressed seller, we perform a multivariate analysis using model (3).

$$\begin{aligned} CAR_i = {} & \beta_0 + \beta_1 DealValueUndisclosed_i + \beta_2 DealValueUndisclosed_i \\ & * Distress_i \\ & + \beta_3 Equity_i + \beta_4 CoreAssets_i + \beta_5 RelatedIndustry_i + \beta_6 Size_i \\ & + \beta_7 CrossBorder_i + \beta_8 SmallSeller_i + \beta_9 C\&ISpread_i + \varepsilon_i \end{aligned} \quad (3)$$

Except for RelativeSize[27], we use the same control variables as in the model (2), which was introduced in section 2.2.2.. As explanatory variables, we include $DealValueUndisclosed_i$ that is an indicator equal to one if the deal value was not disclosed at the announcement and zero otherwise, and $DealValueUndisclosed_i * Distress_i$ which is an interaction term between the deal value undisclosed indicator and the Distress variable, which is equal to one if the acquisition is from a distressed seller. The interaction term captures the additional effect of the deal value non-disclosure when the acquisition is from a distressed seller. Therefore, the total impact for non-distressed acquisitions is given by the

[26] With the exception of the difference between the median CAR of distressed acquisitions with an undisclosed deal value is statistically higher than non-distressed acquisitions with a disclosed deal value (p-value<0.07).
[27] We excluded the variable RelativeSize because its inclusion would lead to the exclusion of 49% (140 out of 287) of the deals with undisclosed deal value from this multivariate analysis.

coefficient of DealValueUndisclosed, while for distressed acquisitions the total impact is given by the sum of both coefficients.

Given that previous studies (e.g., Sicherman and Pettway, 1992; Martynova and Renneboog, 2011) have shown that the deal value non-disclosure affects negatively acquirer returns, for DealValueUndisclosed we expect a negative effect. For the interaction term if indeed the acquisition is seen positively for distressed acquisitions as the univariate analysis suggests, then there will be a positive effect.

Table 9 shows the results for the regressions of the effect of deal value non-disclosure on acquirer returns. There are three regressions, and in terms of setting, the main difference among them is the dependent variable. In regression 1 we use the CARs for event window [-10; +1], in regression 2 for [-1; +1], and in regression 3 for [-10; +10].

The results of the univariate analysis are confirmed. We find evidence that the deal value non-disclosure has a statistically significant negative impact suggesting that not disclosing the deal value leads to lower returns, which is consistent with previous studies. In regression 1, the coefficient of DealValueUndisclosed is negative and significant at 1% level. The interaction DealValueUndisclosed*Distress is also significant (p-value<0.02), but with a positive coefficient. We interpret these results as evidence that indeed the market assesses differently not disclosing the deal value depending on the seller's financial condition[28].

The lack of information about the deal value makes investors pessimist about the amount paid when the acquisition is from a non-distressed seller, whereas when the acquisition is from a distressed seller it makes no difference or even optimist since the total effect is positive.

In regard to the results for regression 2 and 3 that have as the dependent variable the CARs for the event window [-1; +1] and for the event window [-10; +10], respectively. Our results provide evidence that the effect is not limited to the event window [-10; +1], in both regressions, the coefficients of the explanatory variables maintain their signs and they continue to be statistically significant (although at different levels for regression 3). The total effect for acquisitions from distressed sellers remains positive.

[28] Given that we are focusing on the different reactions when the deal value is not disclosed and that Table 8 shows that the returns when the deal value is disclosed are not statistically different depending on whether it is a distressed or a non-distressed acquisition we did not include a stand-alone variable Distress. However, in unreported results we also made its inclusion, its coefficient is insignificant and overall we obtained similar results for the explanatory variables. We also tested regressions focusing only on the deals with undisclosed deal value and obtained similar results.

3.3. Method of Payment and Type of Asset Sold

3.3.1. Method of Payment

Contrarily to what has been observed in acquisitions of public targets, in acquisitions of unlisted targets (stand-alone firms, subsidiaries only, and divested assets) it has been found that when the method of payment involves equity the returns are higher than those with all-cash (e.g., Chang 1998; Moeller *et al.*, 2004; Slovin *et al.*, 2005; Faccio *et al.*, 2006). However, distressed sellers are more likely to sell assets for cash and the need for liquidity may make them accept higher price discounts (Shleifer and Vishny, 1992; Officer, 2007), therefore, we analyse if the method of payment influences the returns depending on whether it is a distressed or a non-distressed acquisition.

In our analysis, we also include undisclosed methods of payment. However, given the results in the previous sub-section considering the deal value non-disclosure, we divide the undisclosed method of payment category into two distinct ones: undisclosed method of payment and undisclosed terms. The undisclosed method of payment represents deals in which only the method of payment is not disclosed, and undisclosed terms represent deals in which both method of payment and deal value are not disclosed. As such, the analysis is divided into four different categories of method of payment.

Table 10 exhibits the CARs according to the method of payment. For the full sample, similarly to Martynova and Renneboog (2011), we find insignificant mean returns for acquisitions with undisclosed terms and as in their study, it is this set of acquisitions that yields the lowest returns (0.76%). For the remaining methods of payments we find significant positive returns regardless the method of payment, which is consistent with Moeller *et al.* (2004) and Faccio *et al.* (2006) results for subsidiaries.

In line with Slovin *et al.* (2005), we find that acquisitions of divested assets with equity yield the highest returns, the mean CAR for acquisitions involving equity is 3.22%, in theirs is 9.77%. Considering all-cash acquisitions, the mean CAR for their sample is negative but insignificant (-0.30%), for ours is positive and highly significant (p-value<0.01), 1.85%.

The non-disclosure of the method of payment only does not seem to influence as negatively the returns as when the deal value is not disclosed, since the mean CAR is 2.10% and highly significant (p-value<0.01). Given that acquisitions of divested assets are typically

acquired with all-cash as the method of payment[29], the market may interpret this type of acquisitions as such. Indeed, not only the range of returns is quite similar, but also the great majority was in fact paid in all-cash[30].

The results for non-distressed are in line with the full sample and consequently with previous work, however, the same is not observed for distressed acquisitions.

We find the highest returns in distressed acquisitions for deals with undisclosed terms, which are statistically different from non-distressed acquisitions (p-value<0.01)[31]; and the lowest returns for distressed acquisitions when the method of payment involves equity. For this last set of acquisitions, the returns are not only insignificantly different from zero[32], but also the mean CAR is statistically different from non-distressed at 10% level. Considering all-cash and when the method of payment only is not disclosed, despite not statistically different, the mean CARs are around 1 p.p. higher for distressed acquisitions.

The results suggest that the method of payment plays an important role on the market interpretation of fire sale discounts and are consistent with the argument that distressed sellers are more likely to sell assets for cash and the need for liquidity would make them accept higher price discounts (Shleifer and Vishny, 1992; Officer, 2007).

In distressed acquisitions, when the method of payment is announced to be all-cash the mean CAR is 2.51% (p-value<0.01) and when not disclosed the mean CAR is also positive and highly significant (2.77%, p-value<0.01), possibly because the market assumes that the acquisition is going to be financed by all-cash. However, when the method of payment announced involves equity the mean CAR in distressed acquisitions is insignificant (-0.30%). Possibly, the market interprets the willingness of a distressed seller to accept equity as a signal that the firm either is able to obtain a larger amount of funds by monetizing the stake received, despite the transaction costs, than if the method of payment was all-cash, and therefore a fire sale becomes less likely.

Also, according to Slovin *et al.* (2005), the willingness of a seller to accept equity signals positive private information about the value of the acquirer and the assets acquired, because

[29] In Fuller *et al.* (2002) 75% of the subsidiary sample was acquired with all-cash, in Faccio *et al.* (2006) 87%, and in Officer, 2007 94%. Slovin *et al.* (2005) report 70% for divested assets.
[30] Out of the 208 deals, we were able to find on firm's SEC fillings 191 (91.8%), 186 (97.4%) were paid in all-cash.
[31] This result is mainly driven by the deal value non-disclosure, despite not being the same sub-samples it is above 80% of the deals.
[32] The CARs remain insignificant if we exclude the methods of payment classified as "other".

the seller becomes exposed to the risks of the acquirer's value and future performance. Consequently, the seller will only accept the buyer's equity as a mean of payment when it can generate more favourable future returns with it than with all-cash (Slovin *et al.,* 2005). However, in distressed acquisitions this positive signal conveyed by the acceptance of buyer's equity may not happen, because, due to its necessity for funds, the market may assume that a distressed firm will sell the stake received rather sooner than a non-distressed. And as such, it will not benefit from the acquirer's future performance, which could explain the different reactions in distressed and non-distressed acquisitions when the method of payment involves equity. A third explanation would be that the willingness of a seller to accept equity can be seen as a sign that the distressed company is not so distressed as it would be if only accepted all-cash payment and so a fire sale becomes less likely.

Overall, the results suggest that in distressed acquisitions more obscure deals (i.e. deals with undisclosed terms) lead to higher positive returns, the less is disclosed about the distressed deal the better the reaction; and that the perception of fire sales is more likely when acquiring assets from distressed sellers as long the method of payment does not involve equity. As such, when the deal is announced the market reacts according to the method of payment.

3.3.2. Type of Asset Sold

According to the literature a firm may sell assets for other reasons than to raise funds (*the financing hypothesis*). According to Hite *et al.* (1987), a firm sells assets to those that can manage them more efficiently (*the efficiency hypothesis*). Due to the buyer's ability to generate cash flows from the assets, it will value the assets highly and therefore will be willing to pay a high premium them. John and Ofek (1995) propose that firms engage in asset sales to increase the focus on their operations (*the focusing hypothesis*), by selling unrelated assets to its core business the firm is able to eliminate negative synergies and to gain with the sale due to a better performance of the remaining assets. Fuller *et al.* (2002) suggest that *the focusing hypothesis* could imply that a firm may be willing to sell non-core assets at relatively lower prices than core assets. Also, Schlingemann *et al.* (2002) show that firms try to avoid asset sales in illiquid markets (*the liquidity hypothesis*) which implies that if the firm is not in distress it may postpone the asset sale. They also show that firms are more likely to sell core assets when the market is relatively more liquid, meaning that the assets can be sold faster without

a discount. Therefore, we analyse if the type of asset being sold influences the returns depending on whether it is a distressed or a non-distressed acquisition.

Table 11 shows the results according to the type of asset being sold: core and non-core. As in Fuller *et al.* (2002) for subsidiaries, the CARs for the full sample are not statistically different, but contrarily to their results we find a higher mean CAR for acquisitions of core assets: 2.35% for acquisitions of core and 1.37% for non-core assets (p-value<0.01, for both).

For distressed acquisitions, and contrarily to non-distressed, we find higher CARs for acquisitions of sellers' non-core assets, the median CARs are statistically different at 10% level, suggesting that distressed firms sell non-core assets at relatively lower prices than core assets. According to *the liquidity hypothesis*, firms try to avoid asset sales in illiquid markets, which implies that if the firm has financial flexibility (i.e. it is not in distress) it may postpone the asset sale. Therefore, when a non-distressed firm decides to sell non-core assets to focus on its core business (*the focusing hypothesis*) it may be able to postpone the sale until is able to find an acquirer willing to pay a high price for them. Distressed firms, however, may not have this financial flexibility to postpone the asset sale, also Schlingemann *et al.* (2002) find that firms are more likely to sell core assets when the market is relatively more liquid. Thus, to ease its financial situation a distressed firm may have to sell non-core assets at relatively lower prices than core assets, which could explain the significantly higher median returns in distressed acquisitions of seller's non-core assets.

Our results suggest that the market reacts differently when the acquisition of non-core assets is from a distressed or from a non-distressed seller[33] and are consistent with the view that only distressed firms sell non-core assets at lower prices. Possibly, given that a distressed seller may not have the financial flexibility of a non-distressed seller to postpone the sale of its non-core assets, the market may interpret this type of acquisition as more likely to be done at fire-sale discounts, and, as such, assesses them as more value creating.

[33] For acquisitions of seller's non-core assets the mean (median) CARs is statistically higher for distressed acquisitions at 5% (1%) level, for acquisitions of seller's core assets the CARs are not statistically different from each other. However, in unreported results when we focus on deals with undisclosed deal value only, for both acquisitions of core and non-core assets the differences between CARs are statistically higher for distressed deals.

3.3.3. Multivariate Analysis – The effect of the Method of Payment and the Type of Asset Sold

The results from the previous univariate analyses suggest that the market reacts differently depending on whether it is a distressed or a non-distressed deal in acquisitions of seller's non-core assets, and when the method of payment announced involves equity. As such, in our regression analysis, we take into consideration these possible differences.

For each regression, we use model (2), introduced in sub-section 2.2.2., as our base model, although with some variations. In all regressions, we control for the type of asset being sold, but in the second and third regressions of each panel we also include an interaction term to isolate the effect of the type of asset being sold (regressions 2, 4, and 5). In Panel A we exclude deals in which the method of payment announced involves equity, and in Panel B we include all deals.

Table 12 (Panels A and B) displays the regressions' results. In Panel A, focusing only in deals in which the method of payment announced does not involve equity, the coefficient of Distress is positive and significant in both regressions. In regression 1, Distress is significant at 5% level. In regression 2, due to the inclusion of the interaction Distress*CoreAssets, the effect on CAR of acquiring distressed seller's non-core assets is given by the variable Distress, its coefficient increases and becomes significant at 1% level. For the interaction Distress*CoreAssets, we find a significant negative coefficient (p-value<0.05), which is higher than the coefficient of the variable Distress. For this panel of deals, given that the coefficient of Distress*CoreAssets overcomes the coefficient of Distress, the results suggest that acquirers experience higher returns only when acquiring distressed sellers' non-core assets.

Considering Panel B, in regression 3 due to the interaction term Distress*Equity, the effect of acquiring assets from a distressed seller when the method of payment does not involve equity is represented by the variable Distress. Consistent with regression 1, the coefficient of Distress is positive and significant (p-value<0.06). In regard to Distress*Equity, we find a significant negative effect on CAR when the method of payment used in an acquisition of assets from a distressed seller involves equity (p-value<0.05), and its coefficient is higher than the coefficient of the variable Distress. This suggests lower returns in acquisitions from distressed sellers when equity is used as the method of payment.

In regression 4, we include several interaction terms in order to isolate the effects of the method of payment and the type of asset sold by the selling firm. Consistent with the previous regressions, for the interactions Distress*Equity and Distress*CoreAssets, we find negative coefficients, significant at 5% and 10% levels, respectively. Due to these interactions, acquisitions of distressed sellers' non-core assets without equity are represented by the variable Distress. Similarly to regression 2, its coefficient is positive and significant at 1% level.

Overall, for distressed acquisitions there is a statistically significant negative impact on CAR when the method of payment involves equity, and a statistically significant positive impact on CAR that is driven by acquisitions of non-core assets, given that we find a statistically significant negative effect for acquisitions of core assets. Thus, the results suggest that the higher returns in acquisitions of assets from distressed sellers are limited to acquisitions of non-core assets when the method of payment does not involve equity.

We test and confirm these results in regression 5. For this regression we include the interaction term Distress*NonEquity*NonCoreAssets that captures the impact of acquiring distressed seller's non-core assets without equity[34]. As such, all other distressed acquisitions are represented by the variable Distressed. We find a negative and insignificant coefficient for the variable Distress, suggesting that the impact on CAR is not statistically different from non-distressed acquisitions. And for Distress*NonEquity*NonCoreAssets we find a positive coefficient, significant at 1% level.

As such, the results suggest that, indeed, the higher returns in acquisitions of assets from distressed sellers are limited to those acquisitions that the market may interpret as more likely to be a fire sale, i.e. acquisitions of non-core assets when the method of payment does not involve equity[35]. First, because distressed sellers may not have the financial flexibility to postpone the sale, making them more likely to sell non-core assets at fire-sale discounts to raise capital, and second, the willingness of a distressed seller to accept equity as means of payment may be interpreted as a signal that the firm either is able obtain a larger amount of funds by monetizing the stake received than if it was all-cash or the distressed firm is not as distressed as its financial situation would predict, and therefore a fire sale becomes less likely.

[34] We change the control variables Equity and CoreAssets to their inverse NonEquity and NonCoreAssets, respectively, to better visualization of the impact.

[35] In unreported results, we also find a positive and significant coefficient limited to this type of acquisitions after excluding deals with undisclosed deal value, and even after additionally requiring a minimum relative deal size. The results also hold for event window [-10; +10].

Especially considering that distressed sellers are more likely to sell assets for cash and the need for liquidity may make them accept higher price discounts (Shleifer and Vishny, 1992; Officer, 2007).

Regarding non-distressed acquisitions, the overall results suggest that the impacts on CAR of the method of payment and of the type of asset sold (i.e., core and non-core assets) are not statistically different from one another, except in acquisitions of core assets with equity.

4. Conclusion

In this paper, we investigate if fire sales exist by studying the value creation from acquiring assets from distressed firms and focusing on acquisitions of divested assets (assets, subsidiaries, divisions) involving US nonfinancial public firms between 1997 and 2017.

In line with previous studies (e.g., Rosenfeld, 1984; Sicherman and Pettway, 1992; Moeller *et al.*, 2004), acquisitions of unlisted assets create value. Acquirers earn positive and significant average announcement period abnormal returns independently of the event window considered, and regardless of the seller's financial condition.

We find that, on average, acquisitions of assets from distressed sellers create significantly more value than acquisitions of assets from non-distressed sellers, which suggests that fire sales of heterogeneous real assets exist.

However, dividing the samples based on whether the deal value is disclosed or not at the announcement date reveals that this result is driven by those deals in which the deal value is not disclosed. When the deal value is disclosed at the announcement date the difference between mean (median) CARs for distressed and non-distressed acquisitions is not statistically significant, 2.19% (1.38%) vs 2.00% (0.96%), respectively, but when it is not disclosed the differences are statistically significant at 1% level, 3.58% (3.09%) vs -0.13% (0.31%), respectively. As such, these results suggest that fire sales only occurred because investors believe fire sales exist, given that investors only assess the deals in which the deal value is not announced as acquisitions at fire-sale discounts.

Previous studies (e.g., Sicherman and Pettway, 1992; Martynova and Renneboog, 2011), have found insignificant returns when the deal value is not disclosed (as opposite of positive returns when the value is disclosed) and our results are consistent with that but only for non-distressed acquisitions. In the case of distressed acquisitions, the market still assesses

this type of acquisitions as positive NPV deals despite the deal value not being disclosed. As such, the results suggest that the market only assesses differently distressed acquisitions from non-distressed acquisitions when the deal value is not disclosed. The multivariate analysis confirms these conclusions.

Our results also suggest that the type of asset being acquired, and the method of payment are important determinants on the market's perception of fire sales. We find a statistically significant positive impact on acquirer returns when acquiring assets from distressed sellers but limited to acquisitions of seller's non-core assets when the method of payment does not involve equity, which are the deals that the market may interpret as more likely to be done at fire-sale discounts. First, because distressed sellers may not have the financial flexibility to postpone the sale, making them more likely to sell non-core assets at fire-sale discounts to raise capital, and second, the willingness of a distressed seller to accept equity as means of payment may be interpreted as a signal that the firm is able to obtain a larger amount of funds by monetizing the stake received than if it was all-cash or the distressed firm is not as distressed as its financial situation would predict, and therefore a fire sale becomes less likely.

In fact, contrarily to previous work (e.g. Moeller *et al.*, 2004; Slovin *et al.*, 2005; Faccio *et al.*, 2006) that finds higher and significant returns when acquiring unlisted targets (stand-alone firms, subsidiaries only, and divested assets) with equity, we provide evidence that when the acquisition is from distressed sellers the returns are insignificant. Possibly, due to its necessity for funds, the market assumes that a distressed seller will sell the stake received rather sooner than a non-distressed seller, and thus it will not benefit from the future performance of the acquirer. Therefore, the positive signal conveyed by the acceptance of buyer's equity by the seller argued by Slovin *et al.* (2005) does not happen in a distressed acquisition.

Overall, our results suggest that the market interprets as fire sales, acquisitions of assets from distressed sellers only when the deal value is not disclosed, and also in acquisitions of seller's non-core assets as long the method of payment does not involve equity.

Although we did not compare transaction prices with asset values, the results suggest that fire sales may be indeed only a perception and not the reality. As such, future research on transaction prices vs. asset values will help to clarify this issue. Until then, to answer the question if fire sales are indeed reality or just a perception, we will follow a similar approach

to Myers (1984) and quote Black (1976, p.8): *"We don't know"*. But what we do know is that the perception of fire sales is a reality.

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Table 1. Variables Definition

Variable	Description
Acquirer Size	Market value of equity one month before the deal announcement date. Source: DataStream
All-Cash	Any combination of cash, debt, or liabilities. Source: Zephyr
C&I Spread	The spread between the average rate charged for commercial and industrial loans and the fed funds rate in the previous quarter to the announcement date reported in the Federal Reserve's Survey of Terms of Business Lending. Source: Board of Governors of the Federal Reserve System website
Core Assets	Zero-one dummy variable equal to one, if the assets acquired share the same 3-digit SIC code with the seller. Source: Zephyr
Cross Border	Zero-one dummy variable equal to one if the assets acquired do not have as country code the US, zero otherwise. Source: Zephyr
Deal Value	The deal value reported on Zephyr. When not available, the amount paid reported on firm's SEC filings. Sources: Zephyr, SEC's EDGAR
Deal Value Undisclosed	Zero-one dummy variable equal to one when the deal value is not available on Zephyr. Source: Zephyr
Distress	Zero-one dummy variable, one represents an acquisition of assets from a distressed seller, zero otherwise. Firms in distress are defined as those with negative earnings on the previous fiscal year to the sale announcement. Source: DataStream
Equity	Zero-one dummy variable equal to one if the method of payment involves any form of equity. Source: Zephyr
Leverage	Ratio between the book values of total debt and total assets on the fiscal year before the deal announcement. Source: DataStream
Non Core Assets	Zero-one dummy variable, equal to one if the assets acquired do not share the same 3-digit SIC code with the seller. Source: Zephyr
Non Equity	Zero-one dummy variable equal to one if the method of payment does not involve any form of equity. Source: Zephyr

Related Industry	Zero-one dummy variable, equal to one if the acquirer shares the same 3-digit SIC code with the asset acquired, zero otherwise. Source: Zephyr

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Variable	**Description**
Relative Size	The ratio between deal value and acquirer's size. If the deal value is undisclosed, we assume the market is able to infer the relative size of the acquisition, and use the actual amount paid to compute the ratio. Sources: Zephyr, SEC's EDGAR
Seller Size	Market value of equity one month before the deal announcement date. Source: DataStream
Size	Logarithm of acquirer's size.
Small Seller	Zero-one dummy variable, equal to one if the seller size is equal or less than the median seller size of the full sample, zero otherwise.

Table 2. Deals Distribution by Year and Industry

	All		Distressed		Non-Distressed	
	N	%	N	%	N	%
Panel A: Deals Distribution by Year						
1997	3	0.3%	0	0.0%	3	0.4%
1998	4	0.4%	0	0.0%	4	0.5%
1999	7	0.6%	3	0.8%	4	0.5%
2000	71	6.4%	23	6.0%	48	6.5%
2001	101	9.1%	35	9.2%	66	9.0%
2002	91	8.2%	44	11.5%	47	6.4%
2003	100	9.0%	54	14.2%	46	6.3%
2004	86	7.7%	26	6.8%	60	8.2%
2005	78	7.0%	26	6.8%	52	7.1%
2006	80	7.2%	18	4.7%	62	8.4%
2007	69	6.2%	19	5.0%	50	6.8%
2008	45	4.0%	15	3.9%	30	4.1%
2009	43	3.9%	23	6.0%	20	2.7%
2010	41	3.7%	14	3.7%	27	3.7%
2011	41	3.7%	9	2.4%	32	4.4%
2012	36	3.2%	8	2.1%	28	3.8%
2013	47	4.2%	11	2.9%	36	4.9%
2014	60	5.4%	17	4.5%	43	5.9%
2015	52	4.7%	15	3.9%	37	5.0%
2016	38	3.4%	15	3.9%	23	3.1%
2017	22	2.0%	6	1.6%	16	2.2%
Total	1,115	100.0%	381	34.2%	734	65.8%
Panel B: Deals Distribution by the Industry of the Assets Acquired						
Manufacturing	472	42.3%	157	41.2%	315	42.9%
Mining and Construction	75	6.7%	27	7.1%	48	6.5%
Retail and Wholesale	107	9.6%	34	8.9%	74	10.1%
Services	262	23.5%	104	27.3%	157	21.4%
Utilities	195	17.5%	57	15.0%	138	18.8%
Other	4	0.4%	2	0.5%	2	0.3%

Table 3. Descriptive Statistics for the Full Sample

This table reports the descriptive statistics for the full sample, all variables are defined on Table 1.

	Mean	Median	Std. Deviation	N
Acquirer Size ($ Million)	11,252	1,716	35,540	1114
Seller Size ($ Million)	21,932	2,954	57,597	1112
Seller Leverage (%)	30.7	28.2	24.4	1113
Deal Size ($ Million)	373	67	2,488	975
Relative Deal Size (%)	18.3	4.5	66.0	974
C&I Spread (%)	2.41	2.36	0.415	1110
Core Assets Sold (%)	40.9	–	–	456
Related Industry (%)	43.9	–	–	490
Cross Border (%)	9.4	–	–	105
Undisclosed Deal Value (%)	25.7	–	–	287
Undisclosed Method of Payment (%)	41.4	–	–	462
All-Cash (%)	49.2	–	–	549
Equity (%)	9.3	–	–	104

Table 4. Descriptive Statistics for Distressed and Non-Distressed Acquisitions

This table reports descriptive statistics for the Distressed and Non-Distressed samples. All variables are defined on Table 1. For the differences between the two samples, we performed T-tests for means and Wilcoxon rank-sum (Mann-Whitney) tests for medians. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

	Distressed			Non-Distressed		
	Mean	Median	N	Mean	Median	N
Acquirer Size ($ Million)	8,768	1,297	381	12,544*	1,966***	733
Seller Size ($ Million)	4,168	411	378	31,080***	5,874***	734
Seller Leverage (%)	35.8	32.7	380	28.1***	26.7***	733
Deal Value ($ Million)	160	43	350	492**	89***	625
Relative Deal Size (%)	18.4	3.1	350	18.2	5.4***	624
C&I Spread (%)	2.42	2.38	380	2.41	2.36	730
Core Assets Sold (%)	45.4	–	173	38.6**	–	283
Related Industry (%)	44.9	–	171	43.5	–	319
Cross Border (%)	7.3	–	28	10.5*	–	77
Undisclosed Deal Value (%)	21.5	–	82	27.9**	–	205
Undisclosed Method of Payment (%)	34.6	–	132	45.0***	–	330
All-Cash (%)	55.1	–	210	46.2***	–	339
Equity (%)	10.2	–	39	8.9	–	65

Table 5. CARs for the Full Sample, and Distressed and Non-Distressed Acquisitions

This table shows the results from the event study methodology applied to the full sample, and to the Distressed and Non-Distressed samples. Distressed represents acquisitions of assets from distressed sellers and Non-Distressed represents acquisitions of assets from non-distressed sellers. The last column reports the differences between Distressed and Non-Distressed samples. CARs were estimated through the Market-Adjusted Model. For means we performed T-tests, for medians we performed Wilcoxon signed rank tests, and Wilcoxon rank-sum (Mann-Whitney) for the differences between medians. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

	Full Sample	Distressed (1)	Non-Distressed (2)	Diff. (1-2)
Panel A: CARs for Event Window [-10;+10]				
Mean	1.80%***	2.63%***	1.36%***	1.27 p.p.
Median	1.07%***	1.95%***	0.79%***	1.16 p.p.
% Positive	55%	58%	53%	
Panel B: CARs for Event Window [-10;+1]				
Mean	1.77%***	2.49%***	1.40%***	1.08* p.p.
Median	1.03%***	1.64%***	0.75%***	0.89** p.p.
% Positive	57%	60%	56%	
Panel C: CARs for Event Window [-1;+1]				
Mean	1.41%***	1.71%***	1.25%***	0.46 p.p.
Median	0.62%***	0.62%***	0.67%***	-0.05 p.p.
% Positive	58%	57%	58%	
N	1,115	381	734	

Table 6. CARs for Event Window [-10;-2]

This table shows the results from the event study methodology applied to the Distressed and Non-Distressed samples for event window [-10;-2]. Distressed represents acquisitions of assets from distressed sellers and Non-Distressed represents acquisitions of assets from non-distressed sellers. The last column reports the differences between Distressed and Non-Distressed samples. CARs were estimated through the Market-Adjusted Model. For means we performed T-tests, for medians we performed Wilcoxon signed rank tests, and Wilcoxon rank-sum (Mann-Whitney) test for the difference between medians. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

	Distressed	Non-Distressed	Difference (1-2)
Mean	0.78%*	0.15%	0.62 p.p.
Median	0.76%**	0.17%	0.59* p.p.
N	381	734	

Table 7. OLS Regression Analysis of CAR: The effect of Distress

This table provides the OLS regressions of CAR. In all regressions the dependent variable is CAR for event window [-10;+1], estimated through the Market-Adjusted Model. In regression 2 we include dummy variables that control for assets acquired industry fixed effects and year fixed effects. For each variable, we list the coefficient and in parenthesis the standard errors, which are heteroskedasticity-corrected in regression 2. ***, **, and * stand for statistical significance at 1%, 5%, and 10%, respectively. The statistically significant variables are denoted in bold.

	(1)	(2)
Distress	**0.011***	0.006
	(0.007)	(0.007)
Equity		0.000
		(0.016)
CoreAssets		0.007
		(0.007)
RelatedIndustry		**0.011***
		(0.007)
RelativeSize		**0.044*****
		(0.006)
Size		**-0.007*****
		(0.002)
CrossBorder		0.012
		(0.009)
SmallSeller		-0.004
		(0.007)
C&ISpread		-0.008
		(0.022)
Intercept	**0.014*****	-0.007
	(0.004)	(0.062)
Adjusted R^2	0.2%	9.1%
Industry and Year FF	No	Yes
F – Statistic	2.765***	3.830***
N	1,115	967

Table 8. CARs by Deal Value (Un)Disclosed

This table reports the cumulative abnormal returns for acquirers of assets by Deal Value Disclosed and Undisclosed at the announcement. Distressed represents acquisitions of assets from distressed sellers and Non-Distr. represents acquisitions of assets from non-distressed sellers. The last column reports the differences between Distressed and Non-Distressed samples. CARs were estimated through the Market-Adjusted Model for the event window [-10;+1]. For means we performed T-tests, for medians we performed Wilcoxon signed rank tests, and Wilcoxon rank-sum (Mann-Whitney) tests for the differences between medians. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

		All	Distressed (1)	Non-Distr. (2)	Diff. (1-2)
Deal Value Disclosed (3)	Mean	2.07%***	2.19%***	2.00%***	0.19 p.p.
	Med.	1.14%***	1.38%***	0.96%***	0.42 p.p.
	N	828	299	529	
Deal Value Undisclosed (4)	Mean	0.93%*	3.58%***	-0.13%	3.71*** p.p.
	Med.	0.79%**	3.09%***	0.31%	2.78*** p.p.
	N	287	82	205	
Diff. D.V.Disc. – D.V.Und. (3-4)	Mean	1.14 p.p.	-1.39 p.p.	2.13*** p.p.	
	Med.	0.35 p.p.	-1.71 p.p.	0.64** p.p.	

Table 9. OLS Regression Analysis: The effect of Deal Value Undisclosed

This table provides OLS regressions of CAR. In regression (1) the dependent variable is CAR for event window [-10;+1], in (2) is for [-1;+1], and in (3) is for [-10;+10]. All dependent variables were estimated through the Market-Adjusted Model. All variables are defined on Table 1. In all regressions we include dummy variables that control for assets acquired industry fixed effects and year fixed effects. For each variable, we list the coefficient and in parenthesis the heteroskedasticity-corrected standard errors. ***, **, and * stand for statistical significance at 1%, 5%, and 10%, respectively. The statistically significant variables are denoted in bold.

	(1)	(2)	(3)
DealValueUndisclosed	**-0.020*****	**-0.013*****	**-0.023****
	(0.007)	(0.005)	(0.010)
DealValueUndisclosed*Distress	**0.035****	**0.020****	**0.036***
	(0.014)	(0.008)	(0.020)
Equity	0.006	0.005	-0.004
	(0.016)	(0.010)	(0.020)
CoreAssets	0.008	**0.011****	0.004
	(0.007)	(0.004)	(0.009)
RelatedIndustry	0.007	0.000	0.000
	(0.006)	(0.004)	(0.009)
Size	**-0.010*****	**-0.009*****	**-0.016*****
	(0.002)	(0.002)	(0.002)
CrossBorder	0.012	0.004	0.017
	(0.008)	(0.004)	(0.012)
SmallSeller	-0.007	**-0.008***	-0.009
	(0.007)	(0.005)	(0.009)
C&ISpread	-0.000	0.026	0.012
	(0.023)	(0.019)	(0.028)
Intercept	0.025	0.015	0.050
	(0.059)	(0.039)	(0.070)
Adjusted R^2	3.2%	4.9%	2.7%
Industry and Year FF	Yes	Yes	Yes
F – Statistic	2.073***	2.675***	1.915***
N	1106	1106	1106

Table 10. CARs by Method of Payment

This table reports the cumulative abnormal returns by method of payment: all-cash, equity, undisclosed method of payment (when only the method of payment was not disclosed), and undisclosed terms (when both the method of payment and the deal value were not disclosed). Distressed represents acquisitions of assets from distressed sellers and Non-Distr. represents acquisitions of assets from non-distressed sellers. The last column reports the difference between Distressed and Non-Distressed samples. Variables are defined on Table 1. CARs were estimated through the Market-Adjusted Model for the event window [-10; +1]. For means we performed T-tests, for medians we performed Wilcoxon signed rank tests, and Wilcoxon rank-sum (Mann-Whitney) tests for the differences between medians. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

		All	Distressed (1)	Non-Distr. (2)	Diff. (1-2)
All-Cash (3)	Mean	1.85%***	2.51%***	1.43%***	1.08 p.p.
	Med.	1.10%***	1.40%***	0.85%***	0.55 p.p.
	N	549	210	339	
Equity (4)	Mean	3.22%**	-0.30%	5.33%***	-5.63* p.p.
	Med.	1.03%*	-0.18%	2.08%**	-2.26 p.p.
	N	104	39	65	
Undisclosed Method of Payment (5)	Mean	2.10%***	2.77%***	1.79%**	0.98 p.p.
	Med.	1.31%***	1.43%**	1.26%***	0.17 p.p.
	N	208	65	143	
Undisclosed Terms (6)	Mean	0.76%	3.75%***	-0.31%	4.06*** p.p.
	Med.	0.63%*	3.25%***	0.11%	3.14*** p.p.
	N	254	67	187	
Diff. All-Cash - Und. Terms (3-6)	Mean	1.09 p.p.	-1.24 p.p.	1.74** p.p.	
	Med.	0.47 p.p.	-1.85 p.p.	0.74* p.p.	
Diff. Equity - Und. Terms (4-6)	Mean	2.46* p.p.	-4.05 p.p.	5.64*** p.p.	
	Med.	0.40 p.p.	-3.43* p.p.	1.97** p.p.	
Diff. Und. M. P - Und. Terms (5-6)	Mean	1.34 p.p.	-0.98 p.p.	2.10** p.p.	
	Med.	0.68 p.p.	-1.82 p.p.	1.14** p.p.	

Table 11. CARs by Type of Asset Sold

This table reports the cumulative abnormal returns for acquirers by the type of asset being sold: Core and Non-Core. As Fuller *et al.* (2002), we define as core assets those that have the same 3-digit SIC code as the seller's, and as non-core otherwise. Distressed represents acquisitions of assets from distressed sellers and Non-Distressed represents acquisitions of assets from non-distressed sellers. The last column reports the difference between Distressed and Non-Distressed samples. CARs were estimated through the Market-Adjusted Model for the event window [-10; +1]. For means we performed T-tests, for medians we performed Wilcoxon signed rank tests, and Wilcoxon rank-sum (Mann-Whitney) tests for the differences between medians. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

		All	Distressed (1)	Non-Distressed (2)	Diff. (1-2)
Core Assets (3)	Mean	2.35%***	2.39%**	2.33%***	0.06 p.p.
	Med.	0.93%***	0.85%**	1.03%***	-0.18 p.p.
	N	456	173	283	
Non-Core Assets (4)	Mean	1.37%***	2.57%***	0.82%*	1.75** p.p.
	Med.	1.14%***	2.65%***	0.38%*	2.27*** p.p.
	N	659	208	451	
Difference (3-4)	Mean	0.98 p.p.	-0.18 p.p.	1.51** p.p.	
	Med.	-0.21 p.p.	-1.80* p.p.	0.65** p.p.	

Table 12. OLS Regression Analysis of CAR: The effect of the Method of Payment and the Type of Asset Sold

This table provides the OLS regressions of CAR. In all regressions the dependent variable is CAR for event window [-10; +1], estimated through the Market-Adjusted Model. In panel A deals with equity as method of payment are excluded, and in Panel B all deals are included. All variables are defined on Table 1. In all regressions we include dummy variables that control for assets acquired industry fixed effects and year fixed effects. For each variable, we list the coefficient and in parenthesis the heteroskedasticity-corrected standard errors. ***, **, and * stand for statistical significance at 1%, 5%, and 10%, respectively. The statistically significant variables are denoted in bold.

	Panel A (w/o Equity)		Panel B (All)		
	(1)	(2)	(3)	(4)	(5)
Distress	**0.014****	**0.026*****	**0.013***	**0.023*****	-0.016
	(0.007)	(0.009)	(0.007)	(0.009)	(0.011)
Distress*Equity			**-0.066****	**-0.069****	
			(0.032)	(0.032)	
Distress*CoreAssets		**-0.027****		**-0.022***	
		(0.013)		(0.013)	
Equity			0.025	0.005	
			(0.020)	(0.023)	
CoreAssets	-0.001	0.009	0.007	0.009	
	(0.007)	(0.008)	(0.007)	(0.008)	
Equity*CoreAssets				**0.054***	
				(0.031)	
Distress*NonEquity* NonCoreAssets					**0.043****
					(0.014)
NonEquity					-0.009
					(0.016)
NonCoreAssets					-0.021*
					(0.009)
RelatedIndustry	**0.012***	**0.012***	**0.011***	0.011	0.011
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
RelativeSize	**0.048*****	**0.049*****	**0.044*****	**0.044*****	**0.045****
	(0.004)	(0.004)	(0.006)	(0.007)	(0.006)
Size	**-0.006*****	**-0.006*****	**-0.007*****	**-0.007****	**-0.007***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
CrossBorder	0.014	**0.014***	0.012	0.011	0.012
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
SmallSeller	-0.005	-0.005	-0.003	-0.002	-0.004
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
C&ISpread	-0.003	-0.002	-0.008	-0.009	-0.006
	(0.022)	(0.022)	(0.023)	(0.022)	(0.023)
Intercept	-0.030	-0.034	-0.013	-0.014	0.016
	(0.063)	(0.064)	(0.062)	(0.063)	(0.068)
Adjusted R^2	12.0%	12.3%	9.8%	10.5%	10.0%
Industry and Year FF	Yes	Yes	Yes	Yes	Yes
F – Statistic	4.557***	4.562***	4.008***	4.051***	4.057**

N	863	863	967	967	967

Figure 1. CARs for the 21-days event period centered on the announcement date

This figure shows the CARs for the entire event window [-10;+10] for the full sample, Distressed and Non-Distressed acquisitions.