

**SME Insolvency, Bankruptcy and Survival:
An Examination of Retrenchment Strategies**

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Abstract

A key assertion in the turnaround literature is that when survival is threatened, it is *necessary* to undertake asset and cost retrenchment strategies that stabilise the performance decline and provide a base for survival and recovery. Correcting for methodological weaknesses in the literature, this study of Spanish SMEs finds that retrenchment of inventory and employees is associated with *liquidation*. Furthermore, neither intangible asset nor tangible asset retrenchment are associated with survival. Only retrenchment of debt is associated with survival. These results challenge conventional wisdom on retrenchment in turnaround situations. Automatic, across-the-board retrenchment is not a universal panacea to achieve turnaround and should not be implemented as a reflex response to insolvency. Instead, managers of insolvent firms should focus on liquidity and operational improvements, which result in debt reduction. Great care should be taken with the need for, and the extent of, retrenchment in inventory and employees.

Keywords: SMEs, turnaround, retrenchment, bankruptcy, insolvency, survival.

JEL Classifications: G33, K22, L25 L26, L53, M10, M41.

Introduction

A major finding in small business economics is that entrepreneurial small and medium sized enterprises (SMEs) are *prone* to existence-threatening performance declines (Blackburn and Kovalainen 2009). Given the substantial economic contribution of SMEs, this finding has given rise to interest in SME turnaround *following* an existence-threatening performance decline (Collett et al. 2014). This paper focuses on this topic.

A turnaround situation occurs when the performance of a firm suffers a decline such that its survival is under threat (Trahms et al. 2013). A severe decline can lead to insolvency where the firm cannot pay its debts on time and in the amounts arranged with its creditors (Bruton et al. 2003). During a turnaround, problems can arise among employees that fear for their jobs, creditors that harbour doubts of debt recovery, and buyers and suppliers concerned about future business with the firm. Difficulties and handicaps can multiply, making it difficult to recover from insolvency (Pajunen 2006). However, if turnaround is achieved, and a viable firm is saved, the socioeconomic effects can be positive and significant (Tangpong et al. 2015). The actions taken to recover performance are known as turnaround strategies. These are mainly classified into two groups: retrenchment and recovery (Arogyaswamy et al. 1995; Robbins and Pearce 1992). Retrenchment strategies focus on the stabilisation of decline and correction of operational inefficiencies (Hofer 1980), while recovery strategies aim to re-orientate the firm towards sustainable competitive advantage (Barker and Duhaime 1997).

Led by Robbins and Pearce (1992), a key assertion in the turnaround literature is that when survival is threatened, it is *necessary* to undertake retrenchment measures that stabilise the performance decline and provide a base for recovery and growth. The same authors later reassert that retrenchment must be aggressive and far-reaching, not piecemeal, incremental and narrow and that retrenchment may be sufficient with nothing further required to

turnaround (Pearce and Robbins 2008). However, empirical confirmation of this assertion is mixed (Schweizer and Nienhaus 2017). Lim et al. (2013, 42) state: "... retrenchment is one of the most widely used strategies; nevertheless, it is a poorly understood and understudied topic ... Empirical research supporting the efficacy of the retrenchment strategies has been limited or equivocal; and little is known about when, how, and in what form retrenchment should be used." Similarly, Trahms et al. (2013, 1296) state: "Overall, the past two decades have witnessed an increase in the research examining the effect of retrenchment and strategic actions on turnaround performance. While the findings show a more consistent and positive effect of strategic actions, the effect of retrenchment actions is far from settled."

It is suggested that the limited or equivocal results on retrenchment are related to two methodological weaknesses. Firstly, samples have been overly diverse. In particular, sampled firms attempting turnaround have not begun at the same starting point. Solvent and insolvent firms have been mixed within broad definitions of decline that include profitable firms underperforming industry average and unprofitable firms in threat of liquidation (Schweizer and Nienhaus 2017). Similarly, broad definitions of what constitutes a turnaround have mixed firms that aim to survive with others aiming to achieve sustainable competitive advantage and so above industry average performance. Secondly, retrenchment actions have been overly aggregated. It may be the case that certain retrenchment actions are more effective than others, but this will be obscured in research designs that measure retrenchment simply in terms of cost or asset reduction (Tangpong et al. 2015).

This study addresses both methodological problems. It samples firms with the same starting point: all are insolvent and attempting turnaround within a legal bankruptcy process in order to survive. The terms "insolvency" and "bankruptcy" are differentiated. "Insolvency" refers to the inability to make debt repayments while "bankruptcy" refers to a formal Court proceeding. These terms are often used as synonyms (Altman and Hotchkiss

2006). In this study, an *insolvent* firm (unable to pay its debts) must subsequently file for *bankruptcy* (a formal procedure). Only one other study has examined the effectiveness of turnaround strategies for insolvent firms within a bankruptcy regime (Collett *et al.* 2014) but this did not focus on the effectiveness of retrenchment. This study also disaggregates retrenchment in order to examine if certain cost and certain asset reduction actions are more effective than others or are counterproductive.

Guided by the turnaround literature, this study's central research question is: In a bankruptcy proceeding, does retrenchment increase the probability of survival? This question is addressed by testing the link between survival and the retrenchment of intangible assets, the retrenchment in tangible assets, retrenchment in inventory, retrenchment in receivables, retrenchment of labour costs, retrenchment of number of employees, and retrenchment of debt. Based on a sample of insolvent Spanish SMEs within bankruptcy proceedings, we find that retrenchment of inventory and employees is significantly associated with *liquidation*. Furthermore, neither intangible asset nor tangible asset retrenchment are associated with survival. Only retrenchment of debt is associated with survival. Taken together, these findings challenge conventional wisdom on retrenchment in turnaround situations. These findings strongly indicate that automatic across-the-board retrenchment is not a universal panacea to achieve turnaround and should not be implemented as a reflex response to insolvency.

In the next section, the turnaround literature is reviewed, and hypotheses related to the central research question are generated. The study's methodology is detailed in the following section. Next the study's results are presented and discussed. A final section concludes and states the study's implications.

Literature Review and Hypotheses

The seminal paper on retrenchment to achieve turnaround is Robbins and Pearce (1992). Their sample consisted of firms in the textile industry that, following prosperity - defined as two consecutive years of increasing return on investment (ROI) and return on sales (ROS) - experienced a minimum of two years decline in ROI and ROS relative to industry average. Successful turnarounds were defined as those firms that subsequently resumed prosperity and achieved increasing, above industry average ROI and ROS for two consecutive years. Two types of retrenchment were defined: cost retrenchment (net reduction in total costs) and asset retrenchment (net reduction in total assets). They found that both cost and asset retrenchment were positively correlated with turnaround performance. Furthermore, the correlation was strongest for firms facing more severe turnaround situations. They concluded that “retrenchment was a critical strategic element in attaining turnaround” (Robbins and Pearce 1992, 303).

Subsequent research on retrenchment and turnaround has produced equivocal results. Schoenberg et al. (2013) concur with Robbins and Pearce finding both cost and asset retrenchment to be effective turnaround strategies. Other researchers argue that whilst cost and asset retrenchment may be appropriate within a mature industry like textiles, these actions are inappropriate in other contexts: Morrow *et al.* (2004) question retrenchment in high growth and innovative environments and find that asset or cost reduction did not improve profitability in these environments. Also, certain cost and asset retrenchment actions are argued to be more effective than others (Lim et al. 2013). Tikici et al. (2011) find that neither cost nor asset reduction are associated with successful turnaround. Implementation (Castrogiovanni and Bruton 2000), including timing of actions (Tangpong et al. 2015) can affect outcomes. Barbero et al. (2018) examine timing and find that time aggressiveness, that is early and fast retrenchment, has a positive effect on turnaround performance whereas

overly aggressive volume of retrenchment has a negative effect. In the most comprehensive literature review to date, based on 276 studies spanning five research fields, Schweizer and Nienhaus (2017) authoritatively conclude that the turnaround phenomenon is more complicated than conceptualised in the retrenchment and recovery model.

Tangpong et al. (2015) define three categories of retrenchment: asset, cost and employees. These broad categories provide the basis for seven hypotheses that relate to the central research question and test the efficacy of *specific* retrenchment actions.

General asset reduction is advocated in the literature as a means to discard poorly performing assets, raise cash, and improve asset productivity (Robbins and Pearce 1992; Slatter and Lovett 1999). A positive performance effect is found because of divestitures of the least productive assets and an increased focus on core competencies (Denis and Shome 2005). However, Lamont et al. (1994) find that excessive divestment can hinder recovery and Winn (1997) argues that general asset reduction will not improve asset productivity, as financially troubled firms are most likely to sell their most lucrative and/or strategically important assets below value to increase liquidity.

Assets can be sub-divided into intangible and tangible assets. The disposal of intangible assets (patents, brands, etc.) during turnarounds is neglected in the turnaround literature. This could be because troubled firms rarely own valuable intangible assets (Slatter and Lovett 1999) and that, even if in possession of valuable intangible assets, such assets are often illiquid and difficult to sell (Astebro and Winter 2012). Therefore, it is possible to conclude that the ownership and divestiture of intangible assets are of little consequence in turnaround situations. However, from an Resource-Based View (RBV) (Barney 1991; Wernerfelt 1995), intangible assets are a greater source of competitive advantage than tangible assets (Vicente-Lorente and Zuniga-Vicente, 2018). Accordingly, their presence signals valuable resource and fundamental viability (Mackova 2013) and their disposal may

accelerate decline. Which view is correct? Received wisdom or the argument from an RBV perspective? We test received wisdom as follows:

H1: In a bankruptcy proceeding, retrenchment of intangible assets increases the probability of survival.

Garcia-Posada and Mora-Sanguinetti (2012) find that the preference of banks to secure loans against tangible assets can result in a higher rate of investment in tangible assets. In such situations, tangible assets may not be critical and so can be easily off-loaded and so we expect a positive relationship between tangible asset retrenchment and survival (Rico and Puig 2015). Supporting this reasoning, Aguiar-Diaz and Ruiz-Mallorqui (2013), who studied the link between overcoming a bankruptcy and the composition of creditors, found that debtor firm survival was more likely when liabilities were concentrated in the hands of banks. It is also usually cheaper and faster to foreclose the mortgage's collateral than recover the credit in a bankruptcy proceeding. Accordingly, creditors secured with a mortgage will not support an arrangement unless a superior alternative is proposed, one that is likely to result in the original terms of the mortgage being observed (Franks and Sussman 2005). We test conventional wisdom on tangible asset reduction as follows.

H2: In a bankruptcy proceeding, retrenchment in tangible assets increases the probability of survival.

Regarding general cost cutting, Boyne and Meier (2009, 857) in their analysis of public-school districts in Texas, are unequivocal finding that "Retrenchment, and in particular an emphasis on cutting costs and raising efficiency, pushed school districts further towards decline." Lim et al.'s (2013) argument that cost retrenchment is unlikely to work for Schumpeterian firms that create rent based on explorative capabilities is contextual but at a broad level. At a more granular level, the management of inventory and receivables has been one of the most widely studied aspects in the retrenchment field (Camacho-Miñano et al.

2015; Hofer 1980; Robbins and Pearce 1992; Slatter and Lovett 1999). Both are components of working capital management, which becomes difficult once a firm enters bankruptcy (Camacho-Miñano et al. 2015). Pajunen (2006) employs stakeholder theory (Mitchell et al. 1997) to explain the causes and consequences of a loss of stakeholder support when becoming insolvent, particularly from creditors that halt further credit and/or push harder for payments. Consequently, working capital financing tends to tighten, often to the extent that the firm's short-run future is in jeopardy. An appropriate response by the debtor firm is to restrict inventory and receivables as much as possible to generate cash immediately and so rebalance operations. More broadly, John (1993) finds a positive relationship between increased liquidity and successful turnaround. Chowdhury and Lang (1996) concur and find that improved liquidity is positively associated with turnaround. This impact of retrenchment in inventory and receivables as a means for improving liquidity is hypothesised as follows.

H3: In a bankruptcy proceeding, retrenchment in inventory increases the probability of survival.

H4: In a bankruptcy proceeding, retrenchment in receivables increases the probability of survival.

Managing labour costs is a key feature of retrenchment (Pearce and Robbins 1993). It has also produced contradictory results (Schweizer and Nienhaus 2017). Many studies point to undesirable negative effects. One is a reduction in a firm's capacity to innovate by upsetting product development routines (Amabile and Conti, 1999; Datta et al., 2010; Dougherty and Bowman 1995) although others argue that labour downsizing spurs innovation (Boone, 2000) or there is no significant effect (Mellahi and Wilkinson, 2010a, 2010b). A second negative effect is 'survivor syndrome' in the form of low morale and commitment among those employees that are retained (Brockner et al. 2004; Kawai, 2015). Shah (2000) employs a social network perspective to elucidate this finding that the erosion of network ties

after layoffs contributes to negative feelings towards the firm. Turnley and Feldman (1999) apply psychological contract theory to add that low morale following layoffs are the result of a violation of the psychological contract between firm and employee. Nixon et al. (2004) find that layoffs lead to the loss of intellectual capital and this negatively affects market returns and Cenciarelli et al. (2018) find that intellectual capital and bankruptcy risk are negatively related. Flanagan and O'Shaughnessy (2005) also point to negative effects on a firm's reputation especially within high technology industries or during a recession (Lin et al. 2008). Focusing on experienced and senior labour cost, and from a resource dependence perspective (Pfeffer and Salancik, 1978), Abebe et al. (2012) caution against automatic layoffs finding that experienced CEOs with extensive external board appointments are associated with successful turnaround.

However, reducing such costs whilst maintaining output will naturally increase productivity. Chowdhury and Lang (1996) find that increased employee productivity is the most important predictor of the turnaround of small firms that are usually not able to pursue more complex strategies, such as product/market pruning or sales expansion. In line with this, John et al. (1992) find that layoffs are the largest contributor to cost savings during retrenchment and significantly increase the probability of survival. This is expected to apply to insolvent firms, since their range of strategic actions is limited by their scarce resources. The turnaround literature generally finds in favour of this turnaround action as it can lead to the previously mentioned increase in employee productivity and can lead to efficiency gains via the reorganisation of obsolete work practices (Tangpong et al. 2015).

Reducing labour cost does not necessarily mean redundancies or layoffs. It can of course also be achieved via pay cuts and this may be the easiest way given protective labour market regulations. Of course, such cuts are traumatic for employees, but they may be more willing to accept them compared to the alternative of job cuts (Fernandez 2004). Layoffs can

increase fear and uncertainty among remaining workers (D'Aveni 1989) worried that they will be next. Furthermore, layoffs can be expensive in terms of compensation for job loss and so may be unaffordable to the insolvent firm (Van Hemmen 2009). In this context, it is not surprising that the pay cut approach has been prevalent during the Great Recession allowing financially distressed firms to preserve a skilled labour force and gain increased future commitment to the firm's goals, as workers have been an active part of turnaround strategies.

To inform the debates above, we test:

H5: In a bankruptcy proceeding, retrenchment of labour costs increases the probability of survival.

H6: In a bankruptcy proceeding, retrenchment of number of employees increases the probability of survival.

Finally, a major motivation of financially distressed firms that enter the bankruptcy proceeding is to lower the burden of debt, because despite being economically viable, they are unable to service existing debt. Sudarsanam and Lai (2001) point to the centrality of debt reduction as part of retrenchment although it may also be a natural consequence of cost and asset-retrenchment measures. A bankruptcy proceeding provides two ways of reducing debt. Firstly, the automatic stay allows firms with operating profits to reduce post-petition credits and pre-petition credits permitted by law (e.g., mortgages). Additionally, there is the option of writing-off existing debts, totally or partially. Lin et al. (2008) find that debt reduction improves asset productivity and so aids recovery. Similarly, Situm (2015) finds that firms that successfully recover from distress exhibit higher interest coverage when compared to insolvent firms. Conversely, Winn (1997) does not find any asset productivity growth due to debt reduction during successful turnaround. To inform these debates, we test:

H7: In a bankruptcy proceeding, debt reduction increases the probability of survival.

Methodology

Empirical Context: The Spanish Bankruptcy Procedure

In Spain, firm insolvencies multiplied by a factor of nine from 2007 (the beginning of the Great Recession) to 2013 (the year with the highest number of cases - INE 2017). The Spanish bankruptcy proceeding – *concurso de acreedores* – provides a legal framework under which an insolvent firm files for protection in order to pay back its creditors while attempting to recover (Segovia-Vargas and Camacho-Miñano, 2018). A firm is defined as insolvent when it cannot meet its financial obligations to creditors. This is a situation of *cash insolvency*, as opposed to *balance-sheet insolvency* where the firm has insufficient assets to meet liabilities. In line with practice elsewhere, Spanish bankruptcy law provides for an informal restructuring procedure (*preconcurso*), which can be filed before formal bankruptcy (Segovia-Vargas and Camacho-Miñano 2018). When appropriate, this can allow for quick and low-cost restructuring and survival. This type of restructuring is excluded in this study which focuses only on formally bankrupt firms. Once a firm is officially bankrupt, the only survival outcome is attempting and successfully achieving a *convenio*.

Under a *convenio*, it is possible to achieve survival via an altered arrangement of payments which is voted for by creditors and proposes the satisfaction of debts via future cash-flows generated by the firm. If a *convenio* is not achieved, the firm goes into liquidation (*liquidación*), where assets are sold to pay the creditors. Compared to the USA and the UK, the Spanish bankruptcy regime has a low bankruptcy filing rate with only about 6% filing compared to around 24% in the USA and 9% in the UK.

Data on bankruptcy survival rates are rare but are officially produced in Spain in terms of *convenios* achieved as a proportion of *convenios* attempted. These data are presented in Table 1 and show an average survival rate of about 35% over the period 2012-2016. This survival rate is measured as achieved *convenios* to total attempted *convenios* at the end of the

sample period. It is not possible to accurately compare this survival rate to other countries as official data of this type are not produced elsewhere and the few academic studies of survival rates use different methodologies. However, a rough comparison is possible. Warren and Westbrook (2009) analysed success rates within the US Chapter 11 procedure filed in 1994 and 2002 and report a strict screening process that eliminates 80% within a year. The 20% that survive were dominated (70%) by firms with confirmed restructuring plans. An analysis by Walton et al., (2018) of the 552 Company Voluntary Arrangements (CVAs) that commenced in 2013 involving companies in England and Wales showed that 35% were either fully implemented or ongoing at the survey date. This proportion is remarkably in line with the Spanish survival rate reported in Table 1.

TABLE 1 ABOUT HERE

Once in a bankruptcy proceeding, full discretion over retrenchment is lost as the firm needs the approval of a court-appointed insolvency administrator (*administrador concursal*), who has extensive powers of cost reduction and asset disposal. The most important actions, such as property sales or layoffs, require additional court approval. The management of the insolvent firm also needs the insolvency administrator's approval on all payments accruing during the proceeding. Asset sales are quite common in the Spanish bankruptcy proceeding, as they only require a simple economic case for the court to approve them. Usually, insolvent firms, in conjunction with the insolvency administrator, decide to sell an asset when an external party makes a reasonable offer, or when a substantial reduction of debt can be achieved in return for sale (Altman and Hotchkiss 2006). Layoffs are less common, since they can increase short-term costs in the form of compensation for loss of employment (Van Hemmen 2009).

Data Collection and Sample

The last major reform in the Spanish bankruptcy proceeding took place at the end of 2011 (Garcia-Posada and Vegas 2016). As we were interested in assessing this current regime, the sample was drawn from the population of Spanish firms filing for bankruptcy in the period 2012-2014 inclusive. At the point of data collection (31 December 2016), the cut-off date of data was set to the end of 2015. Accordingly, firms reaching an outcome - liquidation or survival (i.e., successfully achieving a *convenio*) between 2012-15 inclusive were included in the final sample. Following Pozuelo et al. (2013), this period of data collection is highly appropriate for a study of distressed firms as the peak year for bankruptcy filings during the Great Recession occurred in 2013. Our sample will naturally be biased towards firms that file for bankruptcy which are likely to have more turnaround potential than the majority that cease trading without filing. This phenomenon is well-known in the literature (Pozuelo et al. 2013).

Data were extracted from the *Sistema de Análisis de Balances Ibéricos* (SABI) database, version 24.00. SABI contains financial information drawn from annual accounts of 2 million Spanish firms and half a million of Portuguese firms, obtained from the Public Commercial Register (*Registro Mercantil*) and is widely used in research on Spanish firms (Barbero et al. 2017). Firms were selected according to “status” where it is possible to filter those firms that filed for a bankruptcy proceeding (*concurso*). Data on dates of filing and outcome of the bankruptcy proceeding for each firm were then collected from the *Registro Público Concursal*. We discarded those firms that filed for bankruptcy and immediately went into liquidation, since no turnaround potential was expected for them. Also, bankrupt firms whose procedure did not finish by the end of 2015 and, consequently, did not achieve an outcome at that date, were excluded. Therefore, only bankruptcy cases leading to an outcome - either successful *convenio* (survival) or failure (liquidation) - were considered.

Residential and related building activities, as well as sports clubs and holding firms and their subsidiaries, were excluded, since their financial structure would have distorted the variables of interest. In the residential building industry, buildings are considered inventory. However, in reality, a large amount of these current assets have become fixed due to the financial crisis during the Great Recession. There is also a “liquidation-bias” towards building and related activities in the Spanish bankruptcy context, and most of them are liquidated (Van Hemmen 2009). Sports clubs and holding firms and their subsidiaries have some particularities that make their exclusion advisable (Rico and Puig 2015). We also excluded firms that were members of larger groups in order to avoid potential cross-subsidisation effects (Camacho-Miñano et al. 2015). Finally, public or state companies were also excluded, since the proceeding to turn them around differs significantly from that for privately held firms.

Initially, by applying the *concurso* filter under “status” and excluding the above mentioned firms, 2,387 bankrupt firms were found on the SABI database. From these, 685 met the date criteria for inclusion. Excluding firms with missing data, the final sample consisted of 582 firms. Of these, 261 (44.85%) successfully achieved a *convenio*, reorganised and survived and 321 (55.15%) liquidated. Our sample survival rate is in line with that of the general population survival rate (see Table 1). The higher sample survival rate can be explained by our exclusion of firms with liquidation bias and with missing data, which are more likely to have failed than firms with full data. Table 2 summarises sample derivation.

TABLE 2 ABOUT HERE

By industrial classification, the sample contained 234 (40.21%) manufacturing firms, 152 (26.12%) services firms, 139 (23.88%) trading firms and 57 (9.79%) of firms from other industries. Average assets of the sample were €6.2 million, almost the same average (€6.3

million) observed in the years 2012 and 2013 by Van Hemmen (2014). Of the 582 firms in our sample, 99% are SMEs according to both the turnover and number of employees criteria of the European Union definition (96/280/EC).

Variables and Measurements

Dependent variable

The purpose of the study was to identify which retrenchment strategies contribute to liquidation or survival in a bankruptcy procedure. Therefore, the estimation method needed to allow for a binary dependent variable (liquidation or survival). This led us to choose the logistic regression model which has also been applied in other studies of turnaround (Collett et al. 2014; Rasheed 2005). Specifically, the model contains a two-state dependent variable (1 = survival, 0 = liquidation) and turnaround success and failure were defined as achieving *convenio*/survival or liquidation at any time between 2012-15. Most turnaround studies use financial ratios such as return on investment (ROI) or return on assets (ROA) to indicate performance. A bankruptcy proceeding provides only two alternatives and so a dichotomous variable is appropriate (1 in case of survival, 0 in case of liquidation) and eliminates the selection bias that inevitably occurs when continuous dependent variables are employed (Trahms et al. 2013).

Independent variables

Retrenchment. Guided by Lim et al. (2013) and Robbins and Pearce (1992) and our hypotheses, retrenchment actions were measured as the percentage change in the following variables: intangible and tangible assets, inventory, receivables, labour costs, number of employees, and debt. Squared terms of the retrenchment variables were also included, since they may have a non-linear relationship with the dependent variable (Schmitt and Raisch

2013). In line with the concept of retrenchment, and to allow intuitive interpretation of the results, all variables adopt a negative sign. Retrenchment was measured as the percentage change between the year prior bankruptcy declaration and the year in which an outcome was reached for all the above-mentioned variables (Bhimani et al. 2010). Independent variables were selected through the stepwise procedure and the model was estimated using the maximum likelihood procedure.

Control variables. According to the turnaround literature, size, age, leverage, the severity of the crisis, and industry are expected to influence the firm's reorganization and performance. Therefore, the models are controlled by all of these.

Previous studies have assessed the influence of firm size on actions and prospects (Cook et al. 2001; Cook et al. 2011; Schmitt and Raisch 2013). The general conclusion is that larger firms are more likely to survive. Age has also been a recurrent control variable in bankruptcy and turnaround studies with younger firms more likely to fail due to liability of newness (Thornhill and Amit 2003). As size and age may have a non-linear relationship with firm performance (Astebro and Winter 2012), the squared term of both size and age were also included as independent variables. Leverage was selected as a control variable given its notable influence in turnaround and bankruptcy results (Cook et al. 2011). Highly leveraged firms are expected to have little financial slack to absorb grave downturns, and thus have less access to resources to recover from distress (Carter and Van Auken 2006). The severity of the crisis is also an often-used control variable indicated by the cash to assets ratio (Tangpong et al. 2015). Finally, Morrow et al. (2004) argue that the competitive environment has a critical shaping role in determining the success of turnaround strategies, so industry dummy variables were included as control variables in the estimations with Services as the default industry (Thornhill and Amit, 2003).

As mentioned, we discarding firms that immediately entered liquidation or that did not achieve an outcome (*convenio* or liquidation). The retrenchment actions of remaining firms will therefore have been decided by the firm with the insolvency administrator's approval within the context of a successful *convenio*. As all of the actors in this scenario are aiming for viability, we believe that potential endogeneity problems are minimised.

A summary of the measurement of the dependent, independent, and control variables and their operationalization is shown in Table 3.

TABLE 3 ABOUT HERE

Results

Table 4 shows and compares the average values of the variables between the firms that survive and were liquidated. Firms that survive show deeper retrenchment actions in intangible assets (22%, but not statistically significant) and debt reduction (19%, and significant). Surviving firms are also larger (significant, 8.25 versus 7.16), older (significant, 22.40 versus 18.79 years) and more leveraged (significant, 1.13 versus 1.02 debts to assets).

Liquidated firms undertook deeper retrenchment actions in tangible assets (22%, but not significant), inventory (significant 28% versus 6%) and number of employees (significant, 21% versus 16%). The mean for receivables was not reduced for surviving or liquidated firms (augmentation of 91% and 32% respectively), but the difference proved non-significant, and labour costs were reduced by the same degree for both groups (12%). Surviving and liquidated firms had the same level of severity (5%), as expected, given the condition of insolvency for all firms. Change in ROA during the proceeding is given to estimate the effectiveness of turnaround actions. Surviving firms show a clear and highly significant improvement (21%), while firms that were liquidated worsened (71%) during the proceeding. The univariate analysis confirms that the proposed independent variables discriminate

between firms that survive and firms that liquidate. The issue then is to establish their explanatory power.

TABLE 4 ABOUT HERE

Descriptive statistics, including means, standard deviations, and Pearson correlations of all variables are shown in Table 5. In general, no correlation or multicollinearity problems are evident, since statistically significant Pearson correlations are few and lower than 0.5. Most of them relate to the dependent variable and Size. Variance inflation factors (VIF) were also calculated for the independent variables, and none of them was greater than 1.2, well below the critical threshold of 5 (Hair *et al.* 2006).

TABLE 5 ABOUT HERE

Three models were estimated. In Model 1 only control variables and the constant term were included in the regression. Model 2 added the independent variables and Model 3 added the squared term of the independent variables to test for the existence of a curvilinear relationship between dependent and independent variables.

TABLE 6 ABOUT HERE

The results of the regression analysis are reported in Table 6. Model 1 is significant with a Nagelkerke pseudo R^2 of 0.27 (it explains 27% of the dependent variable variance) with a -2 log likelihood of 670.97; $p < 0.01$. Model 2 is also significant with a Nagelkerke pseudo R^2 of 0.41 and improves the -2 log likelihood (586.76 versus 670.97; $p < 0.01$). Model 3 increases the degree of variance explained by 5 points to 46% and reduces the -2 log likelihood (554.52 vs 586.76; $p < 0.05$). Whereas Model 1 correctly classified 71.1% of firms,

the accuracy increases to 75.4% for Model 2 and to 78.5% for Model 3, showing a notable jump in overall accuracy. The discussion of results by hypothesis that follows focuses mainly on Model 3.

Hypothesis 1 centres on the relationship between retrenchment in intangible assets and the probability of survival. The result in Model 3 shows that the relationship is not significant at a conventional level. Therefore, this action is not associated with survival. Retrenchment in tangible assets (H2) is also not significantly related to survival. Overall, the conventional wisdom embodied in these hypotheses is not supported. This resonates with Barbero et al. (2018) and also Winn (1997) who maintain that financially troubled firms are most likely to sell their most lucrative and/or strategically important assets below value and so such action is unlikely to lead to survival. Accordingly, sophisticated tangible asset retrenchment is suggested with insolvent firms carefully considering the preservation of valuable tangible assets rather than large scale knee-jerk divestiture.

Retrenchment in inventory (Hypothesis 3) is highly significant, but with a negative sign indicating that retrenchment in inventory *decreases* the probability of survival. This result holds for intensive inventory retrenchment (the squared term), showing a non-linear relationship, which accelerates the probability of liquidation as inventory retrenchment increases. Similar to tangible asset retrenchment, these results points to the need of careful preservation of important inventory rather than wholesale reduction to achieve survival. Selling inventory at low prices is a common measure during distress (Slatter and Lovett 1999), but our result questions its indiscriminate use to generate cash in a bankruptcy procedure.

Retrenchment in receivables (H4) is not significantly related to survival. This result, along with the result for Hypothesis 3, question the working capital management assumptions

for insolvent firms in the turnaround literature, since reduction of inventories is negatively related to survival, and reduction of receivables is unrelated to survival.

Retrenchment in labour costs (H5) is also not significantly related to survival. Furthermore, layoffs, one of the most popular measures used by distressed firms, is significantly and *negatively* related to survival, contrary to Hypothesis 6. This result holds for intensive layoffs. These results suggests that firing employees during a critical situation does not have the positive effects that are claimed (Chowdhury and Lang 1996), and that it is preferable to maintain staff, along with their know-how, as a base on which to build recovery (D'Aveni 1989). The significant squared coefficient suggests that the probability of liquidation increases rapidly as layoffs intensify.

Hypothesis 7 asserts that debt reduction increases the probability of survival. The positive and highly significant relationship supports this hypothesis. This result, along with confirmation of the relationship by the squared term, points to the unequivocal effectiveness of debt reduction which is aided by the “automatic stay” that is granted during a proceeding which suspends debt servicing and allows cash to be raised to further reduce debt all of which increases vital creditor support during the turnaround process (Pajunen 2006).

Regarding control variables, in line with the literature, size is significant and positively related to survival. Leverage is also significant and positively related to survival. This can be explained by the denominator (assets) rather than by the numerator (debts) of the ratio. It is possible that highly leveraged firms have a low level of assets. In that case, creditors may have low recovery expectations in the case of liquidation, given that assets will not cover liabilities, so reorganization and survival would be a better alternative for meeting claims totally or partially. The severity of the crisis has a significant effect on survival, meaning that the higher the level of cash held prior to the insolvency declaration, the higher the probability of survival. Finally, relative to Services, whilst membership of the Trading and Other

industries is unrelated to survival, membership of Manufacturing is significant and positively related to survival.

Overall, our results are in line with Schweizer and Neinhaus' (2017) argument that the turnaround phenomenon is more complicated than conceptualised in the retrenchment and recovery model. They state: "... firms fighting for survival are confronted with the need for comprehensive organizational change, possible turnaround strategies are manifold and fundamentally differ in their nature or theoretical grounding ... Hence, reviewing works from the corporate distress and turnaround field from the perspective of only two dimensions might lead to spurious conclusions." (Schweizer and Neinhaus 2017, 4).

Conclusion

The findings of this study challenge a pillar of conventional wisdom within the turnaround literature. We conclude that automatic, across-the-board retrenchment is not a universal panacea to achieve turnaround and should not be implemented as a reflex response to insolvency. Our results show that retrenchment of inventory and employees is significantly associated with *liquidation*. Furthermore, neither intangible asset nor tangible asset retrenchment are associated with survival. Only retrenchment of debt is associated with survival.

Implications for scholars, legislators and managers are as follows. For turnaround scholars, intervening variables between retrenchment actions and turnaround outcomes clearly deserve more attention. Our finding that layoffs are negatively related to survival merits deeper investigation. Based on RBV, it is likely that layoffs will be most damaging when the firm's most valuable resources are tied up in that labour, most likely in the form of superior management that brings about efficient production processes and innovative products. But are these equally important or is efficient labour more important than innovative labour?

Negative effects may also be disproportionately related to the dismissal of key “node” employees that connect important interrelationships within the firm that facilitate organisational learning (Fisher and White, 2000). Furthermore, research in the area of technological innovation (Lee, Wu and Pao, 2014; Vicente-Lorente and Zuniga-Vencente, 2018) suggests that layoffs are most effective for firms with low to moderate R&D intensity and least effective for firms with moderate to high levels of R&D intensity. This could be investigated in a turnaround context.

An important implication for legislators is to design bankruptcy procedures that allow careful scrutiny of proposed recovery actions. Across-the-board asset and cost retrenchment should not be encouraged nor blindly authorised as the way to achieve recovery. Turnaround administrators in particular should be experienced experts that are able to judge the appropriateness of proposed actions on a case-by-case basis. Certain actions should be carefully scrutinised such as retrenchment in intangible and tangible assets and receivables, since their reduction is not associated with survival. Also, legislation that limits the power of secured creditors such as banks is implied as powerful, over-zealous and narrow-minded secured creditors may force deeper than necessary retrenchment. These policy recommendations could address the low success rate of firms within bankruptcy procedures.

Finally, managers of insolvent firms should focus on immediate liquidity and operative improvements, which allow debt reduction which in turn gives creditors a better alternative for their claim repayment through survival than liquidation. Greatest care and consideration should be taken with the need for, and the extent of, retrenchment in inventory and employees. Managers need to be careful not to over-retrench in the face of insolvency.

This study has limitations. Firstly, it analysed firms within the Spanish bankruptcy procedure and its findings may be specific to that context. García-Posada and Mora-Sanguinetti (2012) find that the Spanish bankruptcy proceeding is relatively underutilised

compared to other countries and this may affect the generalisability of our findings.

Secondly, the findings may not be applicable to declining firms that are *not* facing an existential crisis. Thirdly, because of the study's static, cross sectional methodology, it can only speculate on the reasons for the differing impact of components of retrenchment on survival. It does not analyse causes of decline, broad context, turnaround process, including implementation, and non-retrenchment variables, and so is unable to demonstrate that such variables do or do not matter. Longitudinal, case study methodology that draws from both quantitative and qualitative data and data analysis has the potential to address these limitations (Pandit, 2000). Relatedly, this study does not analyse *combinations* of actions which may be most effective to ensure survival, nor does it assess insolvent firms in terms of resource strengths and resource weaknesses prior to recovery. Again, case study methodology has the potential to address these limitations (Cater and Schwab, 2008). Wild and Lockett (2016, 849) concur because such "... an analysis of resource weaknesses as part of strategic change efforts during turnaround attempts may be crucial to ensure that any actions taken do not make existing resource weaknesses more salient and destructive for the firm."

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Table 1: Bankruptcies survival rates in Spain (2012-2016)*

	2012	2013	2014	2015	2016
Convenio attempts	1,127	723	844	727	583
Convenios achieved	227	294	344	277	182
Survival rate (%)	20.14	40.66	40.76	38.10	31.22

*Source: Yearbook of bankruptcy statistics (Van Hemmen, 2012-2017). The statistics show the number of *convenios* attempted and achieved by insolvent firms filing for bankruptcy in a particular year. Therefore, in 2012, there were 1,127 *convenio* attempts by firms that filed for bankruptcy exclusively in 2012. Of these, 227 (20.14%) achieved a *convenio*.

Table 2: Sample derivation

Total bankrupt (<i>concurso</i>) firms in SABI	5,543
Less residential building, sports clubs, holding firms, subsidiaries and public firms	3,156
	2,387
Less those before 2012 and after 2014	598
	1,789
Less immediate liquidations	1,008
	781
Less those without an outcome (<i>convenio</i> or liquidation) before 31/12/2015	96
	685
Less firms without complete financial data	103
Sample (of which 261 <i>convenios</i> /survivors and 321 liquidations)	582

Table 3: Description of variables

Variable	Definition	Measure
Dependent	Result	1 (<i>convenio</i> /survival), 0 (liquidation)
Independent	Intangible assets retrenchment	Percentage change in intangible assets
Independent	Tangible assets retrenchment	Percentage change in tangible assets
Independent	Inventory retrenchment	Percentage change in inventory
Independent	Receivables retrenchment	Percentage change in receivables
Independent	Employees reduction (layoffs)	Percentage change in employees
Independent	Labour costs retrenchment	Percentage change in labour costs
Independent	Debt reduction	Percentage change in total debt
Control	Size	Log of assets
Control	Age	Year of bankruptcy less Year of foundation
Control	Leverage	Total debts to total assets
Control	Severity of the crisis	Cash to total assets
Control	Industry	Manufacturing, Trading, Services, Other

Table 4: Mean comparison by result

Variable	Survive	Liquidate	t-statistic	
Intangible assets retrenchment	0.22	0.17	1.477	
Tangible assets retrenchment	0.19	0.22	-0.956	
Inventory retrenchment	0.06	0.28	-4.604	***
Receivables retrenchment	-0.91	-0.32	1.062	
Employees reduction (layoffs)	0.16	0.21	-1.985	**
Labour costs retrenchment	0.12	0.12	-0.011	
Debt reduction	0.19	-0.34	2.413	**
Size	8.25	7.16	9.037	***
Age	22.40	18.79	3.784	***
Leverage	1.13	1.02	1.789	**
Severity of the crisis	0.05	0.05	-0.009	
Change in ROA	0.21	-0.71	4.119	***

* $p < 0.10$ ** $p < 0.05$; *** $p < 0.01$

Table 5: Descriptive statistics and correlations

	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Result	0.449	0.498															
2	Intangible assets	0.193	0.446	0.061														
3	Tangible assets	0.204	0.334	-0.040	0.076													
4	Inventory	0.180	0.574	-0.188***	0.068	0.018												
5	Receivables	-0.219	2.633	0.044	0.013	-0.034	0.179***											
6	Employees (lay-offs)	0.189	0.332	-0.082**	0.202***	0.115***	0.135***	0.062										
7	Labour costs	0.123	1.193	0.000	0.090**	0.042	0.074	-0.072	0.210***									
8	Debt	-0.106	2.649	0.100**	0.094**	0.081	0.014	0.131***	0.189***	0.264***								
9	Size	7.647	1.544	0.351***	0.198***	0.073	-0.020	0.045	0.109***	0.072	0.166***							
10	Age	20.408	11.585	0.155***	0.065	-0.019	0.027	0.061	0.053	0.064	0.101***	0.234***						
11	Leverage	1.069	0.721	0.074	-0.078	0.032	-0.100**	-0.060	0.058	0.056	0.094**	-0.193***	-0.052					
12	Severity	0.046	0.085	0.000	-0.040	0.024	-0.042	-0.050	-0.103**	-0.150***	-0.439***	-0.228***	-0.036	-0.046				
13	Manufacturing			0.198***	0.058	-0.049	-0.017	0.046	-0.015	-0.057	0.040	0.114***	0.162***	-0.071	-0.065			
14	Services			-0.143***	-0.074	0.055	0.006	-0.068	-0.044	0.041	-0.091**	-0.145***	-0.137***	0.079	0.070	-0.488***		
15	Trading			-0.140***	0.023	-0.010	0.054	-0.015	0.026	0.014	0.033	-0.116***	-0.040	0.035	-0.012	-0.459***	-0.333***	
16	Other			0.086**	-0.020	0.014	-0.058	0.046	0.053	0.012	0.021	0.193***	-0.008	-0.049	0.021	-0.270***	-0.196***	-0.185***

N = 582; * $p < 0.10$ ** $p < 0.05$; *** $p < 0.01$

Table 6: Results of logistic regression

Variable	Model 1			Model 2			Model 3		
	Coefficient		SE	Coefficient		SE	Coefficient		SE
Constant	-9.26	***	(2.51)	-9.26	***	(2.51)	-7.61	***	(2.56)
<i>Independent variables</i>									
Intangible assets				0.07		(0.25)	-0.12		(0.30)
Tangible assets				-0.72	**	(0.33)	0.24		(0.63)
Inventory				-0.73	**	(0.20)	-1.09	***	(0.24)
Receivables				0.03		(0.04)	-0.13		(0.15)
Labour costs				-0.09		(0.26)	-0.27		(0.35)
Employees (layoffs)				-0.70	***	(0.37)	-0.50	*	(0.42)
Debt				2.98	***	(0.47)	3.36	***	(0.51)
Intangible assets ²							0.64	**	(0.33)
Tangible assets ²							-2.09	***	(0.76)
Inventory ²							-0.31	***	(0.13)
Receivables ²							-0.01		(0.01)
Labour costs ²							-0.07		(0.08)
Employees (layoffs) ²							-0.71	*	(0.43)
Debt ²							0.05	***	(0.01)
<i>Control variables</i>									
Size	1.57	***	(0.60)	1.57	***	(0.60)	1.31	***	(0.61)
Size ²	-0.07	*	(0.04)	-0.07	*	(0.04)	-0.05		(0.04)
Age	-0.02		(0.03)	0.00		(0.03)	-0.01		(0.03)
Age ²	0.00		(0.01)	0.00		(0.00)	0.00		(0.00)
Leverage	0.57	***	(0.18)	0.57	***	(0.18)	0.49	***	(0.18)
Severity	3.61	**	(1.46)	3.61	***	(1.46)	2.92	**	(1.54)
Trading	-0.05		(0.28)	-0.14		(0.30)	-0.12		(0.30)
Manufacturing	0.84	***	(0.25)	0.74	***	(0.27)	0.61	**	(0.28)
Other	0.64	*	(0.35)	0.62		(0.39)	0.49		(0.41)
Chi-square	129.66	***		213.87	***		246.11	***	
Pseudo R-squared (Nagelkerke)	0.27			0.41			0.46		
- 2 log likelihood	670.97			586.76			554.52		
Reorganize	65.5%			69.3%			74.7%		
Liquidate	75.7%			80.4%			81.6%		
Overall accuracy	71.1%			75.4%			78.5%		

* $p < 0.10$ ** $p < 0.05$; *** $p < 0.01$