ED 396 : Ecole doctorale Economie, organisations, société

UMR 7235 - Economix

Lara ABDEL FATTAH

# Appartenance à un groupe et déroulement du processus de défaillance des entreprises.

## Application au cas de la France

Thèse présentée et soutenue publiquement le 14 mai 2016
en vue de l'obtention du doctorat de Sciences économiques
de l'Université Paris Ouest Nanterre La Défense

sous la direction de Nadine LEVRATTO

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# Remerciements

Mes remerciements s'adressent d'abord à Régis Blazy, Patricia Crifo, Giovanni Ramello et Angelo Secchi pour l'intérêt qu'ils ont manifesté pour mes recherches, en acceptant de participer à mon jury de thèse.

Je suis particulièrement reconnaissante envers ma directrice de thèse, Nadine Levratto, pour m'avoir encadrée pendant mes trois ans et demi de recherche. Mes travaux ont considérablement bénéficié de ses critiques et de ses conseils avisés. Je la remercie chaleureusement pour sa patience, ses encouragements inlassables et l'aide inconditionnelle qu'elle m'a apportée tout au long de cette thèse.

Un merci tout particulier à mes collègues doctorants du bureau 209 pour leur soutien et la bonne ambiance qu'ils ont mis en continu dans le bureau. Merci à Aziza, Bénédicte, Hugo, Ikpidi, Joseph, Marion, Nadia, Nady et Penda. Un grand merci en particulier à Bénédicte pour avoir joué le rôle de relectrice de mes chapitres de thèse.

Mes remerciements vont aussi à Eliane El-Badaoui et Denis Carré pour leur soutien précieux et leurs encouragements continus. Merci particulièrement à Luc Tessier qui a eu la gentillesse de partager avec moi son expertise sur le logiciel SAS qui a servi pour mon travail de traitement des données de cette thèse.

Je souhaite aussi adresser ma gratitude aux participants au séminaire interne d'EconomiX pour leurs précieuses remarques et pour l'intérêt qu'ils ont accordé à mes travaux, en venant assister à mes présentations.

Mon travail a pu être amélioré à plusieurs reprises grâce à la chance que j'ai eu de pouvoir participer à des colloques internationaux à l'étranger. Je tiens, à ce titre, à exprimer ma gratitude au laboratoire EconomiX pour les divers financements qu'il m'a accordés à cette fin.

Mes remerciements ne peuvent s'achever sans une pensée pour ma famille et mes parents qui ont été pour moi une source de réconfort pendant les durs moments de cette recherche.

# Résumé général

Cette thèse est une contribution à la littérature sur les défaillances d'entreprises et celle sur les groupes d'entreprises. Basée sur un échantillon d'entreprises françaises entrées en procédure collective sur la période entre 2006 et 2012, elle propose de repenser la défaillance à la lumière de deux faits. Le premier concerne la spécificité du cadre légal français du traitement de la défaillance qui, malgré son orientation pro-débiteur, n'empêche pas la liquidation d'une part suffisamment élevée des entreprises sollicitant l'ouverture d'une procédure collective annuellement. Le second concerne la place croissante des groupes au sein du tissu productif et la conciliation du processus de filialisation avec le principe d'indépendance de l'entité. A travers une approche pluridisciplinaire alliant le droit à l'économie, cette thèse propose d'étudier la défaillance comme un processus qui débute avec l'entrée de l'entreprise en procédure collective et s'achève avec la disparition des difficultés de l'entreprise ou la sortie de l'entreprise du marché. Quatre chapitres tentent de répondre à cet objectif.

Le chapitre introductif revoit la littérature sur la défaillance et distingue les travaux à visée prédictive de la défaillance des travaux à visée normative du droit de la défaillance. Le deuxième chapitre évalue les déterminants de la défaillance et analyse l'impact de l'appartenance à un groupe sur le risque de défaillance. Le troisième chapitre étudie le choix des tribunaux entre le redressement judiciaire et la liquidation judiciaire, compte tenu de l'ordre de priorité des objectifs du droit français qui privilégie explicitement le sauvetage des entreprises et le maintien des emplois sur le remboursement des créanciers. Le quatrième chapitre s'interroge sur les déterminants de l'échec des tentatives de sauvetage des entreprises en procédure de redressement judiciaire, avec une attention particulière sur le rôle des groupes vis-à-vis de la survie de leurs filiales. Les résultats obtenus mettent en évidence l'impact significatif de l'appartenance à un groupe et celui des caractéristiques des groupes sur les deux premières étapes du processus de défaillance ; à savoir l'entrée en procédure collective et la tentative de redressement relativement à une liquidation immédiate. Ces résultats suggèrent que les groupes d'entreprises seraient impliqués dans la survie de leurs filiales aussi longtemps que ces dernières sont encore viables. En ce sens qu'une entreprise défaillante appartenant à un groupe ne possède pas d'avantage par rapport à une entreprise indépendante, en termes de potentiel de survie après l'entrée en procédure collective.

**Mots clés :** Défaillance, Groupes d'Entreprises, Procédure Collective, Processus de Défaillance, Redressement Judiciaire, Liquidation Judiciaire.

# Overall summary

This thesis is a contribution to both the literature on corporate bankruptcy and the literature on the internal capital markets and business groups. Using data relative to a sample of bankrupt firms over the period from 2006 to 2012, it proposes to rethink bankruptcy in light of two facts. The first one relates to the specificity of the French legal bankruptcy system which, despite its clear pro-debtor orientation, fails to save a high proportion of bankrupt firms annually. The second concerns the growing number of firms affiliated to business groups within the French productive system and the conciliation between group affiliation and the limited liability principle within business groups' members. Through a multidisciplinary approach combining law and economics, this thesis proposes to analyze bankruptcy as a process which starts with the opening of a bankruptcy procedure and ends with the end of firm difficulties or the end of bankruptcy procedure when firm recovery becomes clearly impossible. Four chapters serve this objective.

The first chapter reviews the literature on bankruptcy and identifies two different approaches of bankruptcy: a predictive one which aims to identify the determinants of bankruptcy risk and a normative one which aims to compare the efficiency properties of existing bankruptcy systems. The second chapter identifies the determinants of bankruptcy within French firms and evaluates the influence of firm affiliation to a business group and group characteristics on its risk of bankruptcy. The third chapter explores the determinants of courts' decision between the reorganization and the liquidation of bankrupt firms, given the objectives of the French bankruptcy law which sets firm rescue and employment preservation in priority to creditors' reimbursement. The fourth and last chapter examines the determinants of firm survival after a reorganization attempt within reorganization procedures, with a focus on the role of firm affiliation to a business group. The main insights gained from the results emerging from all four chapters are consistent with a strong influence of group affiliation and group characteristics, limited to the first two steps of the bankruptcy process; namely the risk of filing for bankruptcy and the chance to benefit from a reorganization attempt relatively to liquidation. This suggests that business groups are involved in the financial support of their affiliates as long as the latter are financially sound and economically viable. Once an affiliated firm is subject to a bankruptcy procedure, its affiliation to a business groups is no longer an advantage over stand-alone firms.

**Key words:** Bankruptcy, Bankruptcy Process, Business Groups, French Bankruptcy Law, Reorganization, Liquidation.

# Sommaire

# Introduction générale

Depuis le début du XIXème siècle, la défaillance d'entreprise suscite l'intérêt de praticiens et de chercheurs aux profils et domaines de recherche variés (Desurvire, 1992). L'accélération du phénomène qui a suivi la crise des années 1930 contribue à faire de l'échec de l'entreprise un champ d'investigation à part entière (Guilhot, 2000). Riche d'innombrables contributions publiées annuellement, la défaillance demeure un champ de recherche fertile, d'autant que le nombre de disparitions d'entreprises connaît une augmentation remarquable au cours de la dernière décennie.

En théorie microéconomique, la défaillance correspond à une sanction naturelle à l'égard d'entreprises qui ne sont plus performantes (Chiapori, 1984). Il s'agit plus précisément d'entreprises qui se retrouvent dans l'incapacité de dégager un niveau de rentabilité suffisant pour honorer leurs engagements financiers. *De facto*, dans un contexte institutionnel donné, la radiation de ces entités économiques permet le transfert des ressources vers d'autres aux niveaux de performance et de rentabilité plus élevés, et contribue *in fine* à l'assainissement du circuit économique. Blazy (2000) suggère que la défaillance représente un moyen de sortie du marché indispensable au fonctionnement d'une économie concurrentielle. L'objet de cette introduction est de mettre l'accent sur le caractère situé du phénomène de défaillance à partir d'éléments institutionnels et factuels tirés du cas de la France.

## I. Définition de l'objet d'étude et délimitation du champ de la recherche

En dépit du grand nombre de travaux dédiés à la défaillance, un consensus sur la définition même de cette notion est loin d'être atteint (Guilhot, 2000). La difficulté de contenir la défaillance d'entreprise dans un cadre bien délimité tient en particulier à la nature même du phénomène qui se situe à l'intersection de l'analyse économique et juridique (Blazy, 2000). De ce caractère hybride, découlent deux acceptions principales du concept de défaillance: l'une économique, l'autre juridique.

Les partisans d'une conception purement économique de la défaillance associent cette dernière à un ensemble de situations d'échecs susceptibles, ou non, de faire l'objet d'un traitement judiciaire. Dans cette optique, la défaillance correspond à un processus plus ou moins long qui débute bien avant la détérioration de la situation financière de l'entreprise. En ce sens, une entreprise est réputée défaillante à partir du moment où un problème d'alignement avec son environnement économique l'empêche de maintenir une position stratégique viable sur celui-ci (Crutzen et Van Caillie, 2008).

Alternativement, pour les partisans d'une approche juridique, la défaillance se définit sur la base de la conformité de la situation d'une entreprise avec certains critères légaux dictés par le législateur qui lui permettent de conclure quant à l'existence ou non d'une défaillance légale d'entreprise. Selon cette conception, est considérée comme défaillante, toute entreprise qui fait l'objet d'une cessation des paiements. En France, la loi n°85-95 du 25 janvier 1985 relative au redressement et à la liquidation judiciaire des entreprises, amendée par la réforme 94-475 du 10 juin 1994, qualifie une entreprise de défaillante dès lors qu'elle se retrouve en cessation des paiements, définie comme la situation d'une entreprise « dans l'impossibilité de faire face à son passif exigible avec son actif disponible ».

Dans un souci d'apporter une appréciation objective de l'état de défaillance, nous retenons cette définition juridique de la défaillance. Cette thèse définit donc comme défaillante, toute entreprise en cessation des paiements qui fait l'objet d'une procédure collective ; conformément à l'article L.621-1 du Code de Commerce. Dans la mesure où la défaillance se situe à l'entrecroisement du droit et de l'économie, nous proposons une analyse qui mobilise ces deux domaines. A travers une approche pluridisciplinaire alliant le droit à l'économie, nous considérons la défaillance comme un processus qui débute avec la constatation de la cessation des paiements et s'achève avec le traitement des difficultés de l'entreprise ou sa disparition. A partir de l'analyse des caractéristiques économiques, financières et autres, propres à l'entreprise défaillante, ses parties prenantes et son environnement, nous apportons des éléments explicatifs pour chaque étape du processus.

## II. Cadre d'analyse

L'objet de cette thèse n'est pas une évaluation économique du droit de la défaillance, mais plutôt, une analyse économique du processus de défaillance au regard de la spécificité du cadre légal français du traitement de la défaillance. Souvent comparé à l'exemple américain, le système français est particulièrement intéressant à analyser. En effet, son orientation formellement favorable au sauvetage des entreprises défaillantes et la préservation des emplois n'empêche pas la liquidation annuelle d'un nombre non négligeable d'entreprises défaillantes.

Depuis la fin des années 1990, une tendance vers la convergence des droits de la défaillance vers le système pro-débiteur américain est constatée en Europe, avec quelques exceptions, notamment en France[1]. La recherche d'une efficacité accrue à travers le partage

[1] L'ordonnance n°2014-236 du 12 mars 2014 portant réforme des procédures collectives en France manifeste une attention accrue aux intérêts des créanciers de l'entreprise défaillante.

des risques entre débiteurs et créanciers est souvent mise en avant pour expliquer cette convergence (Brouwer, 2006 ; Frouté, 2007). Dans la plupart des cas, le principe directeur est le remplacement des procédures de liquidation existantes par des procédures plus clémentes vis-à-vis des débiteurs défaillants. Typiquement, une procédure calquée sur l'exemple du Chapter 11 américain est mise en place pour permettre aux débiteurs défaillants faisant preuve d'une viabilité économique de bénéficier d'une tentative de sauvetage sous la protection du tribunal. A cet égard, les exemples de l'Allemagne et de l'Angleterre sont très illustratifs. En 1999, une réforme majeure a modifié le droit des procédures collectives en Allemagne *Insolvenzordnung* par l'introduction d'une nouvelle catégorie de procédure *Insolvenzplan* qui vise à offrir aux entreprises défaillantes la possibilité de poursuivre leur activité. Cette innovation constitue le premier pas d'un rapprochement progressif entre les systèmes allemand et américain de la défaillance. Plus récemment en 2002, l'*Enterprise Act* anglais a visé la facilitation du sauvetage des entreprises et le meilleur service des créanciers dans l'ensemble. L'examen des grandes évolutions du droit des défaillances français suggère que le même processus a été enclenché dans le pays. En effet, durant les trente dernières années, les objectifs du droit français de la défaillance ont évolué dans le sens d'une dédramatisation de la défaillance et de son traitement, en passant progressivement de la sanction systématique du débiteur défaillant, vers un traitement le plus préventif possible de la défaillance visant à maximiser les chances de survie des entreprises.

Entre la première guerre mondiale et le début des années 1960, la loi française des défaillances se distingue par une sévérité remarquable envers le débiteur défaillant dont l'incapacité à rembourser les dettes à échéance est punie par des peines pouvant aller de la confiscation des actifs jusqu'à l'incarcération. L'attention accrue portée au sauvetage des entreprises depuis le milieu des années 1960 a motivé les réformes de 1984 et 1985 visant à moderniser le traitement des défaillances en France. Les réformes introduites par les lois du 1er mars 1984 et du 25 janvier 1985 se sont traduites par une refonte totale des procédures avec comme objectif commun de faciliter le sauvetage des entreprises et d'encourager l'intervention avant la cessation des paiements. La loi du 1er mars 1984 relative à la prévention et au règlement amiable, entrée en vigueur en mars 1985, consiste pour l'essentiel à améliorer l'information des dirigeants sur les signes avant-coureurs d'une défaillance et à prévoir une solution à l'amiable pour les difficultés rencontrées. Par ailleurs, la loi n° 85-89 du 25 janvier 1985 relative au redressement et à la liquidation judiciaires vise principalement à encourager le redressement des entreprises viables. L'article 1er de la loi énonce qu'« *il est institué une procédure de redressement judiciaire destinée à permettre la sauvegarde de*

*l'entreprise, le maintien de l'activité et de l'emploi et l'apurement du passif. Le redressement judiciaire est assuré, selon un plan arrêté par décision de justice, à l'issue d'une période d'observation. Ce plan prévoit, soit la continuation de l'entreprise, soit sa cession. Lorsqu'aucune de ces solutions n'apparaît possible, il est procédé à la liquidation judiciaire* ». Cette primauté accordée à la place occupée par l'entreprise défaillante permet de hiérarchiser les objectifs du traitement des défaillances en France, avec, en premier lieu, le sauvetage de l'entreprise, puis le maintien des emplois, et enfin le remboursement des créanciers.

A la lumière de la recrudescence des défaillances durant le début des années 1990, les critiques des créanciers et des institutions financières à l'égard des lois de 1984 et 1985 ont conduit à une nouvelle réforme en 1994. Les critiques portent, d'une part, sur l'insuffisance du dispositif existant de prévention des difficultés et, d'autre part, sur le traitement défavorable des créanciers qui ne garantit pas pour autant le sauvetage d'un nombre suffisant d'entreprises défaillantes. La loi du 10 juin 1994 répond ainsi à une double préoccupation : en premier lieu, l'amélioration du dispositif de prévention des difficultés à travers l'accélération de la procédure d'alerte et l'accroissement du pouvoir du tribunal, en second lieu, la simplification et l'accélération des procédures de redressement et de liquidation judiciaires, tout en renforçant les droits des créanciers et en moralisant les plans de cession[2]. La réforme conserve toutefois l'architecture générale du droit et notamment ses objectifs initiaux, à savoir, la priorité accordée au sauvetage des entreprises et des emplois par rapport au désintéressement des créanciers.

En 2005, le droit des entreprises en difficulté a été modifié par la loi de sauvegarde des entreprises n°2005-845 du 26 juillet 2005, dite SADE, entrée en vigueur le 1er janvier 2006. La réforme introduite par la loi SADE est la troisième en moins de quarante ans. Son principal objectif est le renforcement du traitement préventif des difficultés des entreprises à travers l'instauration d'une nouvelle procédure dite « Procédure de sauvegarde ». La loi de 2005 contribue par ailleurs au réaménagement des procédures formelles et informelles existantes[3].

[2] Dans le cadre de cette nouvelle loi, la liquidation des entreprises est simplifiée dans la mesure où le tribunal dispose désormais de la possibilité de prononcer la liquidation immédiate de l'entreprise sans période d'observation si le redressement de celle-ci semble manifestement impossible. Les créanciers ont également bénéficié de cette réforme. Ils peuvent désormais être rémunérés en priorité sur les contrats en cours durant la période d'observation, notamment en présence de sûretés. Enfin, la moralisation des plans de cession répond au souci d'éviter que des entreprises cédées ne profitent à des repreneurs *« indélicats qui promettent monts et merveilles pour le maintien de l'emploi »* (Bonnard, 2009, p. 15), mais ne respectent pas leurs engagements. Le tribunal possède désormais la faculté de prévoir l'inaliénabilité des biens cédés aux repreneurs et de prononcer la résolution du plan en cas d'inexécution des engagements d'un repreneur.

[3] La loi SADE introduit une nouvelle procédure, dite procédure de conciliation, qui se substitue à l'ancien règlement amiable. La procédure de conciliation préserve l'objectif de l'ancienne procédure, mais permet surtout

La procédure de sauvegarde, innovation majeure de cette réforme, s'inspire de la procédure de redressement américaine (Chapter 11). Elle vient s'ajouter aux procédures collectives existantes, le redressement et la liquidation judiciaire, mais s'en distingue par son champ de couverture. La procédure de sauvegarde bénéficie au débiteur qui, sans être en cessation des paiements, justifie de difficultés qu'il n'est pas en mesure de surmonter (Article L.620-1 du Code de commerce). Peu utilisée dans les faits, elle vise à permettre au débiteur de tenter une réorganisation de son entreprise et une renégociation de sa dette à l'abri des poursuites des créanciers. L'ordonnance du 18 décembre 2008 a tenté de rendre plus attractive la nouvelle procédure de sauvegarde instituée par la loi SADE. L'ordonnance de 2008, entrée en vigueur le 15 février 2009, aboutit principalement à l'assouplissement des procédures de sauvegarde[4].

L'extension du domaine de la loi s'est renforcée avec l'ordonnance n°2014-326 du 12 mars 2014 portant la réforme de la prévention des difficultés des entreprises et des procédures collectives, entrée en vigueur le 1er juillet 2014. Elle a pour principaux objectifs de renforcer et d'étendre les mesures de détection des difficultés des entreprises pour les prévenir avec plus d'efficacité et de simplifier les procédures collectives pour les adapter au contexte économique. L'ordonnance manifeste en particulier une attention accrue aux intérêts des créanciers de l'entreprise défaillante. Elle introduit des modifications aussi bien aux procédures de prévention (conciliation et sauvegarde) qu'aux procédures de traitement de la défaillance (redressement et liquidation judiciaires). Plus précisément, le régime de la conciliation a été modifié à deux niveaux, avec pour objectif le renforcement de l'efficacité de la procédure et l'incitation des créanciers à y participer. A cette fin, le conciliateur peut désormais organiser la cession partielle ou totale de l'entreprise, à la demande du débiteur et après avis des créanciers participant à la conciliation. Par ailleurs, et dans une optique clairement incitative, l'ordonnance prévoit l'extension de la *New Money*[5] aux créanciers qui apportent de nouveaux financement durant la procédure. Une nouvelle procédure, dite de « sauvegarde accélérée », est introduite. Elle est ouverte à tout débiteur bénéficiant d'une

l'amélioration des conditions d'ouverture de la procédure de traitement amiable des difficultés. Par ailleurs, les procédures de redressement et de liquidation judiciaires sont conservées mais aménagées. En particulier, le redressement par voie de cession est ramené au même plan que la liquidation judiciaire. Finalement, une procédure simplifiée de liquidation est mise en place. La procédure de liquidation judiciaire simplifiée, visant à accélérer la liquidation des entreprises non viables, bénéficie aux entreprises sans actif immobilier.

[4] Le débiteur était auparavant contraint de faire preuve d'une date à laquelle il serait en état de cessation des paiements. Il a désormais la possibilité de demander l'ouverture d'une procédure de sauvegarde par la simple preuve d'absence de cessation des paiements et de présence de difficultés insurmontables.

[5] Conformément à l'article 40 de la loi de 1985, les créances nées après le jugement d'ouverture, dites « créances de l'article 40 », bénéficient du droit de paiement à échéance ou, à défaut, d'un rang prioritaire en cas de cession ou de liquidation de l'entreprise. Ce privilège de la « New Money » était jusque-là réservé aux créanciers des entreprises en cessation des paiements.

procédure de conciliation en cours, dont les comptes sont certifiés par un commissaire aux comptes et dont le nombre de salariés, le chiffre d'affaires ou le total de bilan sont supérieurs à des seuils fixés par décret ou établissant des comptes consolidés. En matière de redressement et de sauvegarde, l'ordonnance contribue à un rééquilibrage des pouvoirs en faveur des créanciers. Les créanciers membres des comités de créanciers peuvent désormais soumettre un projet de plan, *concurrent à celui du débiteur*, qui fera l'objet d'un rapport de l'administrateur et sera proposé au vote des comités. L'ordonnance autorise le tribunal à apporter des modifications aux conditions de quorum et de majorité pour le vote de l'assemblée générale dans le cadre des modifications de capital prévues par le plan. Par ailleurs, l'ouverture de la sauvegarde ou du redressement judiciaire entraine désormais le versement des sommes restant dues sur le montant des parts et actions souscrites.

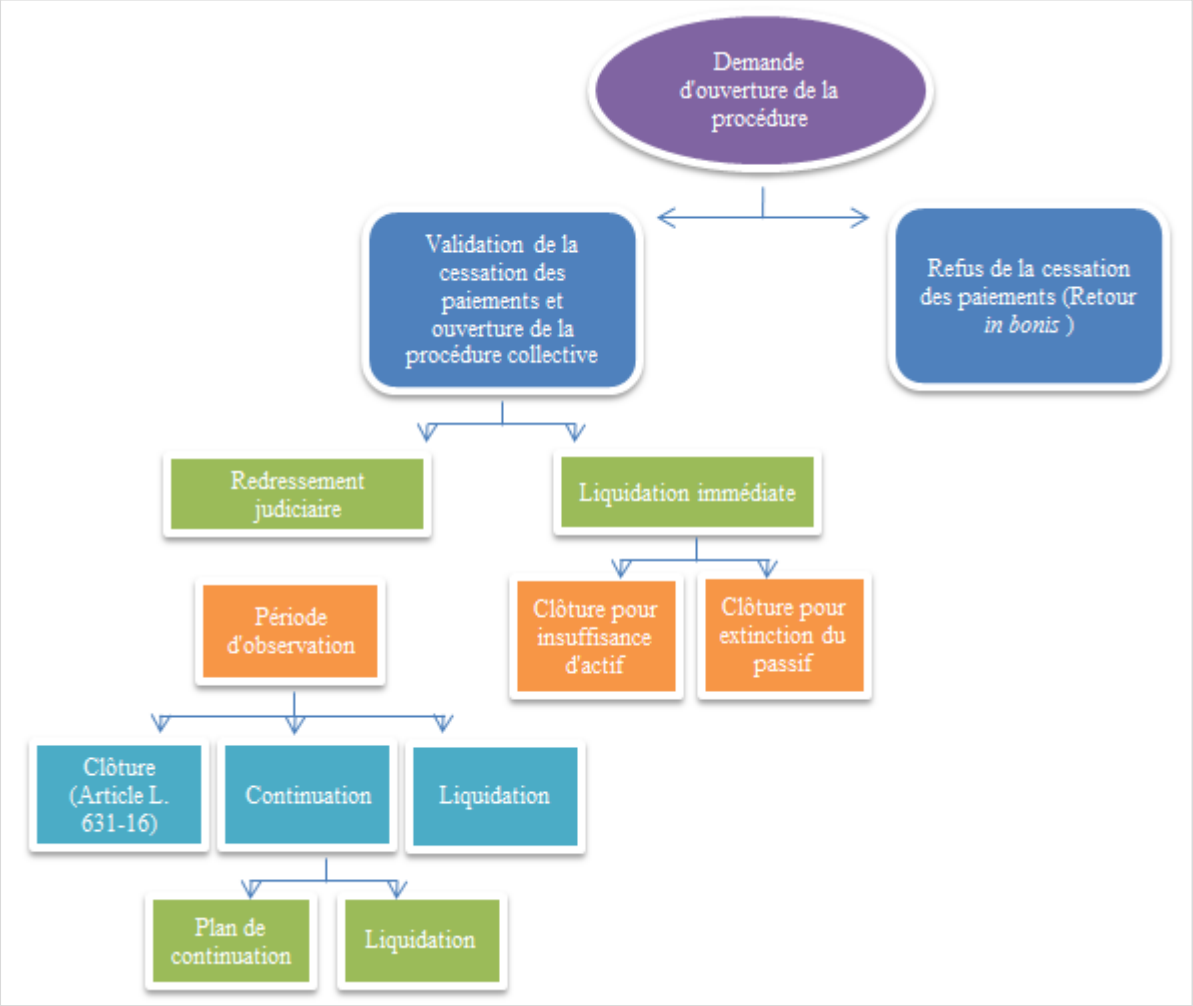
Les lois qui ont réformé le système de traitement des défaillances en France confirment que le système légal français est favorable au sauvetage des entreprises et au maintien des emplois, en dépit de la réforme récente qui pourrait traduire un tournant majeur compte tenu de l'orientation du droit en faveur des débiteurs. Dans sa configuration actuelle, le système de traitement de la défaillance peut se résumer par la figure A-1. Ainsi, l'ouverture d'une procédure collective qui peut se faire à la demande du débiteur, à la demande d'un créancier assignant l'entreprise en justice ou à la demande du tribunal par une procédure d'auto-saisine, est soumise à un jugement du tribunal confirmant l'état de cessation des paiements de l'entreprise. Si le tribunal considère que l'état de cessation des paiements est avéré, la procédure est ouverte. Le jugement d'ouverture de la procédure donne lieu à une période d'observation durant laquelle sont évaluées les chances de redressement de l'entreprise. Le tribunal peut néanmoins prononcer la liquidation immédiate de l'entreprise si sa situation s'avère irrémédiablement compromise.

A défaut d'une liquidation immédiate, la période d'observation a pour effet la suspension des poursuites des créanciers et la désignation des organes de la procédure, soient le juge commissaire, l'administrateur judiciaire et le représentant des créanciers[6]. Ces derniers sont chargés respectivement de veiller au bon déroulement de la procédure, d'évaluer les chances de survie de l'entreprise et de vérifier les créances. Au terme de la période d'observation et sur avis de l'administrateur judiciaire, le tribunal est seul habilité à décider

[6] Le juge commissaire désigné par le tribunal veille principalement au bon déroulement de la procédure. L'administrateur judiciaire élabore un bilan économique et social de l'entreprise et décide sur cette base le redressement ou la liquidation de celle-ci. Le représentant des créanciers est chargé de vérifier les créances déclarées et devient le mandataire à la liquidation de l'entreprise dans le cas où la procédure débouche sur une liquidation.

du sort de l'entreprise. Trois issues sont envisageables : la clôture de la procédure et le retour *in bonis* de l'entreprise conformément à l'article 631-16 du Code de commerce[7], la liquidation judiciaire si la situation de l'entreprise s'avère irrémédiable[8] et enfin la continuation de l'entreprise en vue de l'adoption d'un plan de continuation.

**Figure A- 1 Schéma de la procédure collective en France**




Source : Auteur

## III. Problématique et positionnement de la thèse

Dans sa version actuelle, le droit français des défaillances ne tient pas compte de la structure du capital des entreprises. Le principe directeur consiste à traiter l'entreprise comme

[7] Conformément à l'article L 631-16, le tribunal peut, à tout moment, mettre fin à la période d'observation si le débiteur dispose des sommes suffisantes pour désintéresser ses créanciers et payer les frais de procédure.

[8] La liquidation judiciaire est prononcée à l'encontre des entreprises dont la situation est irrémédiablement compromise ou, en d'autres termes, lorsqu'aucune perspective de redressement n'a pu être dégagée durant la période d'observation. Le tribunal de commerce désigne un mandataire judicaire en qualité de liquidateur pour réaliser l'ensemble des actifs de l'entreprise. Le montant de la réalisation des actifs constitue l'assiette de désintéressement des créanciers qui seront payés suivant leur rang, dans l'ordre de priorité fixé par la loi.

une entité autonome, qu'elle soit indépendante ou filiale. Ainsi, chaque entreprise serait seule responsable de ses dettes avec ses propres actifs, indépendamment des liens capitalistiques avec le reste de son groupe. Par conséquent, la défaillance d'un ou de plusieurs sociétés d'un groupe entraîne l'ouverture de procédures distinctes à l'égard de chaque membre du groupe. La question qui se pose alors est de savoir si, et dans quelle mesure, chaque composante du groupe doit être traitée comme étant une entité distincte. Une extension de la procédure de liquidation à l'ensemble du groupe, ou du moins à la société mère, peut être néanmoins réalisée, conformément à l'article L. 621-2 du code de commerce, lorsque la preuve d'une confusion de patrimoines[9] ou de fictivité de la filiale[10] est existante. Toutefois, ces deux situations demeurent difficiles à mettre en évidence, laissant penser que la levée du voile de la personnalité morale (en anglais, *« piercing the corporate veil »*) n'est pas chose évidente.

Depuis le début des années 2000, la recrudescence des défaillances s'accompagnant d'un énorme contentieux juridique mettant en cause la responsabilité des sociétés mères vis-à-vis de la défaillance de leurs filiales a ravivé le débat sur le sujet. Dans la plupart des cas, la défaillance d'entreprises affiliées à un groupe est associée à des montants colossaux d'impayés de dettes environnementales et/ou sociales à l'origine de leur défaut. L'origine du problème : le principe d'indépendance des personnes morales au sein du groupe, souvent exploité par ce dernier dans son propre intérêt. De Metaleurop à Flodor en passant par Petroplus, les exemples d'instrumentalisation du droit des défaillances par les groupes en France sont nombreux.

L'affaire Metaleurop Nord a marqué les esprits par son impact tant social qu'environnemental. Filiale du groupe Metaleurop SA, la société Metaleurop Nord exploitait la plus importante fonderie de plomb et de zinc d'Europe à Noyelles-Godault. En 2003, ses 830 salariés apprennent que l'entreprise, placée en redressement judiciaire depuis novembre 2002, va être liquidée, et qu'aucun plan social n'est prévu. Dans la réalité, depuis plusieurs années, la maison mère, sous le haut patronage de Glencore, son actionnaire de référence, se livrait au dépeçage de sa filiale dont le bilan des dettes environnementales s'est considérablement alourdi. En réaction, à ce type de manipulations comptables le Grenelle de l'environnement a introduit des modalités de responsabilisation accrue des sociétés mères pour les dégâts causés à l'environnement par leurs filiales. Conformément au nouvel article

[9] La confusion des patrimoines suppose une imbrication des éléments d'actif et de passif composant les patrimoines des sociétés concernées. L'objectif des sociétés qui opèrent une confusion des patrimoines n'est pas de limiter les risques financiers (ce qui est le but de la fictivité), mais de rendre perméables les cloisons entre les patrimoines de deux entités (Bulletin Joly Sociétés, 01 mai 1995).

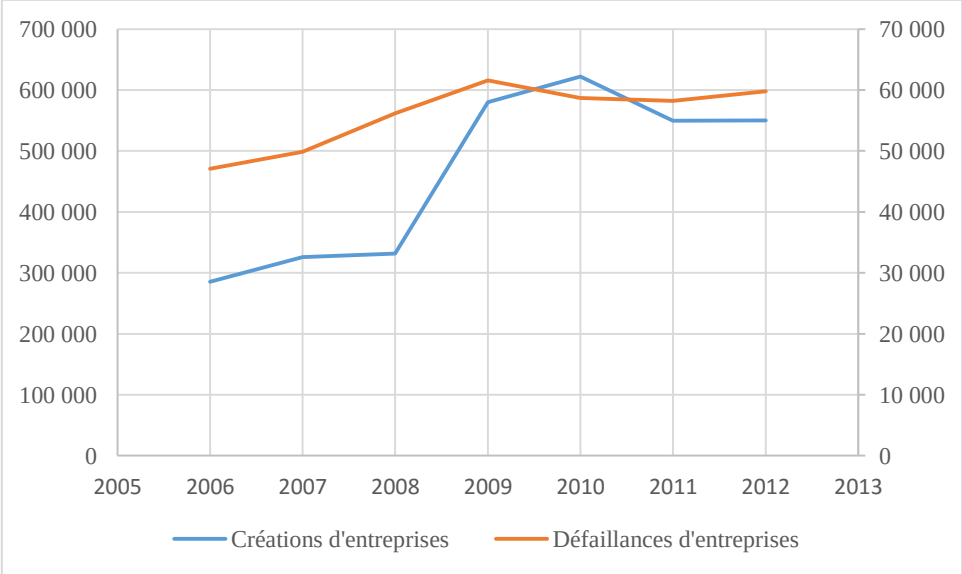
[10] Une société fictive est une société nulle et non existante. Dite aussi « société façade », une société fictive est créée de manière artificielle sans aucune autonomie juridique ni fonctionnement propre.

L.512-17 du Code de l'environnement, la société mère supporte la charge du passif environnemental de sa filiale dans le cas particulier d'une liquidation judiciaire si la preuve d'une faute caractérisée ayant contribué à une insuffisance d'actifs de cette dernière est apportée.

Plus récemment, une loi du 12 mars 2012 a modifié le livre VI du Code de commerce. Connue sous le nom de loi Petroplus, procédure collective médiatisée, le texte répond à certains actes estimés comme moralement répréhensibles et économiquement dévastateurs, consistant pour des sociétés multinationales à dépecer des filiales en difficulté (Le Corre, 2012). La loi prévoit la possibilité de procéder à des mesures conservatoires consistant à reprendre les biens, propriétés des sociétés mères, dans la procédure collective des filiales. Selon le texte de la loi, des mesures conservatoires peuvent être prises contre les biens de personnes cibles de l'extension, soit pour confusion des patrimoines, soit pour fictivité, même avant l'ouverture d'une liquidation judiciaire.

- **Chiffres clés**

**Figure A- 2 Créations et défaillances d'entreprises en France (2006-2012)**

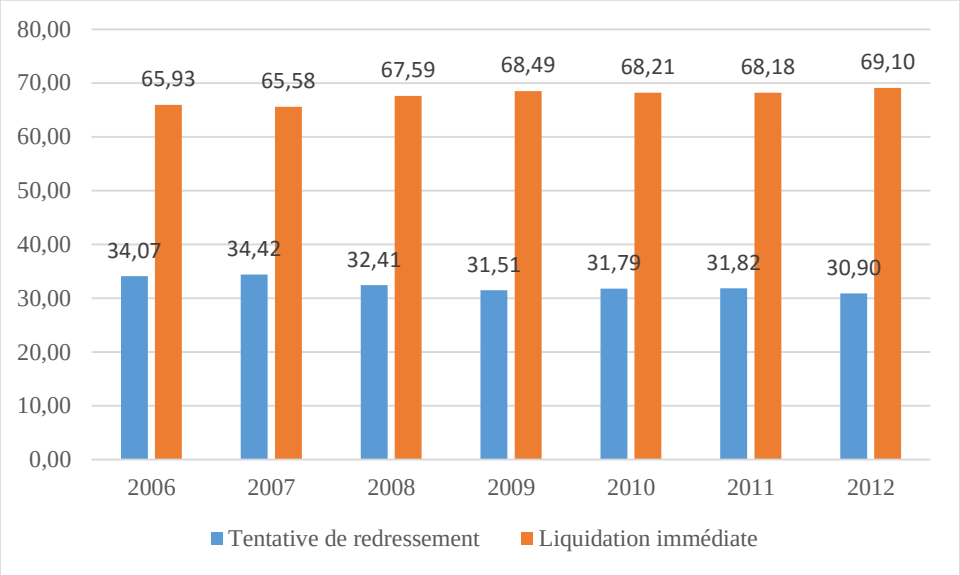



Source : Données INSEE, BODACC

En France, plus de 200 000 entreprises sont créées annuellement et dans le même temps, environ 60 000 entreprises sont défaillantes. La crise financière a d'ailleurs contribué à l'accélération des défaillances (Kremp et al., 2013). Ainsi, le nombre de défaillances d'entreprises est passé de 49 850 en 2007 à 61 595 en 2009, soit une progression de près de 23% en deux ans. L'année 2010 représente l'année de sortie de crise avec la reprise de l'activité économique et la baisse du nombre de défaillances. Les défaillances demeurent

toutefois à des niveaux non négligeables. Depuis le pic de 61 595 défaillances atteint en 2009, la France enregistre annuellement près de 60 000 ouvertures de procédures collectives (cf. Figure A-2). De façon très marquée, l'orientation formelle du système français en faveur du débiteur, suggérée par l'ensemble des lois en application n'empêche pas la liquidation de près de 70% des entreprises entrées annuellement en procédure collective (cf. Figure A-3).

**Figure A- 3 Liquidations immédiates et tentatives de redressement en France (2006-2012)**

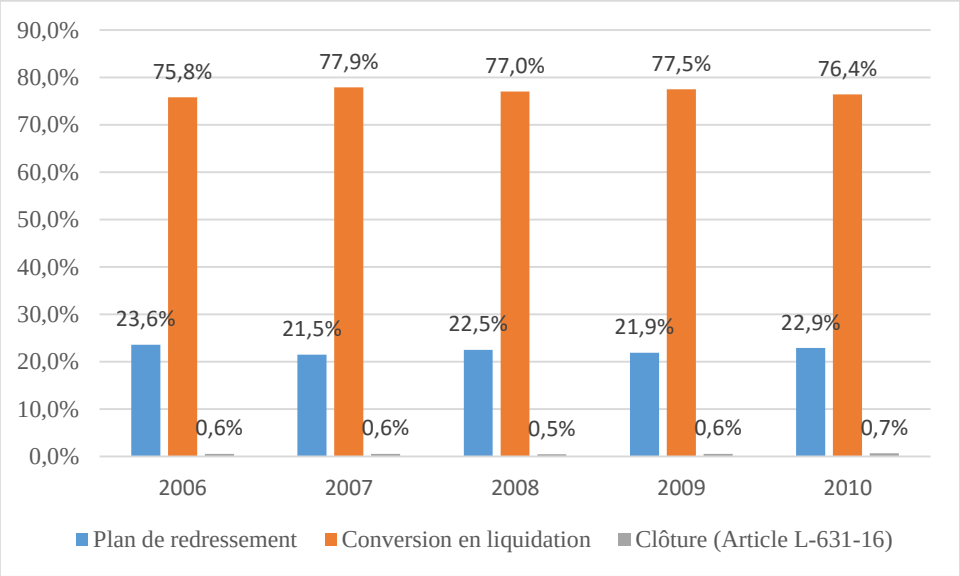



Source : Altares (Bilan 2014)

De surcroît, le taux élevé de sinistralité parmi les entreprises bénéficiant d'une tentative de redressement attire particulièrement notre attention. En effet, plus de 70% des entreprises autorisées à tenter un redressement sont liquidées dans les cinq ans qui suivent l'entrée dans la procédure, comme le souligne une étude récente du Ministère de la Justice portant sur les ouvertures de procédures collectives entre 2006 et 2010 (cf. Figure A-4). Une étude sur plus longue durée publiée par Ellisphere en 2014[11] ajoute que moins de 14% des entreprises entrées en procédures collective sont encore vivantes 8 ans plus tard. A un an de l'entrée en redressement judiciaire, le taux de survie des entreprises serait de 39% seulement (cf. Figure A-5).

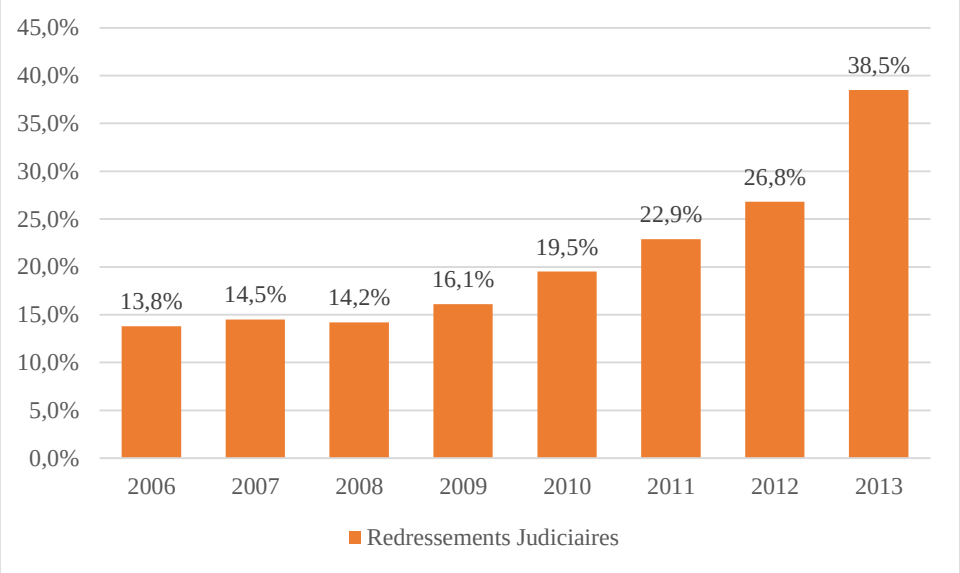
[11] Ellisphere, 2014 : Pérennité des entreprises après l'ouverture d'une procédure collective. L'observatoire des entreprises. N°20-Novembre 2014

**Figure A- 4 Issues des tentatives de redressement en France (2006-2010)**




Source : Ministère de la justice, direction des affaires civiles et du sceau (Octobre 2013)

**Figure A- 5 Taux de survie des redressements en France (2006-2013)[12]**




Source : Ellisphere

- **Approche et questions de recherche**

Compte tenu de la spécificité du cadre légal français et de la place croissante des groupes en France[13], nous proposons de repenser la défaillance à la lumière de deux faits. Le premier concerne la spécificité du cadre légal français qui, malgré son orientation formellement favorable au sauvetage du débiteur et au maintien des emplois, n'empêche pas

[12] Les taux de survie sont calculés en rapportant la population annuelle de redressement à la même population toujours active à Octobre 2014
[13] INSEE : Les entreprises en France, 2013.

la disparition de plus de 70% des entreprises entrées en procédure collective. Le second concerne la place croissante des groupes au sein du tissu productif et la conciliation du processus de filialisation avec le principe d'indépendance de l'entité.

A travers une approche pluridisciplinaire alliant le droit à l'économie, notre thèse propose d'étudier la défaillance comme un processus qui débute avec la constatation de la cessation des paiements et l'entrée de l'entreprise dans une procédure collective et s'achève avec la disparition des difficultés de l'entreprise ou la sortie de l'entreprise du marché. Les trois chapitres empiriques qui la composent tentent respectivement de répondre aux trois ensembles de questions suivants :

- Quels sont les déterminants de l'entrée en procédure collective d'une entreprise ? Quel est l'impact de l'appartenance à un groupe ?
- Quels sont les déterminants du choix des juges entre le sauvetage et la liquidation immédiate des entreprises entrées en procédure collective ? Dans quelle mesure l'appartenance à un groupe est-elle considérée ?
- Quels sont les déterminants de la survie des entreprises bénéficiant d'une tentative de redressement ? Pourquoi certaines entreprises sont liquidées plus rapidement que d'autres ? L'appartenance à un groupe a-t-elle une influence ?

En vue d'apporter des éléments explicatifs à ces trois questions, nous suivons dans le temps un échantillon d'entreprises françaises entrées en procédure collective sur deux périodes distinctes : la première porte sur les années 2006 et 2007, la deuxième va de l'année 2009 à l'année 2012[14]. Les entreprises sont sélectionnées en fonction de la disponibilité des données. Ainsi, les entreprises avec données manquantes ou incomplètes ne sont pas étudiées. Les données collectées portent sur l'année précédant la cessation des paiements. L'échantillon constitué couvre les 11 principaux secteurs d'activités en France[15], définis sur la base du découpage sectoriel le plus large de l'INSEE. Notre échantillon représente aussi les 5 principales régions de France, à savoir : l'Ile-de-France, le Nord-Est, le Sud-Est, le Sud-Ouest, la région Centre et le Nord-Ouest.

Quatre principales sources de données sont mobilisées dans cette thèse :

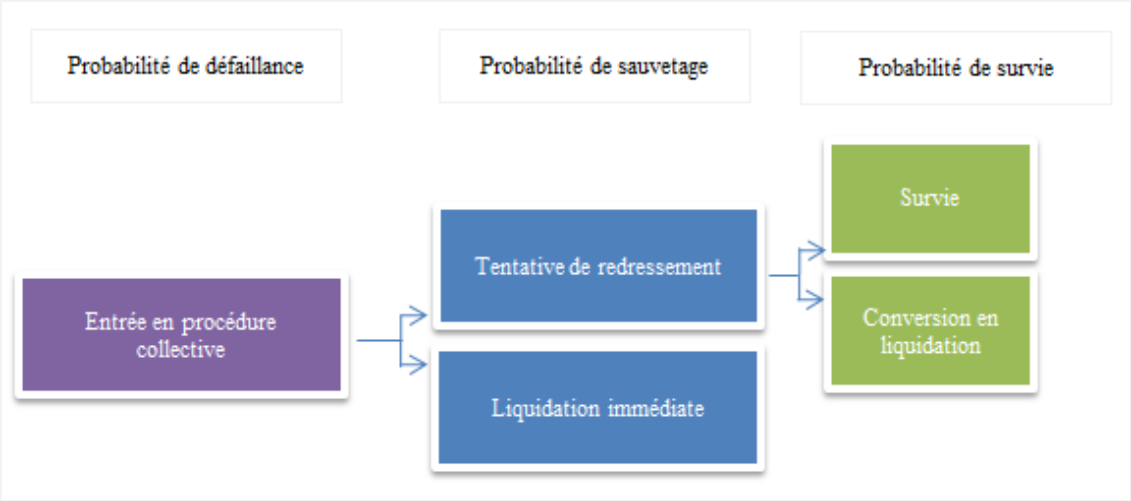
- Le Bulletin Officiel des Annonces Civiles et Commerciales (BODACC) qui recense l'ensemble des actes publiés au registre du commerce et des sociétés

[14] Faute de données, l'année 2008 n'est pas prise en compte dans cette thèse.
[15] Les 11 secteurs définis sont : l'industrie agro-alimentaire, l'industrie manufacturière, les technologies de l'information et de la communication, les hôtels et restaurants, l'électricité, eau, gaz, la construction, le commerce, les transports, les services d'accompagnement et d'appui, les services intellectuels et les administrations des entreprises.

(RCS), à savoir la création, la radiation, la vente, le dépôt des comptes des sociétés et les procédures collectives.

- La base Diane du bureau Van Dijk qui couvre l'essentiel des sociétés françaises, tenues de déposer leurs comptes annuels auprès des greffes des tribunaux de commerce, et qui regroupe un ensemble d'informations générales et financières relatives aux entreprises recensées.
- L'enquête sur les liaisons financières entre les sociétés (LIFI) de l'INSEE qui permet d'identifier les groupes de sociétés opérant en France et de déterminer leur contour.
- Les séries de l'INSEE sur le taux de chômage local par zone d'emploi.

**Figure A- 6 Le processus de défaillance**




Source : Auteur

Les entreprises incluses dans l'échantillon sont suivies dans le temps de manière à constituer pour chacune une chronique de jugements depuis leur entrée en procédure collective, à savoir, la cessation des paiements, la décision de redressement ou de liquidation immédiate, la conversion en liquidation du redressement ou l'adoption d'un plan de redressement, etc. Une analyse fondée sur les caractéristiques générales, comptables et financières des entreprises, à la veille de l'entrée en procédure collective, est ensuite réalisée afin de répondre aux trois questions soulevées précédemment et qui portent chacune sur une étape du processus de la défaillance, tel que décrit dans la Figure A-6.

## IV. Structure de la thèse

Cette thèse est structurée en quatre chapitres. Le premier est un chapitre introductif offrant une revue de la littérature existante sur la défaillance. Le deuxième chapitre propose

une estimation de la probabilité d'entrée en procédure collective des entreprises (en violet sur la Figure A-6 ci-dessus). Le troisième chapitre modélise le choix des tribunaux entre le redressement ou la liquidation immédiate des entreprises entrées en procédure collective (en bleu sur la Figure ci-dessus). Le quatrième et dernier chapitre s'intéresse à l'issue des procédures de redressements judiciaires, en estimant la probabilité de survie des entreprises, avec une attention particulière sur le temps écoulé à partir de l'ouverture de la procédure (en vert sur la Figure A-6).

- **Chapitre introductif : Revue de littérature sur les défaillances d'entreprises**

Le premier chapitre est une revue de la littérature théorique et empirique existante sur les défaillances. La dualité des approches de la défaillance qui fait l'objet de ce chapitre en fait toute l'originalité. Cette dualité nous conduit surtout à soulever un certain nombre de voies encore inexplorées au sein de la littérature sur la défaillance.

La première approche à visée prédictive de la défaillance est nourrie par de nombreux travaux ayant pour objectif la prévision de probabilités de la défaillance. Réduite souvent à un problème de classification des entreprises en deux catégories (défaillantes/non-défaillantes), la prévision de la défaillance s'est développée depuis les travaux de Tamari (1966), Beaver (1966) et Altman (1968). L'ensemble de ces travaux, ainsi que la plupart de ceux qui les ont suivi, sont principalement basés sur des variables comptables et financières. Récemment, des travaux pionniers comme ceux de Dewaelheyns et Van Hulle (2006), ainsi que Beaver et al. (2015) ont mis en évidence la nécessité d'enrichir les modèles existants de la défaillance par des informations sur les groupes d'entreprises. Cette voie de la recherche demeure toutefois très marginalement exploitée, pourtant légitimée par l'ensemble des travaux théoriques sur le lien entre structure d'actionnariat et performances de l'entreprise d'une part et les travaux empiriques sur l'impact de l'appartenance à un groupe sur les performances des entreprises-filiales de l'autre.

La seconde approche inscrite dans le champ de l'analyse économique du droit est alimentée par des travaux à portée normative du droit de la défaillance. Elle est fondée sur l'opposition entre deux grandes familles de systèmes de la défaillance : les systèmes pro-débiteurs et les systèmes pro-créanciers. L'ensemble des travaux existants aboutissent à une hiérarchisation des systèmes de la défaillance, en faveur des systèmes privilégiant les intérêts des créanciers. Reposant souvent sur des hypothèses restrictives, minorant le rôle joué par les différents acteurs impliqués dans la procédure, ainsi que la manière dont le droit est appliqué, la hiérarchie entre systèmes de défaillance élaborée par ces travaux a été critiquée à plusieurs

reprises. Une analyse approfondie de la véritable mise en œuvre du droit (i.e. « le droit en action ») s'avère donc nécessaire.

- **Chapitre 1 : Analyse des déterminants de l'entrée en procédure collective**

Le deuxième chapitre de cette thèse vise à expliquer les déterminants de la défaillance des entreprises en France. Basés sur un échantillon de 101 363 entreprises « saines » et 20 565 entreprises défaillantes, nous utilisons un modèle LOGIT binaire pour modéliser l'entrée en procédure collective comme une variable dichotomique distinguant les entreprises en cessation des paiements de celles pouvant être considérées comme « saines ». Ce chapitre tente de répondre à deux principales questions. La première renvoie aux déterminants de la défaillance. Pour y répondre, nous testons le pouvoir explicatif d'un ensemble de variables financières et non-financières utilisées dans les précédentes recherches sur le sujet. La deuxième se focalise sur le rôle de la structure de l'actionnariat des entreprises sur leur probabilité de défaut. Inspirés des travaux théoriques sur le lien entre actionnariat et performance des entreprises, et des travaux empiriques sur l'influence des groupes d'entreprises sur les performances des entreprises, nous évaluons une série d'hypothèses portant sur l'impact de l'appartenance à un groupe, mais aussi sur les caractéristiques des groupes.

Nos résultats offrent une contribution à la littérature sur les défaillances, mais aussi sur les groupes d'entreprises. Les principaux résultats obtenus soutiennent l'hypothèse que l'appartenance à un groupe a un impact significatif sur la probabilité de défaillance des entreprises. Cependant, contrairement à l'idée dominante au sein des travaux existants et qui sous-entend que l'appartenance à un groupe protège l'entreprise du dépôt de bilan, nos résultats suggèrent que l'appartenance à un groupe ne garantit pas l'entreprise contre une entrée en procédure collective. Plus exactement, l'influence de l'appartenance d'une entreprise à un groupe sur sa probabilité de défaut dépend largement des caractéristiques de l'entreprise, mais aussi de celles de son groupe.

- **Chapitre 2 : Analyse du choix des tribunaux entre redressement judiciaire et liquidation judiciaire**

Le troisième chapitre de cette thèse s'inscrit dans la continuité du deuxième et cherche à expliquer les déterminants du choix des juges entre le redressement et la liquidation immédiate des entreprises entrées en procédure collective. Ce chapitre contribue à apporter des éclaircissements sur le déroulement des procédures de redressement en Europe,

particulièrement en France, encore largement inexploré. A partir de l'analyse des caractéristiques financières et non financières des entreprises en cessation des paiements, nous évaluons les critères de choix des juges entre le sauvetage ou l'élimination des entreprises défaillantes au regard, notamment, des objectifs définis par ordre de priorité par le législateur français. Pour cela nous complétons l'analyse par des données sur les caractéristiques des groupes d'entreprises et des données sur les chiffres du chômage par zone d'emploi des entreprises analysées.

Les hypothèses élaborées portent sur quatre points majeurs, à savoir le souci de préservation de l'entreprise viable, l'attention à l'égard de la préservation des emplois, l'impact des conditions macroéconomiques sur les décisions des tribunaux et finalement, l'attitude des juges vis-à-vis de la structure de l'actionnariat des entreprises, notamment l'appartenance à un groupe et les caractéristiques des groupes. Nous utilisons pour ce faire un modèle LOGIT binaire portant sur différents découpages de l'échantillon d'entreprises soumises à l'ouverture d'une procédure collective. Nos résultats confirment le rôle actif joué par les tribunaux en France pour le sauvetage des emplois et le maintien des entreprises. Ils mettent par ailleurs en évidence, l'avantage comparé des entreprises appartenant à des groupes de nationalité française, par rapport à la fois aux entreprises indépendantes, mais aussi aux filiales de groupes étrangers.

- **Chapitre 3 : Analyse de la survie des entreprises en redressement judiciaire**

Le quatrième et dernier chapitre de cette thèse s'intéresse à la dernière étape du processus de défaillance décrit précédemment. A partir d'un échantillon d'entreprises autorisées par le tribunal à tenter une continuation dans le cadre d'une procédure de redressement judiciaire, ce chapitre offre l'une des rares analyses existantes sur le sujet en Europe, notamment en France. Souvent soucieuses d'apporter des éléments explicatifs de la probabilité d'entrée de l'entreprise en défaillance, les études existantes ignorent ce qui se passe après l'entrée de l'entreprise en procédure collective. L'originalité de notre analyse tient à la fois à son caractère novateur en matière de défaillance d'entreprises en France, mais aussi aux techniques utilisées pour l'analyse. En se basant sur deux modèles non-paramétrique (les Forêts Aléatoires ou *Random Forests*) et semi-paramétrique (Modèle de Cox), nous distinguons d'abord les facteurs influençant la probabilité de conversion des redressements en liquidation à l'horizon d'un an et deux ans de l'ouverture de la procédure. Par ailleurs, nous étudions les déterminants du temps passé par les entreprises en procédure de redressement avant d'être liquidées.

Les principaux résultats obtenus permettent de mieux comprendre les facteurs liés à l'échec des tentatives de redressement en France. En particulier, nos résultats suggèrent que l'impact de la structure financière et des performances économiques de l'entreprise est très significatif, notamment sur le court terme (i.e. avant la fin de la période d'observation). Ils montrent par ailleurs que les entreprises appartenant à un groupe ne sont pas avantagées par rapport aux entreprises indépendantes. De surcroît, deux résultats novateurs sont mis en évidence ; le premier va dans le sens d'un comportement des juges français soucieux de la préservation de l'emploi et du sauvetage des groupes français. Le second laisse penser que la survie à plus long terme des entreprises ne serait pas forcément liée à leurs propres caractéristiques, mais à d'autres facteurs, en particulier liés aux caractéristiques du plan de redressement.

# Chapitre introductif : Revue de littérature sur les défaillances

## Introduction

Si la question des faillites fait l'objet de nombreuses réflexions à partir du XVIIIème siècle, elle est principalement abordée du point de vue du droit. La question posée par les commentateurs de l'époque consiste à déterminer comment inciter les débiteurs à rembourser leurs dettes et, en cas d'échec, comment garantir les meilleures perspectives de recouvrement aux créanciers. Cette approche répond principalement aux besoins des Etats de mettre en œuvre des modalités de clôture d'une affaire, tout en permettant aux créanciers de réaffecter rapidement les montants récupérés. Elle obéit aussi à une logique d'échanges et de cohérence entre les différents cadres juridiques nationaux (Hautcoeur et Levratto, 2007). Les auteurs s'intéressent alors à l'évolution du nombre de faillites et aux arbitrages entre concordat (plus tard redressement judiciaire) et liquidation judiciaire. Les causes de l'échec sont simplement divisées en trois grandes catégories : les malversations qui engagent la responsabilité personnelle et peuvent déboucher sur un emprisonnement, l'impéritie qui donne souvent lieu à une interdiction de gérer et enfin la malchance qui amène les juges de commerce à envisager l'effacement de tout ou partie des dettes du débiteur. Aucune analyse systématique approfondie des causes de l'échec n'est disponible à cette époque. Les rapports des syndics de faillite constituent les documents les plus complets d'identification des causes de l'échec, mais restent en général confidentiels.

La crise des années 1930 et les premiers travaux d'auteurs comme FitzPatrick (1932) modifient considérablement l'approche du sujet. C'est ainsi que la problématique de la défaillance s'affranchit de l'emprise du droit pour devenir un objet de recherche à part entière. Deux grands courants sont le résultat de ce changement. Le premier courant cherche à mieux comprendre les causes des faillites pour mieux les prévenir, tandis que le second s'interroge sur l'efficacité du droit à mettre en œuvre, ainsi que les réformes à entreprendre pour converger vers les dispositifs les plus efficaces, en général, anglais ou américain.

Actuellement, aucune recherche ne fournit une analyse globale et synthétique des approches existantes de la défaillance. Les précédentes revues de littérature privilégient souvent une approche exclusivement prédictive avec un focus sur les différents modèles existants de prévision (Refait, 2004), ou une approche normative qui s'intéresse à l'efficacité du traitement légal de la défaillance (Hart, 2000). Au regard de la nature même de la

défaillance, qui correspond à un évènement situé au croisement des champs d'analyse économique et juridique, il apparaît intéressant de jumeler ces deux approches.

La dualité des approches de la défaillance qui fait l'objet de ce chapitre nous permet de mieux rendre compte de la défaillance comme un processus qui débute avec un constat de cessation des paiements et une ouverture de procédure collective et prend fin avec l'achèvement du traitement légal des difficultés.

L'ampleur du phénomène de la défaillance et ses répercussions sur un grand nombre d'acteurs économiques justifient la multiplication de travaux dédiés à l'identification des signaux annonciateurs d'une défaillance imminente. Souvent limitée à un problème de classification des entreprises en deux catégories (défaillantes/non-défaillantes), la prévision de la défaillance a mobilisé des chercheurs relevant de domaines de recherche variés. La multiplication des techniques quantitatives au service de la prévision de la défaillance et l'élargissement des facteurs inclus dans ces modèles tiennent particulièrement à l'amélioration de la qualité et de la disponibilité des données. Depuis les premiers travaux de Beaver (1966) et Altman (1968) qui sont largement fondés sur l'analyse financière des bilans d'entreprises, les modèles de prévision se sont complexifiés, notamment avec le recours à des techniques quantitatives non déterministes inspirées du fonctionnement du cerveau humain.

Principalement fondés sur l'analyse financière de l'entreprise, les premiers modèles de prévision de la défaillance sont exclusivement basés sur des données comptables et financières. De ce fait, la rentabilité, l'endettement et la liquidité demeurent les facteurs incontournables de la prévision de la défaillance. Le développement des modèles de prévision pouvant inclure des variables autres que quantitatives, a ensuite permis l'élargissement du champ des variables explicatives de la défaillance. On retient principalement les caractéristiques de l'équipe managériale, la taille et l'âge de l'entreprise, l'environnement macroéconomique et la conjoncture, et enfin la structure de l'actionnariat. Souvent difficile à repérer, cette dernière catégorie de facteurs demeure la moins exploitée avec un nombre très limité de travaux qui mettent en évidence l'impact significatif de l'appartenance de l'entreprise à un groupe sur son risque de défaillance. Beaver et al. (2015) soulignent que l'information sur la structure des groupes améliore de manière significative la prévision de la probabilité de défaillance des filiales, mais aussi celle des sociétés-mères. Cette voie de recherche demeure très fertile, d'autant plus que des travaux empiriques mettent en évidence l'impact non négligeable de l'appartenance à un groupe sur les performances des entreprises (Bamiatzi et al., 2014 ; Khanna et Yafeh, 2007).

Au-delà de la prévision du défaut des entreprises, la question de l'efficacité de son traitement légal a longtemps intéressé les chercheurs en matière de défaillance, malgré la difficulté d'appréhension de cette notion. Deux formes d'efficacité peuvent être distinguées. L'efficacité *ex ante* renvoie aux effets anticipés et aux mécanismes incitatifs du droit de la défaillance. L'efficacité *ex post* se mesure par les effets de la procédure collective, une fois le défaut observé et la procédure engagée. L'importance accordée à l'une ou l'autre des efficacités, ainsi qu'aux mécanismes sous-jacents à chacune, diffère significativement selon les législations. Le clivage pro-débiteurs/pro-créanciers popularisé par les rapports Doing Business pour la distinction entre systèmes de défaillance sous-entend que les législations pro-créanciers mettent plus l'accent sur les droits des créanciers et le respect des termes des contrats de dettes. En revanche, les législations pro-débiteur s'intéressent davantage à la continuation de l'activité et au maintien des emplois. De manière générale, l'ensemble de ces travaux qui sont inspirés du courant de la *Law and Economics* (La Porta et al., 1998) concourent à souligner la supériorité du droit des défaillances fondé sur une tradition de la « Common Law » par rapport au droit fondé sur une tradition de « Civil Law ».

Le plus souvent basées sur une lecture des textes de lois, ou sur l'analyse des opinions d'experts vis-à-vis de la mise en œuvre du droit, ces recherches ont rapidement révélé leurs faiblesses, mais surtout leur manque de légitimité. La substitution d'une analyse plus pragmatique du « droit en action » à une analyse centrée sur le droit formel de type *« Law on the books »* devient donc un enjeu clef de l'analyse et un programme de travail fécond.

Le présent chapitre propose un état des lieux de la littérature sur les défaillances, avec une attention particulière sur les voies encore inexplorées dans ce domaine. Il s'organise en deux sections. La première se penche sur la branche de la littérature qui s'articule autour de la prévision de la défaillance et l'exploration de ses facteurs explicatifs. La seconde se focalise sur les travaux à visée normative du droit des défaillances.

## 0.1. Démarche heuristique : expliquer les faillites

Depuis les travaux de Tamari (1966), de nombreux auteurs ont tenté avec succès d'évaluer le risque de défaut des entreprises. Les premiers modèles de score sont largement issus de l'analyse financière et reposent sur des ratios financiers fondamentaux en nombre restreint. Ils ont ensuite évolué vers plus de complexité afin de tenter d'obtenir des notes de plus en plus fiables et précises, notamment en recourant à des techniques non déterministes. Cependant, malgré la diversité des techniques utilisées, le principe général qui sous-entend ces modèles demeure le même. L'amélioration de la qualité et du volume des données

financières d'entreprises, ainsi que la sophistication et le développement des capacités de leur traitement informatique expliquent largement l'évolution du nombre de techniques dédiées à la prévision de la défaillance (Van Caillie, 2004). Développées à partir des années 1960, ces démarches trouvent leur origine dans les travaux de Beaver (1966) et Altman (1968), eux-mêmes inspirés des travaux pionniers de Ramser (1931) et FitzPatrick (1932). C'est en effet des années 1930 que datent les premiers essais d'évaluation de la santé financière d'une entreprise à partir de ratios financiers.

### 0.1.1. La défaillance comme variable expliquée

La répartition des entreprises en deux catégories en fonction de leur situation vis-à-vis de la défaillance nécessite avant tout de choisir une définition de l'état de défaillance que l'on cherche à prédire. Dans un souci de disposer de prévisions à fort pouvoir discriminant, la grande majorité des chercheurs assimilent la défaillance à un évènement purement juridique, objectif et facile à repérer qui est celui de l'entrée en procédure judiciaire. Des critiques envers ce choix ont été émises à plusieurs reprises. De nombreux auteurs, jugeant cette définition comme étant très restrictive, ont tenté de prévoir d'autres formes plus générales d'échec.

De manière générale, la défaillance est définie comme l'état d'une entreprise qui n'est pas en mesure de faire face à ses obligations vis-à-vis de ses débiteurs (Charreaux, 1996). Le risque de confusion entre le défaut et la défaillance est non négligeable. Ainsi, la défaillance correspond à une réalité d'entreprise qui n'est simple ni à définir, ni à appréhender. Pourtant, l'établissement d'une ligne de séparation claire entre les entreprises saines et les entreprises défaillantes est fondamental pour la construction d'une typologie. Elle l'est *a fortiori* lorsque les objectifs du travail sont de nature empirique.

Parmi les travaux économiques consacrés à la défaillance, deux acceptions principales s'opposent : l'une est purement économique, l'autre est d'ordre juridique.

- Selon les tenants de la conception économique, la défaillance se définit comme un ensemble de situations d'échec, pouvant faire l'objet ou non d'un traitement judiciaire. La défaillance est donc associée à un processus progressif de dégradation des performances, durant lequel l'entreprise ne parvient pas à maintenir une situation stable vis-à-vis des exigences de son environnement. Cette vision intégrée et continue de la défaillance débouche sur la modélisation d'une dynamique de comportement ou d'une trajectoire d'entreprise qui vise à repérer les signes avant-coureurs du processus de la défaillance. Afin d'échapper à l'assimilation stricte entre défaillance et défaut de paiement, quelques auteurs ont tenté de prendre en compte d'autres types de

manifestations de la défaillance. Une entreprise est alors considérée comme défaillante dès lors qu'elle n'est plus capable d'atteindre certains objectifs d'ordre économique, financier ou social. Il s'agit par exemple du défaut de remboursement de la dette, du non-paiement des dividendes, ou encore de la détresse financière, etc. Toutefois, la frontière entre les états de défaillance/non-défaillance devient poreuse, ce qui rend la distinction entre les entreprises saines et les entreprises défaillantes de plus en plus floue.

- Le second groupe de travaux considère la défaillance d'un point de vue légal. La défaillance est alors définie sur la base de sa conformité à un moment donné avec les critères légaux retenus par les différents législateurs pour déterminer l'existence ou non d'une situation de faillite légale d'entreprise. Suivant cette acception, sont considérées comme défaillantes les entreprises qui font l'objet d'une cessation décidée dans le cadre d'une procédure judiciaire. La cessation débute avec le dépôt de bilan et se termine par la clôture de la procédure judiciaire dont elle fait l'objet. En ce sens, la défaillance de l'entreprise est associée à son entrée en procédure collective. Le caractère objectif de cette définition qui est facile à repérer fait la force de cette conception qui fait désormais presque l'unanimité des chercheurs en matière de défaillance.

Balcaen et Ooghe (2006) reprochent surtout le caractère arbitraire d'une définition purement juridique qui ne permet d'aboutir, selon eux, qu'à une classification artificielle des entreprises en deux catégories. D'abord, il existe des cas où l'entreprise peut se trouver en procédure collective sans pour autant présenter les symptômes d'une véritable défaillance. Ensuite, la classification dichotomique des entreprises ignore le fait que la faillite ne représente que l'aboutissement d'un processus plus ou moins long de défaillance. Une telle classification ne permet donc pas la distinction entre les différentes issues d'un processus de défaillance : rachat-fusion, liquidation, redressement. De la critique de Balcaen et Ooghe (2006), on retient qu'une définition purement juridique basée sur une classification dichotomique des entreprises est susceptible de nuire à la qualité de l'indicateur de risque élaboré. De nombreux modèles ont donc tenté de modéliser des situations autres que la faillite et la non-faillite, comme le défaut de paiement, la détresse financière ou le non-versement de dividendes.

### 0.1.2. Les méthodes de prévision de la défaillance

En raison de l'acceptation générale d'une classification dichotomique, la plupart des recherches reposent sur des statistiques, mathématiques ou même économétriques mobilisées répondant à cette logique dite "de discrimination" (Dimitras et al. 1996). Bien que cette approche ne permette pas de rendre compte des facteurs à l'origine du défaut, elle aboutit néanmoins à l'élaboration d'une ligne de distinction claire entre les entreprises défaillantes et celles qui ne le sont pas (Morris, 1997). Le principe est simple : il s'agit de sélectionner les variables ou ratios permettant de discriminer au mieux entre les deux catégories d'entreprises. L'élaboration d'une relation stable entre ces ratios permet ensuite de déterminer l'appartenance d'une entreprise quelconque à la catégorie des entreprises défaillantes ou à celle des non défaillantes.

Une analyse sur longue durée de 165 études sur la prévision de la défaillance, amène ses auteurs, Bellovary et al. (2007) à souligner une certaine diversité des techniques statistiques utilisées, des données et du nombre de ratios mobilisés. Toutefois, une méthodologie générale identique à tous les modèles existants est susceptible d'être mise en évidence (Refait, 2004 ; Balcaen et Ooghe, 2006) :

1. Dans un premier temps, sont constitués deux sous-échantillons d'entreprises dont la probabilité de défaillance est connue *a priori*.
2. Ensuite, la sélection des variables caractérisant l'état dichotomique d'être ou de ne pas être défaillante se fait à travers une relation statistique, sur la base des données comptables et financières.
3. Enfin, la qualité de l'indicateur de risque élaboré est évaluée au regard des erreurs de classements[16].

#### *0.1.2.1. Les scores construits sur des approches déterministes*

##### 0.1.2.1.1. La méthodologie unidimensionnelle de Beaver (1966)

Bien que les premiers travaux relatifs à la prévision des faillites sur la base de données comptables remontent à Tamari (1966), l'œuvre de Beaver (1966) semble avoir été le point de départ pour de nombreuses études empiriques qui se sont développées depuis longtemps. La méthode de Beaver (1966) n'est plus appliquée actuellement, jugée de nature purement exploratoire (Refait, 2004). En effet, Beaver propose le premier modèle reliant la faillite à un ratio comptable choisi parmi une liste d'indicateurs de fragilité de l'entreprise. Sa méthodologie consiste à sélectionner une batterie de 30 ratios dont la capacité à refléter la

[16] On parle d'erreur de type I lorsqu'une entreprise défaillante est classée comme saine et d'erreur de type II lorsqu'une entreprise saine est classée parmi les défaillantes.

santé financière de l'entreprise est reconnue théoriquement. Ensuite, sur la base d'un seuil critique fixé pour chaque ratio de manière à maximiser les bons classements, l'entreprise est classée dans le groupe des défaillantes ou le groupe des non-défaillantes, en fonction de la valeur prise par chaque ratio par rapport à ce seuil. Toute entreprise présentant un ratio inférieur au seuil théorique fixé est considérée comme défaillante tandis que toute entreprise présentant un ratio supérieur est considérée comme non-défaillante. Dominé principalement par la dimension flux de trésorerie, le modèle de Beaver assimile l'entreprise à un réservoir de flux de fonds qui se vide et se remplit simultanément de manière continue durant toute la période d'exploitation. Par conséquent, la défaillance survient à partir du moment où la vitesse d'épuisement du réservoir dépasse largement la vitesse de son remplissage, l'entraînant vers une taille critique compromettant ainsi la pérennité de l'entreprise. La comparaison des flux de trésorerie des entreprises saines à ceux des entreprises défaillantes suggère que les dernières génèrent moins de liquidité particulièrement durant les cinq dernières années précédant la défaillance. A un an de la défaillance, Beaver conclut que les ratios, **Cash-flow/Endettement Total**, **Résultat Net/Total Actif** et **Total Dettes/Total Actif** sont les plus discriminants ; le premier ratio permettant de classer correctement 87% des entreprises.

#### 0.1.2.1.2. L'analyse discriminante d'Altman (1968)

En dépit de la simplicité et de l'efficacité du modèle de Beaver, il manque de robustesse dû à l'unicité du ratio et à l'hypothèse forte d'une relation linéaire entre les ratios et l'état dichotomique de défaillance/non-défaillance, le modèle de Beaver a fait l'objet de nombreuses critiques. Si elles ont ouvert de nombreuses voies de recherches sur la question, les travaux d'Altman demeurent les plus connus.

Altman introduit l'analyse multivariée avec l'analyse discriminante multiple dans le but de construire un véritable modèle de prévision de la défaillance. La méthode consiste à calculer un score *S* par entreprise, représentant une note de risque qui s'exprime comme la combinaison linéaire d'un ensemble de variables explicatives, et à comparer ce score à un seuil délimitant la frontière qui sépare les entreprises saines de celles qui sont défaillantes. Dans sa forme la plus générale, le score s'exprime de la manière suivante :

$$S = w_0 + \sum_{i=1}^{n} x_i w_i$$

Où *s* représente le score à calculer, $x_i$ les variables explicatives et *w* le vecteur des coefficients $w_i$ à estimer. Selon la valeur prise par ce score, qui représente une mesure ordinale du risque, les entreprises sont classées l'une par rapport à l'autre en fonction de leur degré de risque. La

comparaison du score avec la valeur du seuil fixé permet de classer dès lors les entreprises dans l'une des deux catégories : défaillantes ou non défaillantes.

Basé sur un échantillon de 66 entreprises, dont 33 en état de défaillance et 33 autres ayant survécu durant la période 1946-1965, Altman élabore un modèle à cinq variables sélectionnées dans un premier temps sur la base de leur capacité théorique à juger la performance financière d'une entreprise, et dans un second temps sur leur pouvoir empirique de discrimination. Le modèle d'Altman, révisé à plusieurs reprises (Altman, 1977 ; 1983 et 1984), a fait preuve d'une capacité de prévision importante à deux ans de la défaillance. Il est ainsi devenu une référence essentielle et un point de repère pour l'évaluation de la qualité de l'ensemble des modèles de prévision de la défaillance élaborés plus tard. La fonction de prévision d'Altman se présente de la manière suivante :

$$Z = 1.2x_1 + 1.4x_2 + 3.3x_3 + 0.6x_4 + 1.0x_5$$

$x_1$ : Fonds de roulement / actif total (liquidité)

$x_2$: Bénéfices non répartis / actif total (rentabilité)

$x_3$ : Bénéfices avant intérêt et impôt / actif total (rentabilité)

$x_4$ : Valeur de marché de l'avoir / valeur au livre de la dette (capitalisation)

$x_5$ : Ventes / actif (productivité)

Si le score obtenu est inférieur au seuil de 1.81, le modèle prévoit la faillite. Si le score dépasse ce seuil, la survie est l'hypothèse la plus plausible. Depuis cette fonction pionnière, un nouveau modèle commercial plus sophistiqué, appelé le modèle Zeta, a été élaboré et racheté par plusieurs institutions financières américaines dans le but d'améliorer leurs décisions de crédit.

#### 0.1.2.1.3. Les scores de la Banque de France

La Banque de France a également apporté une contribution importante à la recherche en matière de prévision des défaillances, grâce à la mise en place de ses propres outils de prévision. Le premier en la matière est le score BDFI, mis en place à partir de l'année 1982 (pour une présentation, voir Bardos, 2005). A l'origine, le score est applicable aux entreprises industrielles, soumises à l'impôt sur les sociétés, et respectant un certain nombre de critères de cohérence comptable, tels que : la valeur brute des immobilisations corporelles en fin d'exercice positive, la valeur ajoutée positive, le capital engagé positif, etc. Le score est construit comme une moyenne pondérée de 7 variables centrées sur la rentabilité, la structure et le délai de la dette fiscale et sociale, commerciale et financière de l'entreprise. Appuyés

principalement sur la technique d'analyse discriminante, les scores de la Banque de France se sont largement développés et surtout étendus aux grands secteurs de l'activité productive en France.

#### *0.1.2.2. Les scores construits sur des modèles multivariés à probabilité conditionnelle : Logit et Probit*

Face à la contrainte de multinormalité, rarement respectée empiriquement des analyses discriminantes linéaires et quadratiques, d'autres techniques paramétriques ont été appliquées à la prévision de la défaillance. Contrairement aux modèles précédents qui nécessitent des variables exclusivement quantitatives, les modèles Logit et Probit s'emploient sur variables qualitatives et supposent une distribution différente des variables comptables. Les deux modèles se distinguent principalement par l'hypothèse sur la distribution des erreurs[17] ainsi que par la méthode de calcul de la probabilité de défaut. Ils ont toutefois en commun une variable endogène *Y*, de nature binaire, qui prend la valeur 0 ou 1 selon que l'entreprise est défaillante ou non. La technique d'estimation la plus couramment employée est celle du maximum de vraisemblance[18] permettant d'estimer les paramètres associés à chacune des variables explicatives du modèle.

En supposant que Y vaut 1 quand l'entreprise est défaillante et 0 quand l'entreprise n'est pas défaillante, la variable explicative estimée s'écrit :

$$Y_i = 0 \quad si \ \beta x_i + \epsilon_i \leq 0$$
$$Y_i = 1 \quad si \ \beta x_i + \epsilon_i > 0$$

avec ε l'erreur associée à l'entreprise *i* et β le vecteur des coefficients associés aux variables explicatives $x_i$. Les probabilités de défaut *a posteriori* se calculent de la manière suivante :

- Probabilité que l'entreprise *i* soit défaillante :

$$P(y_i = 1) = P(\beta x_i + \epsilon_i > 0) = P(\epsilon_i > -\beta x_i) = 1 - F(-\beta x_i)$$

- Probabilité que l'entreprise *i* ne soit pas défaillante :

$$P(y_i = 0) = P(\beta x_i + \epsilon_i \leq 0) = P(\epsilon_i \leq -\beta x_i) = F(-\beta x_i)$$

où *F* correspond à la fonction de répartition des erreurs ε.

Le modèle Logit est appliqué pour la première fois à la prévision de la défaillance par Ohlson (1980), puis de manière non exhaustive par Aziz et al (1988), Bardos (1989), Platt

[17] Le modèle Logit suppose une distribution logistique des erreurs. Le modèle Probit suppose une distribution normale.

[18] Le maximum de vraisemblance est une technique statistique d'estimation, développée en 1922 par Ronald Fisher et utilisée couramment pour inférer les paramètres de la distribution de probabilité d'un échantillon donné.

et Platt (1991) et plus récemment par Boisselier et Dufour en 2003. De manière générale, il se présente comme suit :

$$P = \frac{1}{1 + e^{-\sum_{i-1}^{n} x_i w_i}}$$

Avec $P$ la valeur du score ou de la probabilité à calculer, $x_i$ les variables explicatives du modèle et $w_i$ les coefficients associés à ces variables. Sur un échantillon de 105 entreprises ayant fait faillite sur la période 1970-1976, Ohlson (1980) retient dans son modèle les neuf variables suivantes :

$$x_1 = \log(Actif\ Total / Résultat\ Net\ Global)$$

$$x_2 = Dettes\ Totales / Actif\ Total$$

$$x_3 = Fonds\ de\ roulement / Actif\ Total$$

$$x_4 = Dettes\ Courantes / Actifs\ Courants$$

$$x_5 = \begin{cases} 1\ si\ Total\ Dettes > Total\ Actif \\ 0\ si\ Total\ Dettes < Total\ Actif \end{cases}$$

$$x_6 = Résultat\ Net / Actif\ Total$$

$$x_7 = Marge\ Commerciale / Dettes\ Totales$$

$$x_8 = \begin{cases} 1\ si\ Résultat\ net < 0\ sur\ les\ deux\ deniers\ exercices \\ 0\ si\ Résultat\ net \geq 0\ sur\ les\ deux\ derniers\ exercices \end{cases}$$

$$x_9 = \frac{Résultat\ Net_t - Résultat\ Net_{t-1}}{|Résultat\ Net_t| - |Résultat\ Net_{t-1}|}$$

En dépit de son caractère simple et non contraignant, le modèle Logit fait l'objet de nombreuses critiques. On retient principalement l'hypothèse de distribution logistique des erreurs que rien ne garantit, le problème de multicolinéarité[19] entre les ratios et la récurrence de valeurs aberrantes.

Le modèle Probit a été utilisé pour la première fois par Zmijewski en 1984 pour la prévision de la détresse financière, et très rarement plus tard. Dimitras et al. (1996) expliquent que le faible intérêt que suscite ce modèle peut être expliqué par le grand effort de calcul requis par ce modèle par rapport au modèle Logit.

#### *0.1.2.3. Les méthodes non déterministes*

Butant sur l'incapacité des méthodes statistiques classiques à modéliser correctement la relation fonctionnelle qui lie les variables explicatives à l'état de défaillance, les chercheurs ont pris conscience de la nécessité du recours à de nouvelles méthodes, plus faciles à mettre

[19] Balcaen & Ooghe (2005) expliquent que ce problème est dû principalement au fait que la plupart des ratios qui composent le modèle partagent souvent le même numérateur ou le même dénominateur.

en œuvre, et moins contraignantes, notamment en termes d'hypothèses. A partir des années 1990, des méthodes d'analyse non-paramétriques ne nécessitant aucune hypothèse quant à la distribution des variables et qui s'inspirent principalement de l'intelligence artificielle, plus particulièrement de la branche relative à l'apprentissage automatique, ont été exploitées. On retient les réseaux de neurones et les forêts aléatoires.

#### 0.1.2.3.1. Les Réseaux de Neurones (*Neural Networks*)

Le principe général des réseaux de neurones consiste à élaborer un algorithme dit d'apprentissage qui imite le traitement de l'information par le système neurologique humain. L'enjeu réside dans la détermination des variables qui distinguent au mieux les entreprises susceptibles de rembourser leurs dettes de celles qui ne le sont pas. Le réseau est constitué de trois types de neurones : les neurones d'entrée, les neurones de sortie et les neurones cachés. Chaque neurone correspond à une fonction dite de transfert, qui traite un ensemble d'informations (les *inputs*), afin d'aboutir à un résultat (l'*output*). Les neurones cachés traitent l'information en provenance des neurones d'entrée dont les *inputs* correspondent aux *k* ratios comptables présélectionnés, vers les neurones de sortie qui ont pour *output* la variable dichotomique défaillance/non-défaillance. Pendant la phase d'apprentissage, le poids des inputs est révisé et le réseau est appliqué successivement aux entreprises de l'échantillon, de façon à minimiser les erreurs de classement.

La première application des réseaux de neurones à l'estimation du risque de défaillance financière a été réalisée par Bell et al. (1990). Leur introduction en France doit beaucoup à Bardos et Zhu (1997). L'utilisation de cette technique s'est ensuite intensifiée avec, parmi de nombreuses références, les travaux de Lee et al. (1997) ou ceux de Zhang et al. (1999). De nombreux auteurs se sont attachés à sophistiquer l'utilisation des réseaux de neurones et des algorithmes génétiques à partir de données d'entreprises non financières. Toutefois, le recours à ces techniques reste limité. Les réseaux de neurones constituent en effet une boîte noire, le haut degré de technicité des algorithmes génétiques ne permettant pas de fournir des éléments explicatifs clairs de la défaillance. Les études comparatives sur les résultats obtenus à l'aide de techniques alternatives donnent d'ailleurs des résultats mitigés. Ainsi, dès le milieu des années 1990, Altman et al. (1994) concluent à l'efficacité limitée des réseaux de neurones. Ils les utilisent pour reconstituer les valeurs du score élaboré par analyse discriminante linéaire à partir de ratios comptables et pour distinguer les entreprises défaillantes des entreprises saines. A un an de la défaillance, les réseaux aboutissent à un taux de bon classement égal à 91,80 % pour les entreprises défaillantes et à un taux égal à 95,30 %

pour les entreprises saines. L'analyse discriminante linéaire menée sur le même échantillon aboutit à un classement légèrement meilleur : 92,8 % pour les entreprises défaillantes et 96,5 % pour les entreprises saines. Ce résultat non concluant est confirmé par Varetto (1998).

#### 0.1.2.3.2. Les Forêts Aléatoires (*Random Forests*)

Les forêts aléatoires, inventées par Breiman (2001), sont des algorithmes d'apprentissage statistiques adaptés à la fois à des problèmes de classification et de prévision. Plus tôt en 1978, Breiman et Stone introduisent la méthode dite CART[20] (en anglais : Classification and Regression Trees), consistant à construire un arbre de décision binaire par divisions successives des données en deux sous-ensembles. Bien que ces arbres possèdent certaines propriétés intéressantes, leur construction s'avère souvent dépendante de l'échantillon initial, ce qui les rend instables du fait de leur extrême sensibilité à l'ajout de nouvelles données.

D'autres modèles ont donc été proposés par Breiman, parmi lesquels, la méthode des forêts aléatoires (en Anglais : Random Forests). Le principe des Random Forests est tout d'abord de générer plusieurs sous-échantillons et d'appliquer sur chaque échantillon une variante de CART. L'aléa rajouté à la méthode des Random Forest est double. Tout d'abord, les sous-échantillons qui servent à la construction des arbres sont tirés de façon aléatoire. Ensuite, à chaque nœud de l'arbre, sont tirées aléatoirement *k* variables explicatives. Le but consiste à obtenir des arbres les plus décorrelés possible, chaque nœud des arbres étant choisi comme un « split » optimal parmi les *k* variables tirées. La collection d'arbres obtenus est enfin agrégée pour obtenir le prédicteur Random Forests.

En pratique, les forêts aléatoires sont rarement utilisées, notamment en matière de défaillance. Parmi ses principaux inconvénients, on cite la difficulté d'interprétation des résultats qui ne permettent pas de distinguer l'effet précis de chaque variable explicative sur le phénomène à expliquer. Toutefois, les résultats des recherches existantes mettent en évidence le pouvoir discriminant très élevé de cette méthode qui se traduit par un taux de bon classement au moins égal à 90% (Ben Jabeur et Fahmi, 2014 ; Creamer, 2009 ; Santoni, 2013).

### 0.1.3. Les facteurs explicatifs de la défaillance

L'identification des causes de l'entrée en défaillance ou de l'origine de la défaillance fait l'objet d'une littérature abondante qui se caractérise par la diversité des angles d'approche retenus. Van Caillie (2000) identifie trois : la description du processus de défaut, sa prédiction

[20] Dites aussi : arbres de décisions binaires.

et sa prévention. Longtemps cloisonnées, ces trois approches ne sont toutefois pas sans rapports avec la détection des meilleurs signaux avant-coureurs de la défaillance reposant en grande partie sur la bonne compréhension du processus qui y mène.

La présentation des causes de la défaillance que nous proposons n'a pas seulement une visée explicative. Elle s'inscrit dans la perspective de l'estimation d'un risque d'échec dont l'occurrence est le résultat d'un processus évolutif[21] reflété par la dégradation des performances économiques. On retrouve cette logique dans quelques travaux comme ceux de Koenig (1985) et Marco (1989) sur la modélisation d'un « sentier de la défaillance ». Différentes étapes peuvent être identifiées :

1. **A l'origine, des problèmes économiques.**

   Cette situation est caractérisée par des pertes structurelles ou chroniques. Elle signifie que l'entité n'est plus rentable et génère plus de charges que de produits. Le résultat de l'activité dans l'entreprise ne contribue plus positivement au fonctionnement de l'économie. Suivant cette approche, la meilleure façon de détecter la profitabilité d'un projet est d'utiliser un indicateur proche de l'exploitation qui ne tient pas compte des politiques financières et fiscales choisies par les dirigeants. Il peut être enrichi par la prise en compte de l'excédent brut d'exploitation, du solde des recettes liées à l'activité industrielle et commerciale, ou de la valeur ajoutée qui, lorsqu'elle est négative, illustre le fait que l'entreprise consomme plus de ressources qu'elle n'en produit.

2. **La détection sur la base de documents financiers.**

   Elle se produit lorsque l'entreprise ne peut plus faire face à ses décaissements de manière régulière et lorsque son passif à court terme est nettement supérieur à son actif réalisable. Lorsqu'elle est dans cette situation, l'entreprise ne parvient plus à gérer sa dette et connait des incidents de paiement systématiques. L'insolvabilité est alors constatée à partir de ratios qui comparent l'actif et le passif de même échéance.

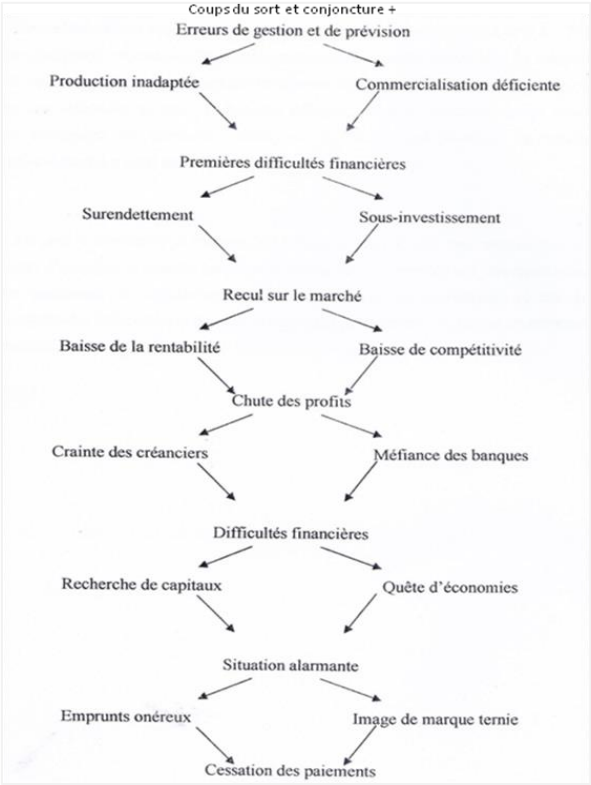
3. **La traduction juridique de l'échec**

   Il s'agit de la sanction légale de la défaillance financière et de la constatation juridique de l'insolvabilité de l'entreprise qui la soumet au contrôle de la justice. Dans la plupart des cas, elle signifie la disparition à court terme de l'entité économique.

La suite de cette section identifie l'ensemble des facteurs susceptibles d'intervenir dans l'entrée d'une entreprise dans des difficultés telles qu'elles la conduisent à la défaillance.

[21] Voir Luoma, M., E.K. Laitinen (1991) et Balcaen, S., Ooghe H. (2006).

**Figure 0-1 Le sentier de la défaillance**




Source : L. Marco, 1989

### *0.1.3.1. Les facteurs économiques et financiers*

La terminologie anglo-saxonne relative à la défaillance, *« Financial Distress »*, insiste sur le fait que le phénomène est de nature principalement financière. Dans cette mesure, l'analyse à la veille de la défaillance de données comptables et financières d'entreprises est susceptible de mettre en évidence des signaux annonciateurs de la « détresse ».

Le choix « conventionnel » d'une définition juridique de la défaillance justifie le recours par la grande majorité des modèles de prévision à des données tirées de documents comptables et financiers. L'hypothèse sous-jacente à ces modèles suggère que tout facteur engendrant la défaillance d'une entreprise doit s'incarner dans les états comptables de celle-ci; d'où sont prélevées les variables potentiellement explicatives du phénomène (Blazy et Combier, 1997). Basés sur l'analyse de 165 études sur la prévision de la défaillance publiées entre 1965 et 2007, Bellovary et al (2007) soulignent que les ratios Résultat Net/Total Actif et Créances à court terme/Dettes à court terme demeurent les ratios les plus couramment utilisés au sein des études de prévision, avec respectivement 54 et 51 apparitions.

- **Rentabilité, liquidité et solvabilité**

Conformément aux enseignements de l'analyse financière, la rentabilité, la structure du bilan et la capacité de remboursement de dette de l'entreprise sont les meilleurs indicateurs de la défaillance (Refait, 2004). Par conséquent, la solvabilité et la liquidité constituent naturellement les deux mesures incontournables de tout modèle de prévision de la défaillance. Trois grands types de risques sont mis en évidence : le risque de liquidité, le risque d'exploitation et le risque de financement (Bardos, 1995). Le risque d'illiquidité ou risque patrimonial correspond à un déséquilibre de la structure du bilan. Il peut être apprécié à travers le recours à des ratios d'une grande stabilité, rapprochant des postes d'actif et de passif. Il s'agit principalement des ratios de couverture des emplois stables par les ressources stables, de financement des besoins en fonds de roulement par les dettes bancaires à court terme, ou de délais de paiements du cycle d'exploitation de l'entreprise. Par ailleurs, le risque d'exploitation relève d'une analyse davantage économique. Il peut être appréhendé à travers les ratios de niveau de la rentabilité (économique, financière et globale), de structure des coûts de production et de solvabilité de l'entreprise. Enfin, le risque de financement se mesure principalement par l'évolution de la nature et de la structure des financements. En particulier, le risque de financement se mesure par la part de l'endettement à court terme (i.e. concours bancaires) dans l'endettement total. Il peut être évalué à travers l'analyse structure de capital de l'entreprise, notamment l'évolution des capitaux propres.

Les études comme celles de Bilderbeek et Pompe (2005), Chang et al. (1999) et Keasy et McGuinness (1990) soulignent le rôle de la rentabilité dans la défaillance des entreprises. Pour Bilderbeek et Pompe (2005), une entreprise dont les profits baissent au fil du temps a de fortes chances de connaitre une défaillance. Parmi les onze mesures de rentabilité proposées par les auteurs, on trouve le résultat brut d'exploitation/total actif, le résultat net d'exploitation/total actif, le résultat net global/total actif et le cash-flow/total actif qui possèdent le pouvoir discriminant le plus élevé.

La liquidité constitue également un indicateur primordial pour l'évaluation de la santé financière d'une firme. En effet, une entreprise en détresse se caractérise souvent par un faible niveau de liquidité qui a pour conséquence inévitable le resserrement des crédits octroyés par les banques, accentuant ainsi les difficultés financières (Brédart, 2014). Mesurée le plus souvent par le ratio actif à court terme/passif à court terme, la liquidité possède un pouvoir discriminant fort entre les entreprises saines et les entreprises défaillantes.

La capacité de l'entreprise à rembourser ses dettes, autrement dit sa solvabilité**,** conditionne également sa probabilité de défaillance. Ce résultat a été constamment mis en

évidence par des travaux comme ceux d'Edminster (1972), Ohlson (1980), Zmijewski (1984), ou encore plus récemment par Lukason (2012).

- **L'endettement**

De nombreuses recherches ont été consacrées à l'étude du lien entre le risque financier et le niveau d'endettement de la firme. Les résultats issus de ces travaux mettent en évidence deux relations principales : d'une part, une part élevée du levier d'endettement dans les ressources financières de l'entreprise accroît le risque de défaillance à long terme et, de l'autre, la mauvaise structure de la dette (à court ou long terme) joue sur le risque de défaut à court terme de la firme.

Artus (1992) rappelle que le financement par fonds propres réduit le risque de défaillance, tandis que les dettes financières entraînent non seulement un risque de non-remboursement des créanciers, mais également un comportement sous-optimal de l'entreprise en matière de choix de projets d'investissements. L'auteur argumente sur la base d'un double risque inhérent à l'endettement financier. D'une part, l'existence d'asymétries d'information autour de certains contrats de dette, la possibilité de retour à meilleur fortune en cas de succès et la limitation de responsabilité des actionnaires en cas d'échec engendrent une incitation au surinvestissement dans des projets particulièrement risqués. D'autre part, l'existence de coûts liés à la défaillance ainsi que le transfert de fonds aux créanciers en cas de procédure judiciaire incitent au sous-investissement.

Rapinel (1994) constate un financement propre remarquablement faible pour les entreprises défaillantes, comparé aux entreprises saines. Basé sur un échantillon de petites et moyennes entreprises industrielles françaises, l'auteur souligne une rentabilité financière « artificiellement » élevée pour les entreprises défaillantes, soutenue par un effet de levier persistant quelques années avant la survenue de l'évènement. Cette meilleure rentabilité financière est essentiellement soutenue par un taux d'apport externe de fonds plus important dont l'effet positif n'est pas durable. De la même manière, Blazy et al. (1993) constatent, sur un panel d'entreprises entre 1986 et 1990, une rentabilité financière artificiellement élevée pour les entreprises défaillantes, en début de période, suivie d'une chute brutale peu avant le dépôt du bilan. Le niveau élevé de rentabilité financière observé en début de période cacherait, selon les auteurs, une fragilité financière due au gonflement du levier d'endettement. En effet, le financement de l'investissement par dette financière permet certes d'accroître la rentabilité financière des fonds propres, mais augmente par ailleurs le volume des charges financières qui pèse sur les résultats de l'entreprise. Cuthbertson et Hudson (1993) distinguent, sur données britanniques, un effet de positif sur la rentabilité financière,

(mais temporaire) à court terme de l'apport de nouveaux fonds qui permettent de soulager la trésorerie de l'entreprise, et un effet négatif du poids du levier d'endettement, à plus long terme, sur le risque de défaillance de l'entreprise.

Le coût de la dette influe également sur le risque de défaillance de la firme. Blazy et al. (1993) considèrent que le financement de projets d'investissements doit privilégier le financement de long terme, plutôt qu'un endettement de court terme. En effet, ce dernier, non seulement diminue les possibilités de renouvellement des crédits, mais expose également l'entreprise à un risque de taux d'intérêt, notamment lorsque celui-ci est variable. Le poids des charges financières relatives à un endettement de court terme constitue par ailleurs un frein à l'augmentation des fonds propres. Parmi les entreprises défaillantes entre 1986 et 1990, ces mêmes auteurs observent une structure de financement déséquilibrée, caractérisée par un déficit de ressources de long terme. Toutefois, il est intéressant de souligner que ce choix échappe souvent à la volonté de l'entreprise. Ceci est vérifié si les banquiers préfèrent souvent accorder des financements à court terme afin d'augmenter leur pouvoir de contrôle sur l'entreprise. Il en résulte une modification des plans d'investissement (des projets moins risqués vers les projets plus risqués) de l'entreprise, surtout dans le cas où le financement sollicité servait au financement d'un projet d'investissement. Domens (2007) confirme ce résultat sur un échantillon constitué d'entreprises défaillantes entre 1993 et 2004.

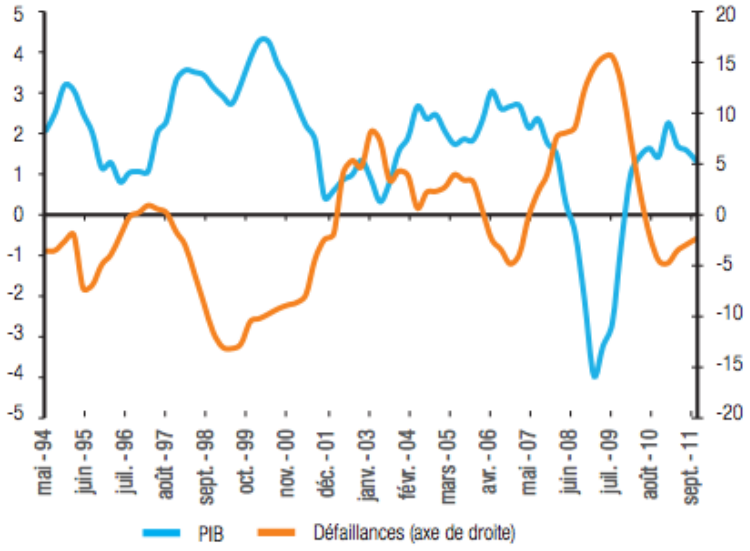
- **Les pressions exercées par les partenaires commerciaux**

Outre le risque associé aux contrats de dettes financières établis entre l'entreprise et ses créanciers bancaires, un risque peut également être associé aux relations avec les partenaires commerciaux. Ceci est particulièrement valable pour les PME dont l'accès au marché des capitaux est assez difficile (Blazy, 2000). La dépendance d'une entreprise vis-à-vis d'un ou de plusieurs clients « importants » la rend extrêmement vulnérable à des modifications au niveau de leur situation financière. D'une part, l'encours du client étant proportionnel à la taille de celui-ci et son degré d'importance, un gros client devient dangereux pour l'entreprise notamment en cas de défaut ou de retards de paiement. D'autre part, des pressions exercées par des clients puissants sur les conditions de l'offre de l'entreprise débouchent sur un positionnement défavorable de celle-ci. L'entreprise prêteuse est alors privée d'avantages concurrentiels en termes de prix ou de critères de l'offre par rapport aux autres entreprises de son secteur (Lelogeais, 2003). L'ensemble de ces pressions exercées sur l'entreprise entraînent, toutes choses étant égales par ailleurs, une diminution de ses ressources nettes, notamment parce que les crédits interentreprises représentent la première source de financement des PME françaises (OSEO, 2008).

### *0.1.3.2. Le rôle de l'environnement économique et de la conjoncture*

Une littérature abondante examinant l'impact de la conjoncture économique et des grandeurs macroéconomiques sur le risque de défaillance met en évidence le caractère cyclique des défaillances d'entreprises. Ce dernier a été particulièrement confirmé en France au cours de la période récente (Kremp et al. 2013). Comme le suggère un rapport de la COFACE publié en 2012, la crise de 2008-2009 a clairement établi la dépendance des entreprises au cycle économique.

**Figure 0-2 : Défaillances et croissance du PIB**




Note : Echelle de gauche en glissement annuel et de droite en pourcentages
Source : COFACE, 2012

L'analyse des facteurs explicatifs des défaillances récentes en France, réalisée par la Direction du Trésor en 2011, confirme que la forte croissance du nombre de défaillances entre 2007 et 2010 résulte principalement de la chute de l'activité qui a accompagné la crise économique récente. A travers un modèle à correction d'erreurs, le rapport met en évidence une forte corrélation négative entre le nombre défaillances et la conjoncture évaluée par le volume du PIB.

Le lien entre défaillances d'entreprises et cycle économique est confirmé par Artus (2008) qui met en évidence la forte corrélation entre le taux de défaut des entreprises et l'évolution du PIB pour la zone euro et les Etats-Unis. Galai, Crouhi et Mark (2000) montrent par ailleurs que les probabilités de défaut sont d'autant plus corrélées aux fluctuations de la conjoncture économique que les entreprises souffrent de déséquilibres internes. Ces auteurs soulignent également une asymétrie dans l'impact exercé par le cycle économique, en ce sens que les probabilités de défaut augmentent de manière non négligeable en période de crise,

mais ne diminuent pas pour autant en période de croissance. Ce résultat suggère que l'amélioration de la situation financière des entreprises en période d'expansion serait due à l'impact de facteurs spécifiques à la firme loin du contexte économique global.

#### *0.1.3.3. Les facteurs stratégiques et comportementaux*

De nombreux auteurs insistent sur la nécessité d'enrichir utilement les modèles de prévision en tenant compte de variables endogènes liées aux caractéristiques intrinsèques et au fonctionnement interne de l'entreprise. En effet, la facilité avec laquelle les ratios financiers sont manipulables a poussé à la décrédibilisation des modèles de prévision basés exclusivement sur des ratios financiers (Dimitras et al, 1996)[22]. En outre, les approches contingentes et celles issues du courant écologique soulèvent que les caractéristiques intrinsèques des entreprises ainsi que leur action volontariste exercent un impact sur leurs performances. De ce fait, les performances négatives sanctionnées souvent par la défaillance sont considérées comme étant le résultat de facteurs intrinsèques, organisationnels et stratégiques propres aux entreprises.

Le risque entrepreneurial peut être interprété comme l'aptitude des entrepreneurs à estimer le risque sectoriel et à y faire face. Une entreprise fait souvent face à des déséquilibres, générateurs de profit, avec des informations et des anticipations différentes. Les résultats enregistrés sur le marché, les réussites comme les échecs, sont alors la sanction des capacités diverses des entrepreneurs à anticiper (Marco, 1986).

Les erreurs d'évaluation du marché et d'anticipation de la demande sont considérées comme des déterminants non négligeables de la défaillance. En effet, la faiblesse des débouchés à l'origine de la défaillance ne pourrait pas s'expliquer exclusivement par une chute de la demande sectorielle. Sur un échantillon d'entreprises défaillantes entre 1999 et 2000, Lelogeais (2003) souligne des difficultés très fréquentes en termes de débouchés qui se traduisent par un ralentissement de l'activité deux ans avant la défaillance. Sur un échantillon plus récent d'entreprises françaises, Levratto et al. (2011) confirment l'importance des débouchés pour expliquer la défaillance et considèrent par ailleurs que le défaut ne peut être exclusivement dû à la baisse de la demande, mais aussi à des erreurs d'anticipation quant à l'évolution de cette demande, et de manière plus générale à une mauvaise évaluation du marché.

[22] Cet argument fait référence aux opérations de « *window dressing* » à travers lesquelles les dirigeants d'entreprises tentent de manière infidèle d'améliorer l'image de leurs comptes (Lelogeais, 2003 ; Keasy et Watson, 1991).

#### *0.1.3.4. La taille et l'âge de l'entreprise*

La littérature sur les trajectoires d'entreprises insiste sur l'impact non négligeable de la taille et l'âge sur les perspectives de croissance positive et négative des entreprises. L'hypothèse sous-jacente est que ces deux dimensions sont étroitement liées à des facteurs de fragilité telles que les caractéristiques intrinsèques en matière de management, de ressources humaines et de ressources financières, propres à l'entreprise.

L'idée d'un handicap lié à la jeunesse des entreprises, appelé « Liability of newness », remonte à Stinchcombe (1965) qui suppose une forte probabilité de défaillance au sein des jeunes entreprises. Des déficiences liées à la difficulté d'établir des relations stables avec les parties prenantes représentent le principal facteur explicatif. Toutefois, l'âge de l'entreprise ne pouvant garantir une protection contre le risque de défaillance (Wagner, 1999), de nombreux auteurs nuancent la relation positive et monotone entre l'âge de l'entreprise et sa probabilité de défaillance. Des profils de risques spécifiques sont donc associés aux différentes étapes du cycle de vie d'une entreprise. Dit autrement, chaque étape du cycle de vie l'entreprise est considérée comme une période de « crise » durant laquelle la survie de l'entreprise est compromise (Crutzen et Van Caillie, 2008). Argenti (1976) et Ooghe et De Prijcker (2006) distinguent trois profils d'entreprises défaillantes. Le premier regroupe les très petites entreprises nouvellement créées, dont la défaillance est étroitement liée à leur difficulté de positionnement sur le marché. Le second correspond aux entreprises en phase de développement, dont les stratégies d'expansion s'écartent de leur positionnement sur le marché, rendant leur gestion d'autant plus compliquée. Le troisième regroupe les entreprises matures qui ne parviennent plus à s'adapter aux modifications de leur environnement en raison d'un fort degré d'inertie accumulée au fil du temps.

L'hypothèse d'un fort lien entre la taille de l'entreprise et le risque de survie est communément admise au sein de la littérature (Kale et Arditi, 1998). Aldrich et Auster (1986) insistent en particulier sur le risque élevé de mortalité parmi les entreprises de petite taille ; les difficultés liées à l'accès aux ressources financières, les déficiences en matière de gestion (Baldwin et al., 1997), et l'instabilité des bénéfices (Hall, 1992) constituant les principaux mécanismes sous-jacents. Toutefois, le handicap de la taille ou « Liability of smallness » mis en avant par Aldrich et Auster ne fait pas l'unanimité. Blazy et Combier (1988) soulignent que la taille accrue des entreprises exerce un double effet. Le pouvoir de négociation des entreprises est certes positivement lié à leur taille, toutefois, l'accroissement du volume des capitaux investis augmente *in fine* le risque de défaillance. En d'autres termes, la taille de l'entreprise n'est pas forcément garante d'une meilleure résilience vis-à-vis du risque de

défaillance (Wagner, 1999). Bottazi et Tamagni (2010) mettent même en évidence une relation croissante entre la taille de l'entreprise et le risque de défaillance. Caractérisées par une efficacité plus importante et une meilleure capacité de recouvrement après la défaillance, les grandes entreprises sont toutefois susceptibles de souffrir de déséquilibres financiers plus graves.

#### *0.1.3.5. L'appartenance à un groupe*

La structure de propriété de l'entreprise est très rarement prise en compte au sein de la littérature sur les défaillances. Le manque d'attention pour l'actionnariat des entreprises est soutenu par le principe qui sous-entend le traitement légal de la défaillance. En effet, le droit de la défaillance ne considère que l'unité légale, en ce sens qu'une entreprise faisant l'objet d'une procédure collective est responsable de ses dettes à partir de ces propres actifs, indépendamment de son appartenance à un groupe. La place croissante des groupes de sociétés au sein du système productif européen soulève toutefois des questions à l'égard de cette hypothèse (Dewaelheyns et Van Hulle, 2004).

La recherche sur le lien entre la structure de propriété et la performance des entreprises remonte à la thèse de Berle et Means (1932) qui soutiennent l'existence d'un lien significatif entre la structure d'actionnariat et la performance des entreprises. L'hypothèse repose sur l'idée d'une séparation entre la propriété et le contrôle des sociétés qui a pour conséquence des divergences d'intérêts entre principal et agent[23].

Le lien entre risque de défaillance et structure de propriété a été mis en évidence par un nombre limité de chercheurs. Ces derniers soulignent l'importance de la prise en compte d'information sur la structure de propriété pour la prévision de la défaillance des filiales, mais aussi celles des sociétés-mères (Beaver et al., 2015 ; Dewaelheyns et Van Hulle, 2006). L'idée presque communément admise est compatible avec un risque de défaillance plus faible des entreprises appartenant à un groupe, par rapport aux entreprises indépendantes. Des motivations d'ordre stratégique, fiscal et financier sont réputées encourager les groupes de sociétés à garantir une protection pour leurs filiales contre le risque de défaillance (Becchetti et Sierra, 2003 ; Dewaelheyns et Van Hulle, 2004).

Une façon courante de prendre en compte l'appartenance d'une entreprise à un groupe, dans les modèles existants de prévision de la défaillance, est d'inclure une variable binaire d'appartenance ou non à un groupe. Cette méthode fait l'objet de critiques soulignant

[23] La théorie de l'agence, dite aussi théorie des incitations, repose sur la notion de relation d'agence qui correspond à une relation de délégation caractérisée par une asymétrie d'information donnant lieu à une divergence d'intérêt entre la personne qui délègue (le principal) et la personne déléguée (l'agent).

l'impossibilité de prendre en compte l'ensemble des mécanismes qui sous-tendent la relation qui lie une entreprise à son groupe à l'aide d'une seule variable. Cette limite est confirmée par la littérature sur les groupes d'entreprises, en particulier sur les marchés internes de capitaux qui montre le caractère ambigu de la filialisation. Les groupes peuvent ainsi constituer soit un avantage concurrentiel ou un fardeau pour leurs filiales (Bamiatzi et al., 2014). De nombreux auteurs mettent en évidence l'impact positif de l'appartenance à un groupe pour les entreprises, à travers notamment le soutien financier en cas de détresse financière (Dewaelheyns et Van Hulle, 2004 ; Khanna et Yafeh, 2005). D'autres recherches s'efforcent au contraire de mettre l'accent sur l'impact négatif sur la performance des transferts frauduleux de ressources des actionnaires minoritaires vers les actionnaires majoritaires (Khanna et Yafeh, 2007).

Dans la mesure où la structure de capital influence les trajectoires et comportements des entreprises, il apparaît légitime d'enrichir les modèles de prévision de la défaillance par la prise en compte des caractéristiques des groupes, mais aussi des relations intragroupes. Au-delà, vis-à-vis de l'importance des relations intragroupes et de leur impact significatif sur les performances, la prise en considération de ces facteurs, pour comprendre le devenir des entreprises après la défaillance semble légitimée aussi.

## 0.2. Démarche normative : à la recherche de l'efficacité du droit de la défaillance

L'approche de la défaillance qui fait l'objet de cette section s'inscrit dans le champ de l'analyse économique du droit. Pour les auteurs qui s'y réfèrent, le droit est au service de l'économie et doit donc être calibré de manière à améliorer les performances économiques. Cette branche de l'analyse a été créée à la fin des années 1960 par Richard Posner dans le cadre du National Bureau of Economic Research, où il conduit des recherches portant sur le fonctionnement économique des cours de justice, ou encore sur les principaux concepts du droit constitutionnel et du droit civil. A la suite de ces travaux, la banque mondiale a mis en place une approche faisant le lien entre les institutions et les performances économiques d'un pays. Celle-ci est présentée dans les différents rapports Doing Business[24]. Elle nourrit des travaux qui s'interrogent d'une part sur les procédures, et de l'autre sur l'efficacité du droit des entreprises en difficulté.

Appliquée à la question des faillites, l'analyse économique du droit s'interroge sur les effets des législations nationales (pro-débiteur vs pro-créanciers) sur les conditions de

[24] La méthode, les résultats nationaux et les comparatifs sont disponibles sur le site : doingbusiness.org

financement de l'entreprise, et le partage entre financement externe (par la dette bancaire ou le marché financier) et financement interne (par les capitaux propres). En ligne de mire de toutes ces analyses, on trouve la question de l'efficacité du droit des entreprises en difficulté. L'appréciation de l'efficacité varie selon les auteurs. Il peut s'agir de la capacité du droit à assurer le financement de l'entreprise. On parle alors d'efficacité *ex ante*. L'efficacité peut également être appréciée du point de vue du devenir des entreprises en difficulté et des créanciers. On parle alors d'efficacité ex post.

### 0.2.1. Système pro-débiteur vs système pro-créanciers : quel équilibre entre l'efficacité *ex ante* et l'efficacité *ex post* des procédures collectives ?

Les entreprises défaillantes n'étant pas les seules à être concernées par le droit des entreprises en difficulté, l'efficacité du droit est appréhendée non seulement vis-à-vis des entreprises défaillantes, mais aussi à l'égard des entreprises « in bonis ». En effet, les entreprises anticipant les effets du droit dans le cas d'un éventuel défaut, leur comportement s'en trouve influencé, même en dehors de toute difficulté financière. De ce fait, le droit des entreprises en difficulté exerce une influence *ex ante,* à la fois sur la gestion des entreprises in bonis, ainsi que sur la qualité et les modalités de leurs relations financières avec les créanciers. D'une part, l'existence de sanctions pénales à l'encontre du débiteur qui cherche à éviter ou retarder l'ouverture de la procédure incite au déclenchement opportun de la procédure. D'autre part, le risque de défaut et de disparition de l'entreprise anticipé par un créancier potentiel, ainsi que le rang de sa créance potentielle, affectent la disponibilité et le montant des crédits distribués.

Le droit des entreprises en difficulté détermine ainsi le nombre et le montant des contrats de crédit dans lesquels une entreprise se trouve engagée, de même que l'utilisation qu'elle en fait dans le cadre de sa stratégie d'investissement. En ce sens, une procédure de résolution de la défaillance sera dite efficace *ex ante* si elle incite les acteurs économiques qui y sont impliqués à prendre les bonnes décisions afin d'éviter les situations d'illiquidité à court terme et d'insolvabilité à moyen ou long terme. De ce point de vue, le droit des défaillances devient un instrument puissant de contrôle des pratiques de gestion de l'entreprise en activité (Pochet, 2002).

Par ailleurs, le devenir des entreprises après le dépôt du bilan constitue l'un des enjeux phare du droit des défaillances. C'est d'ailleurs en réponse à de tels questionnements que les réformes du droit commercial ont été décidées et mises en œuvre sur la période récente. L'efficacité *ex post* concerne les effets des procédures collectives une fois le défaut observé et

une procédure collective engagée. Deux dimensions déterminent ainsi l'efficacité *ex post*, à savoir la capacité de la procédure à produire de l'information fiable sur l'état réel du débiteur, les droits et les obligations des parties prenantes de la procédure ; et sa capacité à arbitrer entre le sauvetage de l'entreprise ou sa liquidation, de façon à maximiser la valeur du projet économique de celle-ci (Oseo, 2008).

Etant donné les effets non négligeables du traitement de la défaillance sur le comportement des débiteurs et celui des créanciers, la mise en place d'un traitement optimal des difficultés semble ainsi primordiale. Cette question se réduit souvent à l'analyse contradictoire des deux grandes familles de procédures (ou systèmes de défaillance) que sont les procédures pro-débiteurs et leur opposé, les procédures pro-créanciers. Autrement dit, la question qui se pose est de savoir si la résolution des difficultés doit se faire de manière à préserver les intérêts des créanciers ou, au contraire, doit permettre à l'entreprise un retour sur le marché, allant ainsi dans le sens des employés et des dirigeants. Dans son rapport de 2004, la Banque mondiale souligne qu'un bon droit des défaillances doit être en mesure d'atteindre deux principaux objectifs que sont d'une part la maximisation de la valeur des actifs de l'entreprise à travers soit la liquidation rapide de l'entreprise ou le sauvetage des affaires viables, et d'autre part le respect du rang de remboursement des créanciers (Doing Business, 2004).

Le débat sur les modalités de traitement des défaillances est en plein essor depuis une vingtaine d'années, notamment suite à la recrudescence de défaillances ayant suscité l'attention des chercheurs sur les systèmes de défaillances en vigueur (Recasens, 2002). Le choix entre un système privilégiant les intérêts des créanciers et un système favorisant le traitement des débiteurs résulte d'un arbitrage entre une efficacité *ex ante* garantie à travers la création de bonnes incitations pour le débiteur, et une efficacité *ex post* permettant la maximisation de la valeur de l'entreprise après le défaut.

Plusieurs travaux ont tenté de hiérarchiser les systèmes pro-débiteurs et pro-créanciers. Le principal résultat atteint par ces études suggère la faiblesse générale des performances économiques des différents types de droit des entreprises en difficulté. L'idée d'une supériorité des systèmes de droit commun orientés vers les créanciers, véhiculée par les rapports Doing Business et inspirée des travaux sur l'origine légale du courant de la *« Law and Finance »* (LLSV, 1998), semble toutefois être dominante. Reposant souvent sur des hypothèses restrictives, minorant le rôle joué par les différents acteurs impliqués, la hiérarchie entre systèmes de défaillance élaborée par ces travaux a été nuancée par un ensemble d'études empiriques mettant évidence son caractère instable. Blazy et Chopard (2006) soulèvent que

les tentatives de ces travaux aboutissent au mieux à l'élaboration d'une typologie des régimes de défaillance.

Plusieurs études incorporant des critères relatifs au niveau de richesse du pays (Djankov et al, 2008), au degré de développement des marchés financiers (Berkovitch et Israel, 1999), et au niveau de développement du secteur bancaire (Chopard et Langlais, 2009) concourent à montrer l'importance de la prise en compte de tels facteurs pour juger la supériorité relative d'un système de défaillance. En ce sens, l'efficacité d'une procédure dépendra du contexte dans lequel celle-ci est mise en œuvre. Dans les pays développés, la procédure la plus efficace *ex post* permettant de limiter les erreurs de jugements (Berkovitch et Israel, 1999) demeure la restructuration (Djankov et al., 2008). En revanche, dans les pays les moins développés caractérisés par un financement principalement intermédié, un système pro-débiteur semble être préférable.

Au total, il apparait que l'orientation de la procédure en faveur des créanciers ou des débiteurs, est loin d'être le seul facteur explicatif de l'efficacité du droit. Entrent également en jeu le contexte dans lequel est insérée la procédure, mais surtout aussi la manière dont elle est mise en œuvre, et dans une certaine mesure, l'attrait qu'elle exerce au regard d'un traitement informel des difficultés en dehors des tribunaux (Levratto, 2009). Dans ce qui suit, nous nous focalisons principalement sur cette idée, en examinant successivement l'arbitrage entre la liquidation et la continuation de l'activité et, dans ce dernier cas, les conséquences sur les performances des entreprises.

### 0.2.2. Liquidation ou redressement: quelles conséquences sur les performances et la survie des entreprises ?

Les études comparatives internationales soulignent la convergence des droits existants en faveur du maintien de l'entreprise dans son ensemble, la valeur des *« going-concern »* étant supposée supérieure à la somme des actifs démembrés. Ce souci de continuation de l'activité des entreprises passe essentiellement par la procédure de restructuration « Chapter 11 » aux Etats Unis, « procédure de Redressement Judiciaire » en France qui attribue au juge le pouvoir d'organiser le sauvetage de l'entreprise, dans les seuls cas où celui-ci semble possible.

Dans sa configuration actuelle, le droit français des procédures collectives est typiquement favorable aux débiteurs, malgré la réforme de 2014[25] qui témoigne de la volonté du législateur de rétablir un équilibre entre les droits des créanciers et ceux des débiteurs.

[25] Ordonnance No. 2014-326

Souvent associé à l'exemple américain illustré par le Chapter 11, le droit français, de même que le droit américain de la défaillance, font l'objet de nombreuses critiques remettant en cause un éventuel biais en faveur du sauvetage des entreprises et du maintien des dirigeants défaillants[26]. Il convient toutefois de noter que la menace d'éviction ou le maintien du dirigeant est loin d'être le seul garant de l'efficacité d'une procédure collective. Pour cette raison, une évaluation du droit basée sur un simple critère distinguant les procédures en fonction de leur orientation en faveur des débiteurs ou des créanciers est loin d'être suffisante. La prise en compte de facteurs décrivant les caractéristiques des acteurs de la procédure et, surtout, la manière dont celle-ci est appliquée sont d'une grande valeur. Une approche objective du « droit en action » s'avère donc nécessaire pour l'analyse du traitement des entreprises en difficulté (Lascoumes et Serverin, 1988 ; Levratto, 2007).

Pour de nombreux auteurs, un droit efficace est celui qui garantit le succès des affaires traitées, autrement dit, celui qui permet un arbitrage entre la liquidation et le sauvetage des entreprises défaillantes, de manière à maximiser la valeur de celles-ci. Accusé souvent de permettre à des affaires non viables, de bénéficier d'une deuxième chance dont l'échec est connu d'avance, le Chapter 11 constitue l'objet de recherche le plus attrayant dans ce domaine. En particulier, les erreurs de jugement liées aux décisions de restructuration en représentent son principal point faible. L'erreur de type I consiste à sauver une entreprise dont la liquidation aurait été la meilleure solution. L'erreur de type II est la décision de liquider une entreprise, encore viable et qui aurait dû être sauvée.

White (1994) souligne qu'en présence d'asymétrie d'information entre les débiteurs et les créanciers, la distinction entre les entreprises viables et celles qui ne le sont pas n'est pas une tâche simple. A travers un modèle mettant en jeu le débiteur et ses créanciers, White (1994) précise que les erreurs interviennent parce que les débiteurs ont tendance à agir dans leur intérêt, en reflétant une image de leur entreprise, qui ne correspond pas à la réalité. En ce sens, les dirigeants des entreprises viables profitent de donner l'impression aux créanciers que leur affaire est moins efficace qu'elle ne l'est. De même, les dirigeants d'entreprises non viables se signalent comme ayant une affaire viable pour bénéficier d'une chance de rester plus longtemps sur le marché.

Si les erreurs sont inhérentes à tout processus de jugement, l'analyse des facteurs sous-jacents à la prise de décision semble importante. Existe-il un profil-type d'entreprises qui

[26] Les défauts de ces dispositifs ont souvent été soulignés dans le cas des Etats-Unis où des entreprises du transport aérien, de l'énergie et du secteur automobile notamment, ont instrumentalisé le droit des faillites, dans leur intérêt, de manière à échapper à leurs créanciers.

bénéficient d'une deuxième chance ? Les entreprises liquidées partagent-elles des caractéristiques communes ? Ce questionnement sur les facteurs qui interviennent dans la prise de décision, i.e. l'arbitrage des tribunaux entre le sauvetage ou la liquidation des entreprises défaillantes demeure marginalement exploité. L'unique étude empirique portant sur ce sujet est celle de Morrison (2007) qui analyse les ouvertures de procédures de redressement aux Etats Unis en 1997 et souligne l'absence d'un biais en faveur du sauvetage des entreprises. Ses résultats suggèrent que les entreprises sauvées souffrent de difficultés d'ordre financier, tandis que celles qui sont liquidées rapidement se distinguent par des difficultés d'ordre plutôt économique.

Cette question trouve sa légitimité en France également en raison de la nature même du système qui, malgré son orientation formelle en faveur du sauvetage de l'emploi et la continuation de l'activité, laisse le choix aux juges pour l'arbitrage entre le redressement ou la liquidation des entreprises entrées en procédure collective. Par ailleurs, le nombre annuel de liquidations immédiates prononcées, relativement élevé par rapport aux ouvertures de procédures de redressement, attire l'attention sur un système qui, selon les tenants du courant de la *Law and Economics*, serait typiquement orienté vers le sauvetage des débiteurs. L'étude empirique de Blazy et al. (2011) portant sur ce sujet aboutit toutefois à mettre en évidence un comportement des juges français en faveur de la préservation des emplois et du sauvetage des entreprises défaillantes.

Au-delà de la décision de sauvetage ou de liquidation, le devenir des entreprises à l'issue de la procédure est une question primordiale. La valeur de la liquidation et celle de la continuation étant quasiment imprévisibles pour une même entreprise, le choix de la meilleure solution capable de maximiser la valeur des actifs devient pratiquement impossible (Blazy et Chopard, 2004 ; White, 1989). De ce fait, dans le cadre des recherches portant sur le Chapter 11, le succès de la procédure a souvent été associé à différents critères, principalement, l'adoption d'un plan de redressement (Flynn, 1989 ; Jensen, 1992 ; Warren et Westbrook, 2009) et la survie de l'entreprise à des différents horizons temporels (Morse et Show, 1988 ; Altman et al., 2009). Les résultats contradictoires et non concluants des études existantes, qui révèlent la sensibilité des résultats à la mesure du succès utilisée ont poussé les chercheurs à se focaliser sur d'autres critères, notamment la performance des entreprises à l'issue de la procédure de redressement. Là encore, le consensus sur l'efficacité des systèmes de redressement, représentés par l'exemple américain du Chapter 11 est loin d'être atteint. Dans le sens où, la capacité de la procédure de redressement à améliorer la performance des entreprises à l'issue de la restructuration ne fait pas l'unanimité des chercheurs. Si pour

certains, les entreprises restructurées se distinguent par des marges d'exploitation très faibles (Hotchkiss, 1995 ; Hotchkiss et Mooridian, 1997), pour d'autres, les rendements des actions de ces entreprises semblent plus élevés (Eberhart et al., 1999), ou équivalents (Alderson et Betker, 1999 ; Jory et Madura, 2010) à ceux des entreprises référentes du secteur.

De l'ensemble des études précédemment citées, on retient que l'évaluation de l'efficacité d'une procédure sur la base des performances des entreprises à son issue, ne fournit pas des résultats définitifs. Ceci est d'autant plus vrai que les mêmes travaux empiriques montrent que l'amélioration ou la dégradation des performances tout au long du processus dépend avant tout des caractéristiques des entreprises, mais aussi de la politique de restructuration qui est mise en place. De manière globale, l'amélioration des performances des entreprises à l'issue du processus de restructuration est conditionnelle au changement du dirigeant (Hotchkiss, 1995), à la réduction significative du volume des actifs et des dettes de l'entreprise durant le processus (Denis et Rodgers, 2006), le recentrage de l'activité de l'entreprise (Dawley et al., 2012) et à la conjoncture industrielle (Dewaelheyns et Van Hulle, 2009).

Kahl (2002) précise que l'évaluation de la viabilité et de la performance des entreprises après la défaillance nécessite du temps. Ce délai complexifie la question du jugement du redressement. Même si les études précédentes visent l'évaluation du droit de la défaillance, en particulier les procédures de redressement, elles aboutissent au mieux à l'identification des facteurs pouvant influencer les performances des entreprises à l'issue du processus. De ce fait, on constate que la plupart des travaux dans ce domaine se situent en aval du processus, ignorant ce qui se passe entre le moment de la défaillance et celui où l'entreprise n'est plus considérée comme défaillante. Autrement dit, les raisons qui font que certaines entreprises chutent plus rapidement que d'autres durant le processus de restructuration demeurent très floues. Intégrer la dimension temporelle à l'analyse des processus de défaillance contribuerait en partie à répondre aux questions.

## Conclusion

La recherche en matière de défaillance s'est développée depuis la fin du XVIIIème siècle. Longtemps abordée d'un point de vue purement légal, la défaillance a rapidement mobilisé des chercheurs dans différents domaines ; notamment, le droit, la finance d'entreprise et les statistiques. Dans ce chapitre, nous avons proposé une revue de la littérature sur la défaillance. La mise en évidence de la dualité des approches du sujet qui permet de mieux rendre compte de la défaillance comme un processus allant de la cessation

des paiements de l'entreprise jusqu'à l'achèvement du traitement juridique des difficultés, constitue l'originalité de notre travail.

La première approche est en lien étroit avec l'ensemble des travaux à visée prédictive de la défaillance. Souvent réduite à un problème de classification des entreprises en deux catégories (défaillantes/non-défaillantes), la prévision de la défaillance s'est développée depuis les premiers travaux de Tamari (1966), en passant par Beaver (1966), Altman (1968), Ohlson (1980) et Zmijewski (1984). Butant sur l'incapacité de ces approches traditionnelles à modéliser correctement la relation fonctionnelle qui existe entre les différentes variables explicatives et l'état de défaillance, de nouvelles techniques d'estimation non paramétriques inspirées principalement de l'intelligence artificielle ont vu le jour. Le développement des techniques quantitatives dédiées à la prévision de la défaillance s'est accompagné de la diversification des variables prises en compte dans les modèles. Ces dernières s'articulent principalement autour des états financiers, des caractéristiques intrinsèques de l'entreprise (taille, âge, secteur, etc.) et des caractéristiques de l'environnement économique. Toutefois, récemment, des travaux pionniers ont mis en évidence la nécessité d'enrichir les modèles de prévision de la défaillance par la prise en compte de la structure de l'actionnariat des entreprises (Dewaelheyns et Van Hulle, 2006 ; Beaver et al., 2015). Cette voie de la recherche demeure très marginalement exploitée, alors qu'elle est légitimée par les travaux théoriques sur le lien entre structure d'actionnariat et performances de l'entreprise d'une part et les travaux empiriques sur l'impact de l'appartenance à un groupe sur les performances des entreprises-filiales de l'autre.

La seconde approche s'inscrit dans le champ de l'analyse économique du droit. Nourrie par des travaux à portée normative du droit de la défaillance, cette branche de la littérature est fondée sur l'opposition entre deux grandes familles de systèmes de la défaillance : les systèmes pro-débiteur et les systèmes pro-créanciers. Le débat sur les modalités de traitement de la défaillance, en plein essor depuis le début du XXème siècle, porte principalement sur l'arbitrage entre une efficacité *ex ante* du droit, garantie à travers la création de bonnes incitations pour les débiteurs, et une efficacité *ex post* permettant la maximisation de la valeur de l'entreprise défaillante. L'ensemble de ces travaux aboutit à une hiérarchisation des systèmes de défaillance, marquée par la supériorité des systèmes de droit commun orientés en faveur des créanciers. Les rapports Doing Business de la Banque mondiale, inspirés eux-mêmes par les travaux sur l'origine légale du courant de la *« Law and Economics »* en apportent les preuves. Reposant souvent sur des hypothèses restrictives, minorant le rôle joué par les différents acteurs impliquées dans la procédure, ainsi que la

manière dont le droit est appliqué, la hiérarchie entre systèmes de défaillance élaborée par ces travaux a été critiquée à plusieurs reprises. Une analyse approfondie de la véritable mise en œuvre du droit (i.e. « le droit en action ») s'avère donc nécessaire.

Au terme de cette présentation des recherches existantes sur la défaillance, il ressort que la défaillance constitue un domaine de recherche très exploré. Toutefois, force est de constater que la défaillance demeure un champ d'analyse très fertile. De nombreux points méritent des investigations plus poussées pour mieux comprendre le phénomène de défaillance des entreprises, notamment, la structure de capital des entreprises et le caractère processuel de la défaillance. Tel est l'objet des trois chapitres qui suivent.

# Chapter 1: Determinants of bankruptcy: the impact of corporate ownership and control structure

## Introduction

During the past decades, firm failure topic has been widely investigated under different aspects, mainly financial distress and bankruptcy. Due to its interdisciplinary nature, failure topic has engaged different disciplines such as industrial economics, corporate finance, statistics and law (Crutzen and Van Caillie, 2008). Since the early 1930s and the seminal research of FitzPatrick (1932), the number of studies focusing on firm bankruptcy has steadily increased (Guilhot, 2000). This is hardly surprising given the number of economic agents both directly and indirectly concerned by the phenomenon, such as potential investors, lenders, clients, suppliers or employees, etc.

A significant proportion of these contributions have adopted a predictive approach trying, by means of different statistical techniques, either to predict accurately bankruptcy default, or to assess firm's exposure to default risk. Relevant empirical studies have concentrated on such commonly examined variables as profitability, leverage, liquidity, and the characteristics of the firm (size, age, location, etc.). Financial factors such as low profitability, cash flow problems and high leverage, combined with the size and age characteristics of firms have been found to influence bankruptcy occurrence (See Altman, 1968; Freeman et al., 1983; Kale and Arditi, 1998; Thornhill and Amit, 2003 for details).

Recently, however, another strand of literature highlighted the role of additional variables in influencing firm’s risk of bankruptcy. In this line, the studies of Dewaelheyns and Van Hulle (2004, 2006) revealed the ability of information on company’s ownership structure to improve the predictive power of bankruptcy prediction models. Yet, research on the link between ownership structure and firm performance is not new. The question goes back to the early thesis of Berle and Means (1932) who insist on the significant impact of ownership structure on firm performance. Bamiatzi et al. (2014) recently recalled that this issue is very well documented in both corporate governance and ownership literatures. In the business group and bankruptcy literature however, only a handful of scholars have explored the effect that ownership structure, namely business group affiliation, might have on bankruptcy risk, providing evidence on its significance (Beaver et al., 2015).

Building on both aspects, the business group and the bankruptcy literature, the present chapter attempts to achieve a twofold objective. First, it explores the determinants of

bankruptcy based on variables previously used in the literature on corporate bankruptcy. Second, it investigates the role of corporate ownership and control structures in determining the occurrence of such an event. Unlike previous studies, we particularly endeavor to help understand the mechanisms which underpin the potential link between group affiliation and bankruptcy by taking into account several aspects such as group characteristics and intra-group financial commitments.

Regarding their benefits and costs, business groups have been a topic of interest for both scholars and legislators. Existing theoretical and empirical evidence from business groups' internal capital markets literature suggests that group affiliation can be either a "blessing" or a "liability" for firms (Bamiatzi et al., 2014:210). The advantages are pointed out by Gopalan et al. (2007) who put some emphasis on their key role as perfect market substitutes in emerging countries as well as their risk buffer attitude towards financially distressed affiliates are well acknowledged. Simultaneously, business groups are often described as dark and opaque institutions where controlling shareholders are free to undertake actions in their own interests, to the detriment of those of minority shareholders (Khanna and Yafeh, 2007). Contentions on these issues remain existing since no study has previously tried to settle the debate in a comprehensive empirical setting.

This chapter concerns with the latter aspects and tries to empirically understand the influence of firm affiliation to business groups on its probability of bankruptcy. Our empirical setting is a unique sample of companies operating in France over two distinct periods: from 2006 to 2007 and from 2009 to 2012[27]. Dataset used combines legal, financial and qualitative information which encompass both companies and group levels. In line with Dewaelheyns and Van Hulle (2006), we identify group affiliation using information on the existence of an Ultimate Corporate Owner (in French, "*la tête de groupe"*), the latter being defined as the parent company which holds control rights[28] in our sample-companies and which is not controlled by any other one.

We investigate the business group-company bankruptcy relationship through the lenses of different company characteristics (size, age, etc.), group specific characteristics (control structure, group origin, etc.) and the operating environment (industry affiliation and the economic conjecture). The logistic regressions run to estimate the company level probabilities of bankruptcy reveal some interesting results. We first find that, contrarily to

[27] The gap in our sample is due to data availability.

[28] Control rights represent the percentage of voting rights held by the controlling company. Due to potential deviations from the one share-one vote principal, the percentage of control rights do not necessarily coincide with the percentage of cash flow rights

what is suggested in previous studies, business group affiliation does not help companies avoid bankruptcy. Instead, our results suggest that operating inside a business group may not be a blessing, since group-affiliation is shown to increase the probability of filing for bankruptcy for any given company, when compared with stand-alone ones. This general rule may be shaded considering more precisely the business groups' characteristics. We particularly find that the potential internal and external negative spillovers likely to occur after the bankruptcy of one member of the group may encourage business groups to save their distressed affiliates. Moreover, robustness checks conducted reveal that our conclusions do not apply to all companies regardless their characteristics. In this sense, we show that our results hold significant for smaller companies only.

The chapter proceeds as follows. Section two reviews the relevant literature on both bankruptcy determinants and the advantages and costs of business groups. It further presents the hypotheses that will be tested in the empirical model. Section three describes our empirical setting: the sample and model used. Section four discusses the results. Section five details the robustness checks and finally section six concludes.

## 1.1. Background and hypotheses development

Based on the insights of Beaver (1966) and Altman (1968), the firm default literature has profoundly investigated the relationship between default and various financial indicators (leverage, cost of debt, liquidity, profitability, etc.) and non-financial variables related to company characteristics (size, age, industry, etc.). The main goal of this research was often to elaborate an accurate risk measure able to properly distinguish between failing and non-failing companies (See Bellovary et al., 2007 for a review). Under this section, we propose a brief review of the main financial and structural determinants of bankruptcy highlighted in previous research. Besides, we focus on different aspects of business group affiliation and their influence on firm performance, namely bankruptcy.

### 1.1.1. Financial and economic determinants of bankruptcy

Financial ratios have long been considered as good predictors of business failure thanks to their ability to accurately discriminate between failed and non-failed companies several years prior to bankruptcy (See Bottazi et al., 2011; Bellovary et al., 2007; Refait, 2004 for a review). According to Refait (2004), profitability, liquidity and leverage remain the best indicators of bankruptcy. The pioneering research of Beaver (1967), Altman (1968), and the numerous other studies they inspired (see Back, 2001; Dewaelheyns and Van Hulle, 2004, Lukason, 2012 among others) agree that a lower liquidity level generates a higher risk of

default. Moreover, existing literature suggest that bankruptcy risk, debt level and cost (See Blazy et al. 1993; Domens, 2007) are highly linked. In this context, Artus (1992) states that equity financing significantly reduces failure risk, whereas, external debt financing, not only increases the risk of failure, but also encourages sub-optimal behavior of firms in terms of investment projects. Using simple statistical techniques, Maricica and Georgeta (2012) recently showed that leverage and financial autonomy ratios exhibit great discriminating power between failing and non-failing companies.

Literature on bankruptcy determinants suggests that bankruptcy causes cannot be fully separated[29]. In this line, numerous theoretical and empirical studies from both organizational ecology and industrial economics insist on the joint influence of age, size and financial characteristics of the company. Most research on bankruptcy agrees that small and young companies are more likely to exit than their bigger and older counterparts (Kale and Arditi, 1998; Thornhill and Amit, 2003). Liabilities of "newness" and "smallness" are often used to refer to these two intrinsic characteristics. Organizational ecologists have first questioned the relationship between company age and performance. The hypothesis of high risk of mortality among young companies goes back to Stinchcombe (1965) who argues that young organizations face a number of disadvantages such as the costly implementation of new rules and routines and the difficulty to establish stable and trusty relationships with stakeholders. The young age-dependent pattern of failure is confirmed by several authors like Kale and Arditi (1998), Thornhill and Amit (2003) and Lussier (1995), who suggest that age dependence is contingent on company's characteristics. Starting from the assumption that the observed relationship between company age and its probability of bankruptcy is underpinned by a resource-based process, Thornhill and Amit (2003) report that young company failures are often the result of deficiencies in resources and general or financial management skills. Lussier (1995) adds that the level of capitalization at creation, besides management skills, plays an important role in the survival of young companies.

Interestingly, several studies underlined that the relationship between company age and risk of bankruptcy is not monotonic, implying that there exists another age-liability which is the "liability of adolescence" (Kale and Arditi, 1998; Fackler et al, 2013, among others). Using the U.S. construction companies' age as a proxy for *organizational learning* and *gaining of legitimacy*, Kale and Arditi (1998) identified a steady increasing relationship between age and failure risk, followed by a decreasing one after having reaching a peak of

[29] In this respect, Fredland and Morris (1976:8) point out that "*any attempt to do so is a futile exercise which boils down to ascribing blame and nothing else*".

risk at a certain age. Older company's failure is often attributable to substantially different factors, mainly the inertia and rigidity to external environmental changes (Thornhill and Amit, 2003; Fackler et al., 2013). In the same vain, research on corporate bankruptcy pointed out the inescapable role of company size. Several scholars have reported that the mortality rate of companies declines with increased size (Fackler et al., 2013; Crutzen and Van Caillie, 2010). This causality illustrates the liability of smallness which implies that size matters and bigger is better (Mellahi and Wilkinson, 2004); even though it is not unanimously agreed that larger companies have always the lower probabilities of bankruptcy (See Bottazi and Tamagni, 2010; Wagner, 1999 for an illustration). The liability of smallness is shown to be underpinned by a set of deficiencies which range from difficulties of access to external finance (Carreira and Silva, 2010), managerial weaknesses (Kale and Arditi, 1998; Hall 1992), poor products, and inefficient marketing (Hall, 1992), to the inability of adjustment to the external environment (Crutzen and Van Caillie, 2010).

Based on the insights of the extensive literature supporting that ownership structure has a significant impact on firm performance, a limited number of bankruptcy scholars have tried to explore the influence of group affiliation on bankruptcy (See Back, 2005; Ooghe et al., 1991). These studies are still very scarce and focus mainly on the financial determinants of bankruptcy, ignoring the mechanisms which underpin the relationship between group affiliation and bankruptcy. In the following sub-sections, we review existing studies which address the group-affiliation-bankruptcy relationship and rely on studies from business groups' internal capital market literature in order to elaborate a set of hypotheses, trying to explore the underlying relationship.

### 1.1.2. Group affiliation and bankruptcy: bright and dark aspects to internal capital markets

The connection between ownership structure and performance has been subject to an important and ongoing debate in the corporate finance literature (Demsetz and Villalonga, 2001). The debate refers to the thesis initially proposed by Berle and Means (1932) which suggests an inverse correlation between ownership diffusion and firm performance. This relationship has been challenged by other studies which conclude that there might be no systematic relation between these two aspects (Demsetz, 1983; Demsetz and Lehn, 1985), arguing that the ownership structure is endogenous to the profit-maximization decisions of shareholders. These contradictory points of view do however not negate the importance of ownership structure since Shleifer and Vichny (1997) underlined the importance of ownership concentration, coupled with the legal protection, as main determinants of corporate governance.

Backed on all previous research, group affiliation is one of the most debated issues when predicting bankruptcy, although much ambiguity exists with respect to the influence of business group affiliation on firm performance. Some scholars assert positive effects on performance in particular for companies operating in emerging countries where markets are imperfect (Bamiatzi et al., 2014). Others strive to highlight their *parasitic* nature (Khanna and Yafeh, 2007) implying that business groups are dark and opaque institutions where controlling shareholders are free to undertake actions in their own interests.

Among bankruptcy scholars that investigate the role of group affiliation, we first mention Becchetti and Sierra (2003) who study the determinants of bankruptcy over a set of Italian industrial companies. The authors find a strong inverse relationship between bankruptcy and group membership. Using data from Belgian medium and large sized companies, Dewaelheyns and Van Hulle (2004) reach results consistent with the previous. The authors underline that the inconclusiveness of previous research may be the 'rudimentary way' of accounting for group membership; the common way being the use of a simple dummy variable. Based on a dataset which encompass both subsidiaries and the ultimate corporate owner levels, the authors' findings suggest that adding information on intragroup ties may significantly improve the classification accuracy and performance of some well-known prediction models. In a more recent paper, Dewaelheyns and Van Hulle (2006) interpret the lower risk of bankruptcy for group affiliated companies as the result of the solidarity between business groups' members which is mainly driven by strategic, taxation and other group-specific motivations. Using data from the ultimate corporate owner level, the authors employ a proxy for the financial soundness of the group and show that business groups are prone to save their distressed affiliates as long as the group has globally sufficient financial resources. In contrast, Heiss and Köke (2001) suggest, based on German data, that there might be no significant influence of pyramidal ownership[30] on bankruptcy.

Our first hypothesis related to group affiliation suggests that companies belonging to business groups may be less likely to go bankrupt than their stand-alone counterparts. Following Khanna and Yafeh (2005), we imply that group affiliated companies have lower chances of going bankrupt thanks to several advantages they may benefit from because of their affiliation to a BG; namely their ability to adjust their capital in case of financial distress and the potential support of the other members of the group they may benefit from. Hypothesis 1 is as follows:

[30] The pyramidal structure is equivalent to the case where a parent company at the top owns shares in subsidiaries, which in turn have subsidiaries of their own.

**Proposition 1. Companies affiliated to BGs are more protected from bankruptcy than stand-alone companies.**

Two main benefits are usually put forward for company affiliation to a business group: the market-substitute role of business groups and the increase of organizational effectiveness. Market imperfections, failure and their associated costs are commonly attributed to developing and emerging economies. Indeed, markets in emerging markets are characterized by information gaps and are weakly supported by contract-enforcement institutions such as courts (Khanna and Rivkin, 2006). These features lead market participants to opportunistic behavior, raising market transactions' costs (Williamson, 1975). In such uncertain environments, intragroup ties are shown to grant beneficial exchanges for group affiliates that would be costly otherwise. Leff (1976) pioneered the idea that business groups are good responses to market imperfections. This hypothesis has been later supported by other researchers who suggested that intra-group ties significantly reduce transaction costs and lead to scope economies by facilitating information flows between firms (Ghemawat and Khanna, 1998; Khanna and Palepu, 2000; Colpan et al., 2010). In this sense, it is shown that groups are able to establish internal capital markets that allow lowering the information asymmetries and help affiliated companies overcome financial constraints (Chang and Hong, 2000).

Based on the previous, intragroup ties and transfers are shown to enhance organization performance thanks to the effective dissemination of factors of production across all members of the group. The internal allocation of resources can result in significant economies of scale and scope; in addition, it contributes to reducing the external financing costs for affiliated companies (Bamiatzi et al., 2014). Empirical evidence from Belgian private business groups provides support to this idea. In this line, Dewaelheyns and Van Hulle (2012) assert that affiliated companies benefit from the flexibility in adjusting their capital structure thanks to the use of both internal and external capital markets. Flexibility in capital structure adjustments provided to group-companies is proved to be very gainful in particular in cases of financial distress. Gopalan et al. (2007) bring evidence in this respect, implying that intragroup loans are important means of providing support to weaker affiliates, especially when the latter are hit with a negative earning shock. Using data from Indian private companies relative to the years 1992-2001, the authors find that accounting for intragroup loan inflows leads to a significant difference in the failure rates of stand-alone and group affiliated firms, to the benefit of the latter[31].

[31] Authors' findings suggest that an affiliated company belonging to a solvent group with sample mean characteristics has a 34.5% lower probability of going bankrupt, compared with a stand-alone company.

As stressed earlier, existing studies on the connection between bankruptcy and group affiliation have a limited scope since they do not consider the mechanisms underpinning this relationship. Therefore, the next step of this research aims at exploring more deeply this issue. To this end, we elaborate further hypotheses based on previous research related to business groups' internal capital markets.

#### *1.1.2.1. Intragroup financial commitments*

Previous empirical studies generally put forward two main arguments for business groups' motivations for extending support to their distressed affiliates. They refer to the potential internal and the external negative spillovers likely to occur after the bankruptcy of one group member. The former relates to the domino effect likely to occur because of the financial linkages which bind business groups' members and the latter alludes to the potential loss of reputation which may compromise the creditors' trust in the group. In this line, Gopalan et al. (2007) use data from Indian business groups and show a significant drop in the investments, profits and external financing of group members after the bankruptcy of one affiliated company. In order to bring evidence with respect to this issue, we focus on the extent to which the potential internal spillovers are likely to influence the probability of bankruptcy for group affiliated companies. We rely on available data on the intragroup indebtedness of group-companies and assume in our second hypothesis that high financial interlinkages inside a business group are likely to increase the chances for affiliated companies to be spared from bankruptcy. In other words, we suggest that the more are the financial commitments held by affiliated companies towards their group, the highest the chance of being saved from bankruptcy. Our assumption implies that negative spillovers likely to occur after the bankruptcy of one affiliated company might be all the more serious since the latter is highly indebted towards its group.

**Proposition 2. Higher levels of financial commitments held by affiliated companies towards their group decrease the probability of bankruptcy.**

#### *1.1.2.2. Group origin*

An extensive body of literature has been devoted to the moderating role of country in the relationship between ownership and firm performance. Foreign vs. domestic ownership is one of the most debated issues in the existing literature. The dominant view implies that foreign direct investments benefit to host countries by increasing the domestic firms' productivity in different ways, namely the transfer of efficient technologies, labor mobility and competition (Reganati and Sica, 2005; Blomström et al., 2001). In emerging markets

notably, foreign ownership is shown to play an important role in local firms, complementing weak local institutional infrastructures, similar to the role of BG affiliation (Choi and Yoo, 2011).

A significant share of research in this field focus on the moderating role of group origin in specific economic conditions, notably bad macroeconomic environments. A first group of studies suggests that advantages acquired by firms through multinationalization allow them to react better to crises than domestic firms (Bamiatzi et al., 2014; Douma et al., 2006). A second group underlines that multinational companies benefit from flexibility allowing them to exit the local economy easily, making the subsequent recovery process more difficult (Alvarez and Görg, 2009). And finally, a third set of studies supports that there might be no significant difference between both agents regarding their reaction to economic slowdowns (Wang et al., 2005; Varum and Rocha, 2011). Regarding the role of multinationals in the host countries, numerous studies argue that multinational companies are inherently "footloose", implying that they can react almost instantaneously to adverse changes in the host country by shifting their production facilities to another country if the present environment changes to their disadvantage (See Caves, 1996; Görg and Strobl, 2003). This assumption of multinationals being "footloose" is based on the nature of multinationals, considered as pure production processes easily transferable from one country to another. Görg and Strobl (2003) provide evidence for the "footloose" nature of multinationals located in the Republic of Ireland. Their analysis shows that multinationals are more likely to exit the market than indigenous plants after controlling for firm specific and industry specific characteristics. Using Japanese data, Inui et al. (2009) bring evidence supporting that multinational ownership significantly raises the probability of plant death. The authors' findings suggest that multinationals specially tend to close their weakest plants. Using data on Swedish multinational companies, Norbäk et al. (2015) add that the primary motive for divesting an affiliate by a multinational company is the financing of other investments in the multinational company's network.

Yet, the bankruptcy literature has ignored the role of group origin. In this chapter, we propose to assess the impact that group origin may have on the relationship between firm affiliation to a BG and the risk of bankruptcy. In other words, we analyze the behavior of multinationals towards companies located in the French economy when these are hit by a negative shock (i.e. financial distress). In the third hypothesis, we assume that companies operating within foreign groups may have higher chances of bankruptcy than companies operating inside domestic BGs. The underlying idea is that foreign distressed plants are more

likely to exit from the market than domestic plants. This implies that multinationals can easily relocate all or a part of their business if the latter is hit by a negative shock. Our third hypothesis is thus the following:

**Proposition 3. Affiliation to a foreign BG increases the probability of bankruptcy of domestic companies.**

#### *1.1.2.3. Excess of control and minority shareholders expropriation*

Despite the advantages business groups can ensure to their affiliated companies, previous literature has underlined that group affiliation might also be a burden for group members. Research raising concerns for the disruptive role of business groups on firm performance mainly insists on agency problems which give rise to resource tunneling (Bamiatzi et al., 2014). In this respect, business groups are often viewed as dark and opaque institutions where controlling shareholders are free to undertake actions in order to meet their ultimate goal of expropriating minority shareholders (Khanna and Yafeh, 2007).

From a theoretical perspective, the proportionality between corporate ownership and control implies that any controlling shareholder owns the same fraction of cash flow rights and voting rights. However, inside BGs, deviation from the one share-one vote principle is very easy and common leading to large discrepancies between ownership and control (Bianco and Nicodano, 2006). This makes the misalignment between controlling and non-controlling shareholders' incentives inescapable (OECD, 2007), leading inevitably to the destruction of company performance (Shleifer and Vishny, 1997). Theoretically, conflicts of interests stated by the principal-agent model formalized by Jensen and Meckling (1976) suggest that excessive control over ownership rights by the controlling shareholder(s) is detrimental to firm value due to opportunities for resources expropriation. Discrepancies between ownership and control are known to give rise to two opposite incentives, both influencing company's performance *in fine*. The positive one is induced by the dominant shareholder's cash-flow rights, whereas the negative one stems from its share of control rights[32] (Arrifin, 2014).

Evidence from large business groups in emerging markets is consistent with minority shareholders expropriation mechanisms. The term “Tunneling” is often used in the literature and is related to the corporation’s decisions which enable controlling shareholders to increase their wealth at the expense of minority shareholders (Johnson et al., 2000; Bertrand et al., 2002). Concretely, it represents the cash transfer from firms where controlling shareholders have low cash-flow rights to firms where they have larger cash flow rights. Using data from

[32] In concrete terms, cash flow rights represent a shareholder’s stake in the firm, while CRs represent voting rights of this shareholder.

Indian business groups, Bertrand et al. (2002) examine cash-flow transfers between corporate group members and find significant evidence on profits tunneling, showing transfers of cash to the benefit of controlling shareholders from firms in which they have low cash-flow rights.

To our knowledge, tunneling has barely been tested on French data. A recent exception lies in the paper by Hamelin (2011) which explores data from French small business groups over the period 1997-2007 and uses two variables of excess of control. The first one measures the wedge between cash-flow rights and control rights of controlling shareholders (as in Claessens et al (2006)), while the second provides information on company's position in the control chain. The author's findings suggest that company's distance from control has a positive influence on its performance. It further shows that, only in case of unfavorable business environments, companies at the top of the control chain tend to tunnel resources out from minority shareholders.

Following this approach, the present chapter focuses on this issue by exploring the impact that excess of control may have on affiliated companies' risk of bankruptcy. In line with the empirical studies which suggest that excess of control is detrimental to company value, we assume that companies closer to control positions, i.e. companies with higher control rights held by the ultimate corporate owner, have more chances to go bankrupt. In line with the previously reviewed literature, we imply that holding a large block of voting shares by the ultimate corporate owner in the firm promote the incentives and the power to expropriate minority shareholders, raising bankruptcy concerns. In line with these arguments, we propose to test the following fourth hypothesis.

**Proposition 4. Companies with higher levels of control by the ultimate corporate owner are more likely to file for bankruptcy than companies far from the latter.**

## 1.2. Empirical setting

Data used in this chapter cover two distinct periods allowing us to assess the determinants of bankruptcy both before and after the economic downturn of 2009. In 2009, France experienced its deepest recession since World War II, with a GDP contraction of 2.6% (Direction Générale du Trésor, 2011). With a high and increasing unemployment rate since 2008[33], France registers annually around 63,000 bankruptcies. In 2009, a peak of 61,595 corporate bankruptcies was recorded. This was the highest level observed since the historical peak of 63,000 reached in 1993.

[33] According to recent statistics published by the *Ministère de l'économie et des Finances, Direction Générale du trésor économique*, the unemployment rate in Metropolitan France rose from 7.1% to 9.6% of the active population before easing in first-half 2010 to 9.3%.

### 1.2.1. Institutional context

The French bankruptcy regime is mainly based on law No.84-148 of March 1984 (Prevention of Business Difficulties Law) and law No. 85-98 of January 1985 (Judicial Reorganization and Liquidation Law). It explicitly sets company rescue and employment safeguard as a primary goal over the reimbursement of creditors. The several amendments which have reformed the law since the late 1980's show the increased will of the legislator to encourage the prevention of company's difficulties and the preservation of businesses. One of the main innovations of the latest Reform of 2005 (Reform of Business Safeguard) was the creation of a novel category in bankruptcy proceedings which entails a stay on creditors' actions against the debtor who is not yet insolvent. With the new conciliation and safeguard proceedings ("Procédure de Sauvegarde" in French), the French bankruptcy law aims to provide strong incentives for debtors to anticipate their difficulties, and for creditors to encourage business recovery.

Under French law, a debtor company is considered to be insolvent ("*en état de cessation des paiements*") when it is unable to meet its due and payable debts with its immediately available assets such as cash and cash equivalents. Insolvent debtors should file a petition in view to benefit from a reorganization procedure ("*Redressement Judiciaire*") or a Judicial Liquidation ("*Liquidation Judiciaire*")[34] within 45 days from the date of the cessation of payments. A petition can also be made by an unpaid creditor, by the public prosecutor or by the court of its own motion.

In accordance with the provisions in force in most of the OECD member countries, the French bankruptcy regime does not include any comprehensive device designed exclusively for business groups. The general principle in all bankruptcy proceedings is the following: regardless of the fact that a company belongs or not to a group, when insolvency occurs, it is treated as a stand-alone body, solely liable for its own debts with its own assets. Therefore, in case of bankruptcy of one or more components of a business group, a separate insolvency procedure is opened with respect to each bankrupt company. Then, the question which often arises is whether and to what extent each component of the group should really be treated as a separate entity.

In order to overcome the inherent limits of such an "atomistic approach", the French legislature has recently proposed and adopted new rules directed towards business groups. The main objective was to thwart detrimental acts of some multinational companies by ensuring the effective discharge of the company, especially from social and environmental

[34] Judicial reorganization benefits to companies whose situation is potentially remediable. Judicial liquidation is opened when the debtor company's situation appears to be irremediable.

liabilities. The new rules allow the court to assign liability among members of a group when one or more of these become insolvent (Peter, 2006). The "Grenelle-II Environment law reform"[35] introduces a new article in the Commercial code (Article L. 233-5-1), and another article in the Environmental Law (Article L. 512-17). Both new articles contain several provisions extending the environmental liability of corporate groups. More recently, the Petroplus law no.2012-346 issued on March 2012, and complemented by the decree of law No.2012-1190 of October 2012 introduced new measures regarding social and environmental claims. The law refers to the Petroplus and Sodimedical cases[36]. It allows the appointed insolvency practitioner, in case of extended procedure, to seize the pursued company's assets and even sell part or the totality of these assets. Money raised is then used to discharge the debtor from its liabilities. However, some well-defined conditions need to be met: a merger of assets between the members of the group, as well as the interference of the group in affiliates' activities or management. Remarkably, up until now, as illustrated by "Metaleurop", "Flodor" or "Petroplus" bankruptcy affairs, a compact corporate veil is still prevailing under the French law. These legal features matter in determining the scope of our research since our goal is to explore the determinants of bankruptcy, with particular regard to firm affiliation to a business group.

### 1.2.2. Sample construction

Data collected originate from three French sources. The first one is the BODACC[37] database, provided by *Altares*. It provides an inventory of all agreements published in the French Trade and Companies Register[38]. Data gathered relates to bankruptcy proceedings and encompasses a wide range of practical details regarding all procedures initiated in the French courts. It contains information such as the date of the Cessation of Payments (in French, *"Date de Cessation des Paiements"*), the type of procedure initiated (Reorganization/ Liquidation), the court of the competent jurisdiction and the text form of the legal announcement. The second source is Diane database, provided by Bureau Van Dijk. It gathers annual financial and accounting information of firms operating in France[39]. It allows identifying information on companies' control structure as well as BGs' characteristics. The third source mobilized is the LIFI survey which is implemented by the National Institute of

[35] This reform came into force in July 2010 and it intends to complete the "Grenelle-I Law" which was enacted in August 2009.
[36] See Le Corre (2012) and Serverin (2012) for an overview.
[37] BODACC is the *« Bulletin Officiel des Annonces Civiles et Commerciales »*. Lifi is the *« Enquêtes Liaisons financières »*.
[38] Agreements gathered range from registrations to insolvency proceedings.
[39] The source covers annually around 1.3 million companies established in France.

Statistics and Economic Studies (INSEE in French). The survey aims at identifying BGs operating in France, making it possible to access a set of practical information related to subsidiaries operating in the national territory such as: the origin of the group, the number of employees operating in France, etc.

The sample-selection process starts by using data available from BODACC database which lists all businesses which entered a bankruptcy procedure over a period covering the years 2005-2007 and 2009-2012. For every identified company, we use the identification number (called *Numéro Siren*)[40] to merge the list of companies extracted from the BODACC dataset with other sources. This enables us to complete the judicial information with variables depicting the financial and ownership structure of the selected companies. These variables are provided by the Diane database for the year *t-1* prior to the date of entry into bankruptcy. We adopt this rule in accordance with Ohlson (1980) according to the use of any information published after the moment a company files for bankruptcy may artificially increase performance of classification models.

French bankruptcy law states that a company is classified as bankrupt as soon as it has been declared to be in suspension of payments by a commercial court. The concept of cessation of payment is a crucial aspect in this process. It is defined as the inability to meet outstanding liabilities with current assets such as cash and cash equivalents. Therefore, we proxy the year of bankruptcy using information on the date of cessation of payments which is fixed by a court decision based on the state of company's accounts (Art. L. 631-8 § 1 of French commercial law). The court may however not always have all information needed to determine the exact date from which the debtor is no longer able to meet its current liabilities with its current assets. Hence, the same law article provides that, in case the date of cessation of payments cannot be determined, it should be declared that of the court's decision.

In order to make our data more accurate, we manually correct the date of cessation of payments for the following cases: either the company has no available date of cessation of payments, or its available date of cessation of payments (noted DCP below) coincides with the date of court's decision. According to statistics on the activity of commercial courts and chambers of high courts in France made available by the Ministry of Justice for the years 2008 to 2012[41], on average, 2 months is the time between the date of cessation of payments and the outcome of procedures openings. Hence, when needed, the DCP is computed by

[40]The *Numéro Siren* is a unique nine-digit identifier assigned by the *National Institute of Statistics and Economic Studies* to every legal entity operating in France.
[41] http://www.justice.gouv.fr/statistiques.html\#statistique-judiciaire

subtracting 2 months from the date of court's judgment[42]. Following common practice, companies with missing or incomplete accounts are eliminated, so that, 20,565 bankrupt companies only with complete accounts and information on structural characteristics are included in our final sample.

To be able to explore the determinants of bankruptcy, a reference group composed of non-bankrupt companies is required. For each year represented in the sample of bankrupt firms, we identify all available sound companies which survived to the end of each year. Sound companies are selected from Diane database, completed with Lifi using the Siren identification number. We classify companies as being non-bankrupt according to two criteria: first, company is not identified as being bankrupt over the studied period in the BODACC database and second, company is identified as having a "normal situation" using the variable *"Situation légale"* available in Diane. The number of sound companies identified with complete accounts being very high, we only keep randomly 10% of the companies. We therefore remain with 101,363 sound companies for the analysis, so that our final sample consists of 121,930 companies, with an overall rate of bankruptcy equal to 16.87%. The composition and the representativeness of our sample are depicted in Table 1-1 above. Overall, our sample of bankrupt companies in the years 2006 to 2007 and 2009 to 2012 represents nearly 6% of all bankrupt companies in France over the same period.

**Table 1-1 Sample structure per year**

| | Total Sample | | | | | Total bankruptcies in France | |
|---|---|---|---|---|---|---|---|
| | Bankrupt | | Non-bankrupt | | | Annual | Representativeness |
| Year | Number | Percent. | Number | Percent. | Total | | |
| 2006 | 1,526 | 7.42% | 8,908 | 8.81% | 10,434 | 47,091 | 3.25% |
| 2007 | 786 | 3.82% | 5,772 | 5.71% | 6,560 | 49,850 | 1.57% |
| 2009 | 2,779 | 13.51% | 15,811 | 15.63% | 18,590 | 61,595 | 4.51% |
| 2010 | 6,960 | 33.84% | 33,357 | 32.97% | 40,317 | 58,674 | 11.86% |
| 2011 | 5,578 | 27.12% | 24,926 | 24.64% | 30,504 | 58,195 | 9.58% |
| 2012 | 2,936 | 14.28% | 12,589 | 12.44% | 15,525 | 59,780 | 4.91% |
| Total | 20,565 | 16.87% | 101,363 | 83.13% | 121,930 | 335,185 | 6.13% |

Note: This table depicts the times series distribution for a sample of French firms operating in the years 2006 to 2007 and 2009 to 2012. For bankrupt companies, it represents the year of cessation of payments. For non-bankrupt companies, it represents the year where information is collected given that the company has survived until the end of this year and has not experienced bankruptcy all over the studied period.

### 1.2.3. Variables and descriptive statistics

This section describes the variables used for the empirical analysis and gives some descriptive statistics. Table 1-12 in Appendix 1 summarizes the definitions and expected signs of the variables.

[42] For the years prior to 2008, the DCP is corrected using the only information available for the year 2008 and which is quite the same as for the years after 2009 to 2012.

**Bankruptcy measure**

Bankruptcy is measured using information from BODACC database. The variable BANKRUPTCY defined is binary, where value 1 represents the case where company is in cessation of payments, i.e. bankrupt, and 0 represents the case where company is still operating. According to the French bankruptcy law, a company is classified bankrupt as soon as it is in cessation of payments, therefore subject to a collective bankruptcy proceeding.

**Group Affiliation**

Following Dewaelheyns and Van Hulle (2006), group affiliation is identified using information on company's ultimate corporate owner. In this sense, a company is considered as a business group member provided that it is controlled by an ultimate corporate owner which in turn is not controlled by any other company. If the company belongs to a business group, GROUP MEMBERSHIP variable equals 1, otherwise it is 0. Information on group affiliation is primarily extracted from Diane database which encompasses a range of variables characterizing business groups operating in France. However, due to incomplete data, information on group affiliation is complemented by LIFI database for a limited number of companies.

**Excess of control**

Since our data lack information on cash-flow rights, we proxy for excess of control using information on the direct control rights held by the ultimate corporate owner in our sample-companies. The variable MAJOR CONTROL equals 1 if affiliated company is directly controlled at more than 50% by its ultimate corporate owner, and 0 if control does not exceed 50%.

**Group origin**

Group origin is proxied using information on the country of the group's parent company (i.e. ultimate corporate owner). A French group or equivalently a domestic group is a group whose ultimate corporate owner is French. Contrarily, a foreign group is a group whose ultimate corporate owner is abroad. Therefore, variable DOMESTIC GROUP takes value 1 if group is domestic and 0 otherwise.

**Intragroup indebtedness**

GROUP DEBT variable is computed using information on intra-group financial commitments. It is represented by the ratio of net borrowing of the company towards its group to total assets (i.e. the difference between debts held by a given company towards its group and the loans granted by the same company for its group, to total assets). It measures the amount of net financial transfers which benefit to the sample-affiliated companies.

**Group size**

Group size is measured using available information on the number of group-employees. Given that our data lack information on subsidiaries outside the French territory, GROUP EMP variable is computed as the natural logarithm of the number of employees within French subsidiaries only[43].

**Company size**

Company size can be measured in many different ways. Some of the most usual indicators are employment, total sales, value-added, total assets or total profits (Coad, 2007). Several bankruptcy scholars agree however that employment might be endogenous for firms in economic distress since they tend to intensively adjust employment before exiting (Fackler et al., 2013; Almus, 2004). Therefore, we measure company size based on the amount of total assets. In accordance with the empirical literature on firm growth which provides an in-depth analysis of the appropriate measure of a company size (Coad, 2009), the variable SIZE is computed as the natural logarithm of total assets to reduce skewness.

**Company age**

Company age is computed using information on company's date of establishment. For bankrupt companies, AGE is the difference between the date of cessation of payments and the date of establishment. For non-bankrupt companies, it equals the difference between the 31st of December of the year where data was collected and the date of establishment. The natural logarithm is also used on age in order to reduce skewness.

**Industry**

The role of industry in bankruptcy prediction is well recognized in previous studies (Altman and Izan, 1984; Platt and Platt, 1991). Therefore, our analysis includes eleven SECTOR dummy variables which allow taking into account industry-specific factors and industry-specific business cycle effects. The variables are constructed according to the French classification of activities (NAF Rev. 2, 2008) which comprises five levels of classification[44]. Starting from the broader level (that is the level "Section"), we define eleven aggregated sectors: food industries, manufacturing industries, construction, retailing, transport and mail, hotels and restaurants, communication technologies industry, finance and insurance, real estate, business services, and household services.

**Location**

The geographic location of companies included in our sample is also used to allow adjusting for specific local characteristics. Six dummy variables are constructed based on a

[43] In this variable, the size of foreign groups might be underestimated. This is true even if all subsidiaries are French. Indeed, if the number of employees of foreign subsidiaries in France is available, those of the ultimate corporate owner operating abroad are not.

[44] The French NAF Rev. 2 classification is equivalent to the European classification of activities.

breakdown of the French territory into six big regions, leading to the following classification: greater Paris region, north-west, north-east, south-west, south-east, and central region[45].

**Liquidity level**

LIQUIDITY variable included is the so-called "quick ratio", an indicator of a company's short-term liquidity. The quick ratio measures a company's ability to meet its short-term obligations with its most liquid assets. For this reason, the ratio excludes inventories from current assets which are more difficult to turn into cash.

**Debt level**

LEVERAGE ratio is calculated as the ratio of total debts to total assets. It represents the potential negative effects which weight on business profits and asset valuation, raising bankruptcy concerns.

Our sample of affiliated companies consists of 28,019 companies mostly operating within foreign groups and controlled at more than 50% by the ultimate corporate owner. Among companies which are majority controlled by the ultimate corporate owner, only 21.9% are subject to a collective procedure. Nearly 14% of companies affiliated to domestic groups are bankrupt, while near 23% of foreign affiliates are subject to a collective procedure. Tables 1-2 and 1-3 presented below sum-up the company characteristics. The correlation matrices are available in Appendix 1 (Tables 1-13 and 1-14).

**Table 1-2 Group subsidiaries characteristics**

| | **Bankrupt companies** | | **Non-Bankrupt companies** | | **Total** |
|---|---|---|---|---|---|
| **UCO Control** | Number | Percentage | Number | Percentage | Total |
| Major Control | 5,048 | 21.90 | 17,994 | 78.10 | 23,042 |
| Minor Control | 544 | 10.93 | 4,433 | 89.07 | 4,977 |
| **Total** | **5,592** | | **22,427** | | **28,019** |
| **Group Origin** | Number | Percentage | Number | Percentage | Total |
| Domestic | 1,233 | 13.93 | 7,618 | 86.07 | 8,851 |
| Foreign | 4 359 | 22.74 | 14 809 | 77.26 | 19,168 |
| **Total** | **5,592** | | **22,427** | | **28,019** |

Note: Table 1-2 depicts the characteristics of sample affiliated companies, partitioned by the variable BANKRUPTCY.

Several features result from the descriptive statistics. On average, bankrupt companies are younger than operating ones. The mean values of the variable AGE for both categories are respectively 2.03 and 2.65 years. Average of the logarithm of total assets is higher for non-bankrupt companies (12.71 against 12.18 for bankrupt companies), suggesting that non-bankrupt companies are larger than those that file for bankruptcy. Observations about company age and size apply to the whole sample, as well for both group affiliated and stand-alone companies taken separately. The liquidity ratio shows higher liquidity levels for non-

[45] See Table 1-15 in Appendix 2 for detailed information on companies' sectoral and geographic characteristics.

bankrupt companies, compared to bankrupt ones. On average, the liquidity ratio equals 0.57 for bankrupt companies and 1.21 for surviving ones. Debt level ratio suggests that bankrupt companies are more indebted than non-bankrupt ones, with an average value of 1.29 for bankrupt companies compared to 0.73 for non-bankrupt ones. Regarding business groups characteristics, mean value of net intragroup funding proxied by the variable GROUP DEBT is slightly lower for bankrupt affiliated companies than for still operating ones. Besides, GROUP EMP variable which proxies for group size suggests that companies belonging to larger business groups are less likely to be bankrupt than companies affiliated to smaller business groups, the natural logarithm of the number of group employees being higher for non-bankrupt companies.

**Table 1-3 Company characteristics**

| | | **Bankrupt companies** | | | **Non-bankrupt companies** | | | |
|---|---|---|---|---|---|---|---|---|
| | | **Group affiliates** | **Stand-alone** | **Total** | **Group affiliates** | **Stand-alone** | **Total** | **Total sample** |
| AGE | Mean | 2.23 | 1.95 | 2.03 | 2.84 | 2.57 | 2.63 | 2.53 |
| | Median | 2.20 | 1.89 | 1.97 | 2.89 | 2.57 | 2.64 | 2.56 |
| | St.Dev | 0.84 | 0.83 | 0.85 | 0.67 | 0.66 | 0.67 | 0.74 |
| | N | 5,592 | 314,973 | 20,565 | 22,427 | 78,938 | 101,365 | 121,930 |
| SIZE | Mean | 12.84 | 11.93 | 12.18 | 13.71 | 12.42 | 12.71 | 12.62 |
| | Median | 12.71 | 11.88 | 12.09 | 13.49 | 12.32 | 12.54 | 12.46 |
| | St.Dev | 1.44 | 1.34 | 1.42 | 1.80 | 1.48 | 1.64 | 1.62 |
| | N | 5,592 | 14,973 | 20,565 | 22,427 | 78,938 | 101,365 | 121,930 |
| LIQUIDITY | Mean | 0.58 | 0.56 | 0.57 | 1.18 | 1.22 | 1.21 | 1.10 |
| | Median | 0.51 | 0.43 | 0.46 | 0.92 | 0.89 | 0.90 | 0.80 |
| | St.Dev | 0.44 | 0.61 | 0.57 | 1.24 | 1.38 | 1.35 | 1.28 |
| | N | 5,592 | 14,973 | 20,565 | 22,427 | 78,938 | 101,365 | 121,930 |
| LEVERAGE | Mean | 1.21 | 1.32 | 1.29 | 0.70 | 0.74 | 0.73 | 0.82 |
| | Median | 0.95 | 0.98 | 0.97 | 0.65 | 0.64 | 0.64 | 0.70 |
| | St.Dev | 1.76 | 1.85 | 1.83 | 0.92 | 1.11 | 1.07 | 1.25 |
| | N | 5,592 | 14973 | 20,565 | 22,427 | 78,938 | 101,365 | 121,930 |
| GROUP DEBT | Mean | 0.05 | N/A | 0.05 | 0.06 | N/A | 0.06 | 0.05 |
| | Median | 0.00 | N/A | 0.00 | 0.00 | N/A | 0.00 | 0.00 |
| | St.Dev | 0.43 | N/A | 0.43 | 1.12 | N/A | 1.12 | 1.02 |
| | N | 5,592 | N/A | 5,592 | 22,427 | N/A | 22,427 | 28,019 |
| GROUP EMP | Mean | 3.80 | N/A | 3.80 | 5.35 | N/A | 5.35 | 5.15 |
| | Median | 3.71 | N/A | 3.71 | 4.74 | N/A | 4.74 | 4.54 |
| | St.Dev | 1.52 | N/A | 1.52 | 2.67 | N/A | 2.67 | 2.60 |
| | N | 1,313 | N/A | 1,313 | 8,776 | N/A | 8,776 | 10,089 |

Note: Table 1-3 summarizes main descriptive statistics of surviving and bankrupt firms. For bankrupt companies, all measures refer to the year prior to the cessation of payments, i.e. *t-1*. Definitions of the variables are detailed in Table 1-12, Appendix 1-1.
Source: BODACC, Diane and Lifi; computations by the author.

### 1.2.4. Model

To assess the probability of going bankrupt according to the ownership structure, we estimate a Logit model. According to Ohlson (1980), logistic regression models are

particularly well suited for bankruptcy prediction. Advantages of these models have been acknowledged by other scholars as well, like Refait (2004) and Balcaen and Ooghe (2006).

The binary Logit model aims at explaining the effects of the explanatory variables on the dependent variable $Y$ which can take one of two possible values among 0 and 1 ($Y = 1$ if company files for bankruptcy; $Y = 0$ otherwise). Let $X = (x_1, \dots, x_k)'$ be the vector of explanatory variables. The corresponding model can be written as follows:

$$logit\{\Pr(Y = 1|X)\} = log\left\{\frac{\Pr(Y = 1|X)}{1 - \Pr(Y = 1|X)}\right\} = \beta_0 + X'\beta$$

$\Pr(Y = 1|X)$ represents the probability of bankruptcy for a given company. It is given by:

$$\Pr(Y = 1|X) = \frac{e^{\beta_0 + X\beta}}{1 + e^{(\beta_0 + X\beta)}} = \frac{1}{1 + e^{-(\beta_0 + X\beta)}}$$

where $\beta_0$ is the intercept parameter, and $\beta$ is the vector of slope parameters.

The estimations are done with the maximum likelihood technique which entails finding the set of parameters for which the probability of the observed data is the greatest. We have the following likelihood function, where $N$ denotes the total number of companies $i$ included in the sample:

$$L = \prod_{i=1}^{N} Pr_i^{Y_i} (1 - Pr_i)^{1 - Y_i} = \prod_{i=1}^{N} f(Y_i|X_i; \beta)$$

We correct for heteroscedasticity in all our estimations using the robust standard errors, and ensure that multicollinearity is absent using the Variance Inflation Factors test (VIF)[46].

We compute the marginal effects for all variables included in the model and show the results in the following section. Marginal effects measure the impact of a marginal change in an independent variable on the expected value of the dependent variable. The marginal effect of a predictor is defined as the partial derivative of the event probability with respect to the predictor of interest. Marginal effects are computed differently for categorical and continuous variables. With binary independent variables, marginal effects measure the discrete change, i.e. the change in the predicted probability of the response variable, as the binary independent variable changes from 0 to1. For continuous variables, marginal effects measure the change in the dependent variable after one unit increase of the independent variable.

There are two ways of estimating marginal effects: the marginal effects at mean and the average marginal effects (Bartus, 2005). Marginal effects at mean are computed with all

[46] VIF is an indicator of how much of the inflation of the standard error could be caused by collinearity Overall, the VIF for each of the variables included in our estimations does not exceed the threshold of 1.2.

the independent variables held at their mean values, while average marginal effects represent the average of all changes over all observations. There is no consensus in the literature on which method is better, although many scholars admit that average marginal effects are more reliable. Train (1986) and Bartus (2005) stress that average marginal effects are more appropriate because they are able to provide a more realistic interpretation of the estimation results. Train (1986:43) argues that it is unlikely that any single observation actually has the mean value of all other variables. Long (1997:74) adds that marginal effects at mean are very limited especially for binary independent variables; indeed, it does not make sense to calculate the mean of a binary independent variable which can take only two values (0 and 1). Based on the arguments of Train (1986) and Long (1997), we decided to compute the average marginal effects for all our estimations. The average marginal effect of the $j^{th}$ continuous independent variable is calculated as follows:

$$AME_j = \beta_j \frac{1}{n} \sum_{i=1}^{n} f(\beta x^i)$$

where $f(.)$ represents the derivate of the cumulative distribution function that maps the values of $\beta x$ to the [0, 1] interval (See Bartus, 2005 for details). $\beta x^i$ denotes the value of the linear combination of parameters and variables for the $i^{th}$ observation. The average marginal effect of the $j^{th}$ dummy explanatory variable is written in the following manner:

$$AME_j = \frac{1}{n} \prod_{i=1}^{n} \{F(\beta x^i | x_j^i = 1) - F(\beta x^i | x_j^i = 0)\}$$

## 1.3. Estimations on the whole sample

We run three sets of estimations with different specifications of the binary Logit model. First and second round of estimations apply to the whole sample which includes both group affiliated and stand-alone companies. The first one aims to determine the financial and non-financial determinants of bankruptcy. The results are then used as control variables in the second set of estimations which explores the influence of business group affiliation on the probability of bankruptcy. And finally, the last set of estimations applies to only group affiliated companies and brings evidence with respect to the influence of group characteristics on the likelihood of bankruptcy. As mentioned before, due to the lack of information on BG affiliation and BG's characteristics for some companies, we considered different samples with slightly different number of companies, depending on the source used to collect the corresponding data. We check for the robustness of our results with regards to the source of data used and the results are made available in the Tables 1-16, 1-17 and 1-18 in the

Appendix 3. Overall, all the results obtained are convergent. Therefore, for the sake of consistency and given that Diane database is the most exhaustive one, the following sub-section reports the results relative to only companies with complete information from Diane database.

### 1.3.1. Financial and structural determinants of bankruptcy

Table 1-4 below shows the results of different specifications estimating the financial and structural determinants of bankruptcy over our whole sample of both group affiliated and stand-alone companies. The results displayed below only apply to companies provided with comprehensive data extracted from Diane in order to ensure the consistency with the remainder of the chapter[47]. All the estimations run include dummy variables accounting for sector affiliation and geographic location. Average marginal effects for these variables are however not reported for the sake of brevity. A control variable named "After2009"[48] which proxies for the stage of the economy following the great depression experienced in 2008 is also included in every specification.

**Table 1-4 Estimations of the financial and structural determinants of bankruptcy (Diane)**

| Variables | AV. Marginal effects (1) | AV. Marginal effects (2) | AV. Marginal effects (3) | AV. Marginal effects (4) |
|---|---|---|---|---|
| SIZE | -0.030 | -0.006 | -0.006 | -0.001 |
| | (0.001)*** | (0.001)*** | (0.001)*** | (0.001)*** |
| AGE | | -0.144 | -0.114 | -0.115 |
| | | (0.001)*** | (0.001)*** | (0.001)*** |
| After2009 | 0.032 | -0.012 | -0.006 | -0.006 |
| | (0.003)*** | (0.002)*** | (0.003)*** | (0.003)*** |
| LIQUIDITY | | | -0.142 | -0.127 |
| | | | (0.002)*** | (0.002)*** |
| LEVERAGE | | | | 0.194 |
| | | | | (0.001)*** |
| SECTOR | Yes | Yes | Yes | Yes |
| REGION | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.0379 | 0.1252 | 0.1869 | 0.1918 |
| LL | -53233.603 | -48400.344 | -44989.75 | -44720.394 |
| Number of obs. | 121 930 | 121 930 | 121 930 | 121 930 |

Note: Table 1-4 displays the results of different specifications of the Logit models applied to a sample of 121,930 French companies operating in France between 2006 and 2007 and between 2009 and 2012. All estimations include industry and region dummies and aim to explore the financial and non-financial determinants of bankruptcy.

[47] The same specifications are tested over the sample of companies with have complete accounts by the combination of both Diane and Lifi sources. Overall, the results are consistent with those displayed above. They are reported in Appendix 1-2, Tables 1-16 and 1-17

[48] For bankrupt companies, this variable takes value 1 if company entered a bankruptcy procedure after the crisis of 2009, and 0 otherwise. For non-bankrupt companies, it takes value 1 if data is collected after 2009.

Columns 1 and 2 present the results of the specifications used to estimate the influence of the company size and age on the likelihood of bankruptcy. Average marginal effects of both variables suggest that smaller and younger companies have higher chances to go bankrupt than bigger and older ones[49]. This result remains valid throughout all specifications. Columns 3 and 4 present the influence of financial variables; i.e. respectively liquidity and debt level. In accordance with existing literature, average marginal effects computed also show that liquidity and leverage inversely influence bankruptcy probability. More precisely, on average, a one unit increase in liquidity ratio decreases the probability of bankruptcy by 12.7%. Besides, an increase by one unit of leverage ratio induces a marginal increase of 19.3% of the probability of bankruptcy (c.f. Column 4). Remarkably, variable After2009, estimating the impact of the economic conjecture, is significant in all estimations, meaning that the macroeconomic context does play a significant impact on business survival. However, the influence of the variable is not homogeneous across all specifications suggesting that the unstable economic environment from 2009 did not influence equally all companies operating in the economy[50].

### 1.3.2. Impact of corporate ownership and control structure

This section seeks to explore the impact of company ownership and control structure on the probability of bankruptcy. We run the same specifications as in the previous section and add variables measuring the impact of ownership and control structure. The influence of group affiliation is first evaluated on the whole sample of group affiliated and stand-alone companies. Estimations using only the population composed of group-affiliated companies are then carried out in view to understand the mechanisms underlying the relationship between group affiliation and bankruptcy.

#### *1.3.2.1. The group affiliation-bankruptcy relationship*

Results relative to the influence of group affiliation display in this section only concern companies for which information on group membership is available from Diane source. The same estimations are run using only Lifi source, as well as the combination of both Diane and Lifi sources. The results are reported in Tables 1-16 and 1-17 in Appendix 3. The different specifications provide consistent results.

[49] Column 2 shows that, on average, a one unit increase of SIZE and AGE reduces bankruptcy probability by respectively 6% and 14.5%.

[50] Indeed, the variable shows an inverse influence on bankruptcy risk since we introduce variables accounting for company characteristics.

Results displayed in Table 1-5 show a positive and significant influence of group affiliation on the probability of bankruptcy. This means a higher risk of bankruptcy for companies when affiliated to business groups. The result is very significant and stable regardless of the number of control variables included in the model. The first specification only controls for the macroeconomic context. The average marginal effect of group membership equals 0.04. This coefficient indicates that the change between value 0 (i.e. the case where company is not affiliated to a business group) and value 1 (the case where company operates inside a business group) for GROUP MEMB variable increases the bankruptcy probability by 4.1%.

We progressively add control variables to the first specification in order to test for the stability of our result. The last column represents a specification with all control variables included. It shows that, on average, group affiliation impact remains positive and significant at 1%[51].

**Table 1-5 Estimations of the influence of group affiliation (Diane)**

| Variables | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects |
|---|---|---|---|---|---|
| GROUP MEMB (No) | REF. | REF. | REF. | REF. | REF. |
| GROUP MEMB (Yes) | 0.041 | 0.033 | 0.082 | 0.071 | 0.067 |
| | (0.003)*** | (0.003)*** | (0.003)*** | (0.003)*** | (0.003)*** |
| After2009 | 0.037 | 0.033 | -0.009 | -0.003 | -0.004 |
| | (0.003)*** | (0.003)*** | (0.003)*** | (0.003)** | (0.003)** |
| SIZE | | | -0.012 | -0.011 | -0.006 |
| | | | (0.001)*** | (0.001)*** | (0.001)*** |
| AGE | | | -0.146 | -0.115 | -0.117 |
| | | | (0.001)*** | (0.001)*** | (0.001)*** |
| LIQUIDITY | | | | -0.140 | -0.127 |
| | | | | (0.003)*** | (0.003)*** |
| LEVERAGE | | | | | 0.017 |
| | | | | | (0.002)*** |
| SECTOR | - | Yes | Yes | Yes | Yes |
| REGION | - | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.0045 | 0.0230 | 0.1335 | 0.1938 | 0.1979 |
| LL | -55081.848 | -54057.178 | -47942.196 | -44609.108 | -44380.291 |
| Number of obs. | 121 930 | 121 930 | 121 930 | 121 930 | 121 930 |

Note: Table 1-5 displays the results of different specifications of the Logit models estimating the influence of group affiliation over a sample of 121, 930 French companies. All estimations include industry and region dummies and control for the stage of the economy.

[51] On average, group affiliation is shown to increase bankruptcy probability by 6.7% after controlling for the sector, region, size, age, liquidity, leverage and the stage of the economy.

The observed relationship between group affiliation and bankruptcy invalidates our first hypothesis which argues that group affiliated companies might be more protected from bankruptcy than their stand-alone counterparts. This view dominates previous research which conclude to a strong inverse relationship between group affiliation and company's risk of bankruptcy. Underlying mechanisms such as liquidity smoothing and risk sharing are often used as arguments (Khanna and Yafeh, 2005; Dewaelheyns and Van Hulle, 2006). Our findings suggest however that being a group member does not only fail to save company from going bankrupt, but also increases the probability of entering a bankruptcy procedure for group affiliated companies.

This result should carefully be interpreted. Based on the limited liability principle which governs the business group entity, one possible explanation is that business groups can incited to accelerate the elimination of their 'lame ducks'. In line with Bianco and Nicodano (2006), moral hazard problems can arise among business groups since affiliated companies are separate legal entities with their own limited liability. This suggests that groups might extract resources from their affiliates and even let these go bankrupt without any major consequences for the other group members (Bianco and Nicodano, 2006). In the same vein, Balcaen and Ooghe (2006) underline that insolvency might be used by companies as a strategic behavior in an attempt to terminate debts and restart their activities with a clean sheet. In view to understand the underlying mechanisms to the observed relationship between group affiliation and the probability of bankruptcy, we further estimate the impact of different group characteristics, on the probability of bankruptcy.

#### *1.3.2.2. The influence of group characteristics*

Given that the observed relationship between group affiliation and bankruptcy risk is contradictory to previous literature on group affiliation and bankruptcy risk, we try, in what follows, to understand its underlying mechanisms through the lenses of both group and firm characteristics. Starting with group characteristics, Table 1-6 below shows the results of different specifications of the Logit model estimating the impact of group characteristics on the probability of bankruptcy for group affiliates. Estimations apply to the sub-sample of group affiliated companies, and more precisely to only companies identified as affiliates by Diane database to maintain consistency with our previous results.

Column 1 focuses on the influence of group origin, proxied by the indicator variable DOMESTIC GROUP. The average marginal effect of group origin indicator shows a lower probability of bankruptcy for affiliates operating inside domestic groups. When controled for companies' structural and financial characteristics, average marginal effect of domestic group

measures a decrease in the likelihood of bankruptcy by near 3%, suggesting that domestic groups reduces the probability of bankruptcy for affiliated companies by 3% compared to foreign ones. This result validates our hypothesis of footloose multinationals and implies that domestic groups might be more lenient towards their affiliated companies. Following Inui et al. (2009), our findings support that multinational companies tend to react to the negative shock hitting their affiliates by shifting their production facilities to finance other investments in the group's network. We argue that domestic groups might be more incited to extend help to their distressed affiliates since the bankruptcy of an affiliate operating in the same country is likely to have serious consequences, in particular on the image of the group. Indeed, since affiliated companies operating in the same country are more likely to share investors and suppliers, the reputation of the group might be set at risk if one group component goes bankrupt, hampering consequently the group access to external finance. This interpretation is consistent with Gopalan et al. (2007)'s findings which highlight that bankruptcy inside a business group is likely to induce distrust among investors and more particularly creditors, leading to a significant drop in the level of external financing of the group.

The judicial liquidation of Flodor-Péronne, a French affiliate of the Italian multinational Unichips, in 2005 illustrates the footloose attitude of multinationals. The Flodor affair has led to many legal disputes given the involvement of the parent entity in the bankruptcy of its affiliate. Concretely, the story goes back to the summer 2003 when Flodor's managers attempted to export the production equipment to Italy, while employees were on a "forced" vacation. The employees who took note of the managers' intention assigned the latter to justice. As a result, the manager was sentenced to a six months' imprisonment and a fine of 3,500 euros. The story continues in 2004 when Flodor was put into bankruptcy, manifesting the group's will to interrupt extending to its affiliate which has been in difficulties for several years. In February 2005, Flodor ended up in a liquidation procedure consecutively to a court decision. This liquidation of Flodor led to the dismissal of 185 employees who failed to benefit from their redeployment in other firms of the group. The Flodor affair is one example among many others in which multinationals have been found to be involved in the bankruptcy of their affiliates[52].

[52] Law No. 2012-346 of March 12, 2012 on protective measures (mesures *conservatoires*) applicable to the French safeguard, reorganization and liquidation proceedings, said Petroplus Law was mainly designed, and adopted, in light of the contentious case of bankruptcy of the French oil refining company Petroplus. Petroplus Company, which was profitable, had been forced to file for bankruptcy due to the behavior of its foreign parent company. The company's bank accounts were fully emptied by the parent's banks shortly before its bankruptcy, leaving the company with no assets since its oil inventory was legally owned by its parent.

**Table 1-6 Estimations of the influence of group characteristics (Diane)**

| Variables | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects |
|---|---|---|---|---|
| DOMESTIC GROUP (No) | REF. | | | REF. |
| DOMESTIC GROUP (Yes) | -0.029 | | | -0.035 |
| | (0.006)*** | | | (0.005)*** |
| MAJOR CONTROL (No) | | REF. | | REF. |
| MAJOR CONTROL (Yes) | | 0.058 | | 0.066 |
| | | (0.006)*** | | (0.006)*** |
| GROUP DEBT | | | -0.172 | -0.173 |
| | | | (0.015)*** | (0.015)*** |
| After2009 | 0.026 | 0.019 | 0.016 | 0.020 |
| | (0.006)*** | (0.005)*** | (0.005)*** | (0.005)*** |
| SIZE | -0.012 | -0.011 | -0.009 | -0.001 |
| | (0.002)*** | (0.002)*** | (0.001)*** | (0.001) |
| AGE | -0.109 | -0.109 | -0.092 | -0.091 |
| | (0.003)*** | (0.003)*** | (0.003)*** | (0.003)*** |
| LIQUIDITY | -0.171 | -0.169 | -0.092 | -0.084 |
| | (0.008)*** | (0.009)*** | (0.006)*** | (0.005)*** |
| LEVERAGE | 0.032 | 0.034 | 0.251 | 0.266 |
| | (0.013)** | (0.013)** | (0.008)*** | (0.008)*** |
| SECTOR | Yes | Yes | Yes | Yes |
| REGION | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.2174 | 0.2194 | 0.2633 | 0.2705 |
| LL | -10960.42 | -10931.626 | -10072.107 | -9974.3353 |
| Number of obs. | 28 019 | 28 019 | 28 019 | 28 019 |

Note: Table 1-6 displays the results of different specifications of the Logit models estimating the influence of group characteristics over a sample of 28,019 French affiliated companies with complete accounts from Diane database. All estimations include industry and region dummies and control for the stage of the economy.

Back to the estimations of group characteristics' influence, column 2 of Table 1-6 suggests that our fourth hypothesis regarding the influence of the ultimate owner's control is valid. Average marginal effect of the indicator variable MAJOR CONTROL shows that when the ultimate owner holds more than 50% of control rights the probability of company bankruptcy is increased by almost 9% percent. As suggested by Johnson, La Porta, Lopez-de-Silanes, and Schleifer (2000), controlling shareholders inside business groups can have strong incentives to "siphon" resources out of companies in order to increase their own wealth. They use the term "tunneling" to describe the transfer of resources operated by controlling shareholders to their own benefits.

The data used in this chapter do not allow making such interpretations. Our result, however, confirms that control concentration is detrimental to company's survival, suggesting

that dominant shareholders may have incentives to act in their own interests. It also confirms the results from French data reached by Hamelin (2011) who underlines that excess of control is likely to increase the sensitivity of companies to industry shocks. We conclude that the high probability of bankruptcy for companies with strong concentrated control could be the result of the discretionary power in the hands of the dominant shareholders. In other words, we suggest that shareholders holding large blocks of control rights can easily decide to eliminate a badly performing company without any consideration for minority shareholders. This means that, in a perspective of loss minimization, controlling shareholders can be encouraged to misuse their controlling power and sharpen the difficulties of a distressed affiliate, especially when the latter does not have any prospect of recovery.

Hypothesis 2 is also validated by the results displayed in column 3. We find that intragroup financial commitments significantly influence the likelihood of bankruptcy for group affiliated companies. Average marginal effect of GROUP DEBT variable is -0.172. This means that an increase by one 1 percentage point of the group debt ratio decreases the likelihood of bankruptcy by 17%. This finding is not surprising, since the failure of a company highly indebted to its group is likely to generate negative spillovers inside the group, all the more so when the amount of debt held is important. Here, we allude to "domino effect" likely to occur after the bankruptcy of particular members in a BG, notably affiliated companies which hold high levels of financial commitments towards their BGs. This finding is also consistent with the results of Gopalan et al (2007) who insist on the negative impact of the bankruptcy of one group member on the profits and investment of the companies operating inside the same group. The last specification available in column 4 of Table 1-6 confirms our conclusions regarding the influence of group origin, control and debt.

The same results regarding the influence of business groups' characteristics hold for a sub-sample including affiliated companies with complete accounts from Diane and Lifi databases jointly. Table 1-7 displays the results of specifications estimating the influence of group characteristics applied to 10,089 affiliated companies. The use of Lifi database allows us to explore the influence of group size on the probability of bankruptcy for affiliated companies. Group size turns out to negatively affect the probability of bankruptcy, i.e. companies operating inside larger business groups have lower risks of bankruptcy. This provides evidence consistent with the findings of Dewaelheyns and Van Hulle (2006) who emphasize that business groups are able to save their distressed affiliates from bankruptcy conditionally to the financial soundness of the group as a whole. Indeed, given that larger business groups are generally more diversified than smaller ones, the performance and

financial soundness of the former might be higher, allowing them to be more able to intervene and bring financial support to a distressed affiliate.

**Table 1-7 Estimations of the influence of group characteristics (Diane and Lifi)**

| Variables | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects |
|---|---|---|---|
| DOMESTIC GROUP (No) | REF. | | REF. |
| DOMESTIC GROUP (Yes) | -0.026 | | 0.002 |
| | (0.007)*** | | (0.008) |
| MAJOR CONTROL (No) | REF. | | REF. |
| MAJOR CONTROL (Yes) | 0.061 | | 0.018 |
| | (0.006)*** | | (0.007)** |
| GROUP DEBT | -0.063 | | -0.064 |
| | (0.019)*** | | (0.019)*** |
| GROUP SIZE(FR) | | -0.027 | -0.026 |
| | | (0.002)*** | (0.002)*** |
| After2009 | 0.039 | 0.035 | 0.034 |
| | (0.007)*** | (0.007)*** | (0.010)*** |
| SIZE | -0.019 | -0.008 | -0.005 |
| | (0.002)*** | (0.002)*** | (0.003)** |
| AGE | -0.053 | -0.047 | -0.046 |
| | (0.004)*** | (0.004)*** | (0.004)*** |
| LIQUIDITY | -0.134 | -0.130 | -0.122 |
| | (0.009)*** | (0.008)*** | (0.009)*** |
| LEVERAGE | 0.030 | 0.008 | 0.039 |
| | (0.013)** | (0.004)** | (0.012)*** |
| SECTOR | YES | YES | YES |
| REGION | YES | YES | YES |
| Pseudo $R^2$ | 0.2076 | 0.2221 | 0.2339 |
| LL | -3582.117 | -3033.6933 | -2988.6144 |
| Number of obs. | 10 089 | 10 089 | 10 089 |

Note: Table 1-7 displays the results of different specifications of the Logit models estimating the influence of group characteristics over a sample of 10,089 French affiliated companies with complete accounts from both Diane and Lifi databases. All estimations include industry and region dummies and control for the stage of the economy.

## 1.4. Robustness checks: the role of firm size and industry affiliation

In order to check for the robustness of the results obtained, we run test reinvestigating the previous analysis through the lenses of two firm characteristics: size and sector affiliation. Therefore, the same model specifications are repeated on different partitions of our samples, according to company size and sector. Bankruptcy scholars have long acknowledged the significant impact of firm size on the probability of bankruptcy (Mellahi and Wilkinson, 2004; Bottazi and Tamagni, 2010). Besides, evidence from Bamiatzi et al. (2014) insists on the moderating role of firm size in the business group-firm growth relationship. Consequently, we propose in the following to check for the stability of our results regarding firm size. In

other words, we explore whether firm size has any moderating role on the business group-firm survival relationship. Our samples are split according to firm size following the typology established by the National Institute of Statistics and Economic Studies (INSEE in French)[53] and which is consistent with the European recommendations.

Until 2008, firm has been defined on a purely legal standpoint. The Decree No. 2008-1354 of December 18, 2008 introduced a purely economic definition of the firm based on four size categories. The size categories are defined based on a composite indicator combining three dimensions: workforce, turnover and total assets. The combination of these three criteria allows to account for the reality of commercial, financial companies and holdings which eventually play a major role in the economy given their turnover or total of assets, even though they may have only very few employees. In the following analysis, we only refer to the total of assets in designing our size classes for sake of consistency with the results set out earlier. We distinguish three size classes: very small firms, small and medium (SME) firms and large firms. Very small firms are defined as firms with a total amount of assets lower or equal to 2 million euro. SME are firms with a total amount of assets not exceeding 43 million euro, and finally, large firms have a total amount of assets which exceeds 43 million euro.

**Table 1-8 Estimations of the influence of group affiliation by size category**

| Variables | Mod. (1) Av. Marginal effects | | | Mod. (2) Av. Marginal effects | | |
|---|---|---|---|---|---|---|
| | Very small | SME | Large | Very small | SME | Large |
| GROUP MEMB (No) | REF. | REF. | REF. | REF. | REF. | REF. |
| GROUP MEMB (Yes) | 0.085 | 0.018 | -0.031 | 0.073 | 0.016 | -0.021 |
| | (0.003)*** | (0.005)*** | (0.017)* | (0.003)*** | (0.005)*** | (0.016) |
| After2009 | -0.014 | 0.019 | 0.020 | -0.08 | 0.022 | 0.021 |
| | (0.003)*** | (0.006)*** | (0.01)*** | (0.003)*** | (0.006)*** | (0.01)*** |
| AGE | -0.160 | -0.072 | -0.020 | -0.126 | -0.049 | -0.019 |
| | (0.001)*** | (0.003)*** | (0.009)** | (0.001)*** | (0.003)*** | (0.008)** |
| LIQUIDITY | | | | -0.133 | -0.053 | -0.019 |
| | | | | (0.003)*** | (0.006)*** | (0.009)** |
| LEVERAGE | | | | 0.018 | 0.124 | 0.028 |
| | | | | (0.002)*** | (0.013)*** | (0.014)** |
| SECTOR | Yes | Yes | Yes | Yes | Yes | Yes |
| REGION | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.1299 | 0.0912 | 0.0949 | 0.1969 | 0.1866 | 0.1319 |
| LL | -441178.589 | -3606.7623 | -116.2630 | -40770.557 | -3229.2459 | -111.8046 |
| Number of obs. | 108 049 | 12 865 | 1 016 | 108 049 | 12 865 | 1 016 |

Note: Table 1-8 displays the results of different specifications of the Logit models estimating the influence of group affiliation by size category over a sample of 121,930 French companies. All estimations include industry and region dummies and control for the stage of the economy.

[53] For more details, refer to the link: http://www.insee.fr/fr/themes/document.asp?ref_id=ip1321

Results displayed in Table 1-8 reveal that the influence of group affiliation on the probability of bankruptcy is not uniform throughout the three size classes. In the first specification of the model, average marginal effect of group affiliation for large companies is negative (-0.031), suggesting that large affiliated companies are protected from bankruptcy, contrarily to smaller companies which show positive probabilities of bankruptcy when affiliated to business groups. However, the variable is not significant for large companies once financial characteristics of the company are taken into account as suggested in the second specification of the model. This means that larger affiliated companies might not derive any advantages or costs from affiliation to a business group, compared to stand-alone companies.

**Table 1-9 Estimations of the influence of group characteristics by size category**

| Variables | Av. Marginal effects | | |
|---|---|---|---|
| | Very small | SME | Large |
| DOMESTIC GROUP (No) | REF. | REF. | REF. |
| DOMESTIC GROUP (Yes) | -0.030 | -0.025 | -0.018 |
| | (0.007)*** | (0.007)*** | (0.018) |
| MAJOR CONTROL (No) | REF. | REF. | REF. |
| MAJOR CONTROL (Yes) | 0.054 | 0.058 | 0.027 |
| | (0.008)*** | (0.007)*** | (0.018) |
| GROUP DEBT | -0.202 | -0.133 | -0.030 |
| | (0.198)*** | (0.023)*** | (0.042) |
| After2009 | 0.019 | 0.020 | 0.019 |
| | (0.006)*** | (0.009)*** | (0.021) |
| AGE | -0.105 | -0.054 | -0.026 |
| | (0.004)*** | (0.005)*** | (0.012)** |
| LIQUIDITY | -0.101 | -0.069 | -0.024 |
| | (0.007)*** | (0.009)*** | (0.015) |
| LEVERAGE | 0.267 | 0.200 | 0.046 |
| | (0.010)*** | (0.018)*** | (0.034) |
| SECTOR | Yes | Yes | Yes |
| REGION | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.2556 | 0.2307 | 0.1782 |
| LL | -8285.7274 | -1655.7802 | -57.706 |
| Number of obs. | 20 895 | 6 438 | 686 |

Note: Table 1-9 displays the results of the Logit model estimating the influence of group characteristics by size category over a sample of 28,019 affiliated companies. All estimations include industry and region dummies and control for the stage of the economy.

For smaller affiliated companies, it is shown that group affiliation significantly increases the probability of bankruptcy. We expect that smaller firms, which are typically characterized by lack of internal and external resources and a limited market power, have intrinsically higher chances of going bankrupt and more difficulties to recover after a

bankruptcy. Therefore, it might be unattractive for business groups to deploy additional resources trying to save these firms. Alternatively, business groups might be incited to accelerate the bankruptcy of a desperately distressed affiliate and reallocate the resources toward more attractive investments within the group network, hence the greater probability of bankruptcy for smaller firms observed. A closer examination of the influence of group characteristics on the probability of bankruptcy depending on firm size reveals some interesting results. For larger firms, group characteristics, globally, do not display any significant influence on the probability of affiliates' bankruptcy. For smaller firms, however, the results remain consistent with our previous conclusions. Thus, it can be safely deduced that size is a significant moderator of the business group-bankruptcy relationship.

**Table 1-10 Estimations of the influence of group affiliation by sector**

| Variables | Mod. (2) | | Mod. (3) | | Mod. (4) | |
|---|---|---|---|---|---|---|
| | Av. Marginal effects | | Av. Marginal effects | | Av. Marginal effects | |
| | Industry | Other | Industry | Other | Industry | Other |
| GROUP MEMB (No) | REF. | REF. | REF. | REF. | REF. | REF. |
| GROUP MEMB (Yes) | 0.088 | 0.094 | 0.089 | 0.089 | 0.083 | 0.084 |
| | (0.007)*** | (0.003)*** | (0.007)*** | (0.003)*** | (0.007)*** | (0.003)*** |
| After2009 | 0.013 | -0.011 | 0.008 | -0.008 | 0.009 | -0.09 |
| | (0.008) | (0.003)*** | (0.008) | (0.003)*** | (0.008) | (0.03)*** |
| SIZE | -0.011 | -0.015 | -0.009 | -0.015 | -0.004 | -0.010 |
| | (0.002)*** | (0.001)*** | (0.002)*** | (0.001)*** | (0.002)* | (0.001)*** |
| AGE | -0.107 | -0.156 | -0.071 | -0.134 | -0.071 | -0.134 |
| | (0.004)*** | (0.002)*** | (0.004)*** | (0.001)*** | (0.004)*** | (0.001)*** |
| LIQUIDITY | | | -0.178 | -0.097 | -0.157 | -0.084 |
| | | | (0.007)*** | (0.002)*** | (0.011)*** | (0.002)*** |
| LEVERAGE | | | | | 0.037 | 0.018 |
| | | | | | (0.017)** | (0.002)*** |
| REGION | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.0646 | 0.1355 | 0.1489 | 0.1808 | 0.1498 | 0.1810 |
| LL | -72448.006 | -41116.466 | -6585.6975 | -38965.349 | -6584.945 | -38943.83 |
| Number of obs. | 16 099 | 105 831 | 16 099 | 105 831 | 16 099 | 105 831 |

Note: Table 1-10 displays the results of different specifications of the Logit models estimating the influence of group affiliation by sector affiliation over a sample of 121,930 firms. All estimations include region dummies and control for the stage of the economy.

For robustness checks, we further explore the moderating role of sector affiliation. According to recent statistics published by the National Institute of Statistics and Economic Studies relative to business groups, it is shown that the latter are mainly present in the industry. The energy and the automotive industry are the sectors where business groups are more present. More than 25% of companies operating in those two sectors are affiliated to a business group and more than 90 percent of employees are employed by a group. The other

heavy industries (capital goods and intermediate goods) are, as well, largely dominated by business groups. Conversely, in the educational, health and other services, independent firms are predominant. Given that business groups are largely present in the industrial sectors, we partition our sample according to a binary classification: industry vs. other sectors, and check for potential differences in the business group-bankruptcy relationship between both sectors. The results displayed in Tables 1-10 and 1-11 also confirm our preliminary conclusions, excluding, as a consequence, the existence of a moderating role of industry affiliation on the group affiliation-bankruptcy relationship.

**Table 1-11 Estimations of the influence of group characteristics by sector affiliation**

| Variables | Mod. (1) | | Mod. (2) | | Mod. (3) | | Mod. (4) | |
|---|---|---|---|---|---|---|---|---|
| | Av. Marginal effects | | Av. Marginal effects | | Av. Marginal effects | | Av. Marginal effects | |
| | Industry | Other | Industry | Other | Industry | Other | Industry | Other |
| DOMESTIC GROUP (No) | REF. | REF. | | | | | REF. | REF. |
| DOMESTIC GROUP (Yes) | -0.030 | -0.044 | | | | | -0.021 | -0.047 |
| | (0.012)*** | (0.006)*** | | | | | (0.012)* | (0.006)*** |
| MAJOR CONTROL (No) | | | REF. | REF. | | | REF. | REF. |
| MAJOR CONTROL (Yes) | | | 0.060 | 0.064 | | | 0.055 | 0.073 |
| | | | (0.013)*** | (0.007)*** | | | (0.013)*** | (0.007)*** |
| GROUP DEBT | | | | | -0.220 | -0.171 | -0.215 | -0.174 |
| | | | | | (0.031)*** | (0.001)*** | (0.030)*** | (0.016)*** |
| After2009 | 0.043 | 0.017 | 0.035 | 0.009 | 0.034 | 0.009 | 0.035 | 0.016 |
| | (0.013)*** | (0.006)*** | (0.013)*** | (0.006) | (0.013)*** | (0.006)*** | (0.012)*** | (0.006)*** |
| SIZE | -0.009 | -0.013 | 0.008 | 0.015 | -0.013 | -0.009 | -0.006 | 0.001 |
| | (0.003)** | (0.002)*** | (0.003)* | (0.002)*** | (0.003)*** | (0.001)*** | (0.003)*** | (0.001) |
| AGE | -0.062 | -0.131 | -0.062 | -0.130 | -0.059 | -0.011 | -0.060 | -0.108 |
| | (0.007)*** | (0.003)*** | (0.007)*** | (0.003)*** | (0.007)*** | (0.003)*** | (0.007)*** | (0.003)*** |
| LIQUIDITY | -0.156 | -0.108 | -0.155 | -0.107 | -0.161 | -0.045 | -0.154 | -0.036 |
| | (0.016)*** | (0.008)*** | (0.016)*** | (0.007)*** | (0.015)*** | (0.005)*** | (0.015)*** | (0.005)*** |
| LEVERAGE | 0.213 | 0.036 | 0.213 | 0.036 | 0.238 | 0.255 | 0.247 | 0.274 |
| | (0.029)*** | (0.014)*** | (0.029)*** | (0.014)*** | (0.029)*** | (0.009)*** | (0.029)*** | (0.009)*** |
| REGION | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.2369 | 0.1924 | 0.2384 | 0.1936 | 0.2451 | 0.2440 | 0.2495 | 0.2542 |
| LL | -2043.853 | -9107.029 | -2036.117 | -9093.9771 | -2011.9021 | -8321.3831 | -2006.277 | -8209.6115 |
| Number of obs. | 5 210 | 22 817 | 5 210 | 22 817 | 5 210 | 22 817 | 5 210 | 22 817 |

Note: Table 1-11 displays the results of different specifications of the Logit models estimating the influence of group characteristics by sector of group affiliated companies. All estimations include industry and region dummies and control for the stage of the economy.

## Conclusion

In this chapter, we addressed an important and still scarcely explored topic: the relationship between company's ownership and control structure and the probability of bankruptcy. We applied binary Logit estimations to a unique sample of stand-alone and group

affiliated companies operating in France and focused on the group affiliation-bankruptcy relationship through the lenses of both business groups and firm characteristics. Data collected cover two periods: 2006-2007 and 2009-2012. They encompass a wide range of information on companies' financial and structural characteristics which relate to both firms and business group levels. Different specifications of the binary Logit models are performed and results reached provide strong evidence on the significant impact of corporate ownership and control structure on the probability of bankruptcy.

Existing literature on the determinants of bankruptcy mainly focuses on its financial and structural determinants, ignoring the impact of corporate control and ownership structures, although ownership structure has been subject to an important number of research works in the corporate finance literature since the early thesis of Berle and Means (1932). Previous studies exploring the impact of group affiliation on bankruptcy are very rare and only have a limited scope since none ever tried to understand its underlying mechanisms. The general adopted view is consistent with an inverse relationship between group affiliation and bankruptcy, compared with stand-alone companies. The advantages and costs of group affiliation have been exclusively acknowledged by the literature on business groups. Existing evidence from business groups' internal capital markets suggest that group affiliation can be either a blessing or a liability for firms. In emerging markets, typically suffering from market inefficiencies, business groups have been accredited to act as perfect market substitutes. Consequently their existence has been shown to significantly enhance the performance of affiliated companies. However, no consensus has been reached yet as regards to the impact of firm affiliation to a business group on its performance. Indeed, while some studies provide evidence over the benefits of business group affiliation, others underline its disruptive role on performance. The current chapter bridges the gap in the literature by providing evidence on the role of business group affiliation on particularly firm bankruptcy.

Our findings offer valuable empirical contributions not only to bankruptcy literature but also to business group analysis. Exploring the determinants of firm bankruptcy, we find that previously used variables estimating the role of company size, age, sector and financial characteristics significantly influence the probability of firm bankruptcy. In addition, we obtain pioneering results regarding the influence of business group affiliation on the probability of bankruptcy. We find that the group affiliation-bankruptcy relationship is different according to firm size. Our findings suggest that group affiliation significantly increases the probability of bankruptcy for small companies when compared to stand-alone ones. Furthermore, it is shown that concentrated control inside small affiliated companies

increases the likelihood of firm bankruptcy. Besides, we underline that the potential external and internal negative spillovers are the main reasons that encourage business groups to extend help for their weaker affiliates.

Taken together, we interpret these findings as evidence that business group affiliation can be either a blessing or a liability: blessing for larger companies operating in highly interlinked groups, more vulnerable for smaller companies mainly controlled by their parent company. By using the French case as an empirical setting, our study adds to the existing literature, insofar as, from the best of our knowledge, no previous study explored the influence of group affiliation and group characteristics on bankruptcy in France. In light of our results and given the compact corporate veil which is still prevailing within business groups under the French bankruptcy law, one should question the extent to which group affiliated companies should really be treated as a separate legal entity. A natural extension of this chapter is the analysis of the influence of group affiliation on the survival of firms post-bankruptcy.

# Appendices of Chapter 1

## Appendix 1-1. Data and Sample description

**Table 1-12 Variables definition and expected sign**

| Variable Name | Definition | Source | Expected sign on the probability of bankruptcy |
|---|---|---|---|
| **Dependent Variable** | | | |
| CESSATION | Dummy: value=1 if company files for bankruptcy | BODACC | |
| **Independent Variables** | | | |
| GROUP MEMBERSHIP | Dummy: value=1 if company is affiliated to a business group | Diane and Lifi | - |
| GROUP DEBT | Ratio: Net borrowing from the group/ Total Assets | Diane | - |
| DOMESTIC GROUP | Dummy: value=1 if company is controlled by a domestic group | Diane | - |
| MAJOR CONTROL | Dummy: value=1 if company is controlled at more than 50% by the ultimate corporate owner | Diane | + |
| GROUP EMP | Natural logarithm of the number of group employees | Lifi | - |
| SIZE | Natural logarithm of total assets | Diane | - |
| AGE | Natural logarithm of the duration in years between the date of establishment and either the date of cessation of payments for | Diane | - |
| SECTOR | Categorical variable for industry affiliation | Diane | |
| REGION | Categorical variable for geographic localization | Diane | |
| LIQUIDITY | Ratio: (Current Assets-Inventory and W.I.P)/ Current Liabilities | Diane | - |
| LEVERAGE | Ratio: Total Debt/Total Assets | Diane | + |

**Table 1-13 Correlation matrix for the entire sample**

| | BANKRUPTCY | AGE | SIZE | LIQUIDITY | LEVERAGE |
|---|---|---|---|---|---|
| BANKRUPTCY | 1 | | | | |
| AGE | -0.306*** | 1 | | | |
| | (0.000) | | | | |
| SIZE | -0.122*** | 0.356*** | 1 | | |
| | (0.000) | (0.000) | | | |
| LIQUIDITY | -0.188*** | 0.171*** | 0.0426*** | 1 | |
| | (0.000) | (0.000) | (0.000) | | |
| LEVERAGE | 0.168*** | -0.106*** | -0.202*** | -0.221*** | 1 |
| | (0.000) | (0.000) | (0.000) | (0.000) | |
| Total | 121 930 | | | | |

**Table 1-14 Correlation matrix for affiliates sample**

| | BANKRUPTCY | AGE | SIZE | LIQUIDITY | LEVERAGE | GROUP DEBT | GROUP EMP |
|---|---|---|---|---|---|---|---|
| BANKRUPTCY | 1 | | | | | | |
| AGE | -0.328*** | 1 | | | | | |
| | (0.000) | | | | | | |
| SIZE | -0.196*** | 0.362*** | 1 | | | | |
| | (0.000) | (0.000) | | | | | |
| LIQUIDITY | -0.206*** | 0.165*** | 0.0850*** | 1 | | | |
| | (0.000) | (0.000) | (0.000) | | | | |
| LEVERAGE | 0.176** | -0.116*** | -0.182*** | -0.211*** | 1 | | |
| | (0.000) | (0.000) | (0.000) | (0.000) | | | |
| GROUP DEBT | -0.00316 | -0.00850 | -0.0518*** | -0.0441*** | 0.298*** | 1 | |
| | (0.059) | (0.015) | (0.000) | (0.000) | (0.000) | | |
| GROUP EMP | -0.0615*** | 0.303*** | 0.691*** | 0.0734*** | 0.0634*** | -0.0261** | 1 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | |
| Total | 28 019 | | | | | | |

**Table 1-15 Company structural characteristics**

| | Bankrupt companies | | | | | | | | | | | | | Non-Bankrupt companies | | Total Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2006 | | 2007 | | 2009 | | 2010 | | 2011 | | 2012 | | Total | | | |
| | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | | N. | % | |
| **Group Affiliation** | | | | | | | | | | | | | | | | |
| Stand-alone | 1,078 | 70.64 | 553 | 70.36 | 2,000 | 71.97 | 4,935 | 70.91 | 4,251 | 76.21 | 2,156 | 73.43 | 14,975 | 78,936 | 77.87 | 93,911 |
| Affiliated company | 448 | 29.36 | 235 | 29.90 | 779 | 28.03 | 2 025 | 29.09 | 1 327 | 23.79 | 780 | 26.57 | 5 592 | 22 427 | 22.12 | 28,019 |
| Total | 1,526 | 100.00 | 786 | 100.00 | 2,779 | 100.00 | 6,960 | 100.00 | 5,578 | 100.00 | 2,936 | 100.00 | 20,565 | 101,365 | 100.00 | 121,930 |
| **Sector** | | | | | | | | | | | | | | | | |
| Food Industry | 7 | 0.46 | 4 | 0.51 | 18 | 0.65 | 33 | 0.47 | 24 | 0.43 | 17 | 0.58 | 103 | 1 021 | 1.01 | 1 124 |
| Manufacturing Industry | 243 | 15.92 | 98 | 12.47 | 383 | 13.78 | 1 042 | 14.97 | 746 | 13.37 | 388 | 13.22 | 2 900 | 12 075 | 11.91 | 14 975 |
| Construction | 265 | 17.37 | 167 | 21.25 | 742 | 26.70 | 1 882 | 27.04 | 1 605 | 28.77 | 831 | 28.30 | 5 492 | 15 870 | 15.66 | 21 362 |
| Retailing | 279 | 18.28 | 167 | 21.25 | 607 | 21.84 | 1 444 | 20.75 | 1 212 | 21.73 | 637 | 21.70 | 4 346 | 26 635 | 26.28 | 30 981 |
| Transport and Mail | 87 | 5.70 | 41 | 5.22 | 112 | 4.03 | 313 | 4.50 | 246 | 4.41 | 123 | 4.19 | 922 | 3 630 | 3.58 | 4 552 |
| Hotels and Restaurants | 164 | 10.75 | 57 | 7.25 | 219 | 7.88 | 665 | 9.55 | 481 | 8.62 | 260 | 8.86 | 1 846 | 9 314 | 9.19 | 11 160 |
| NTIC | 79 | 5.18 | 29 | 3.69 | 71 | 2.55 | 174 | 2.50 | 162 | 2.90 | 66 | 2.25 | 581 | 3 365 | 3.32 | 3 946 |
| Finance and Insurance | 7 | 0.46 | 3 | 0.38 | 60 | 2.16 | 128 | 1.84 | 100 | 1.79 | 53 | 1.81 | 351 | 3 638 | 3.59 | 3 989 |
| Real Estate | 26 | 1.70 | 15 | 1.91 | 84 | 3.02 | 159 | 2.28 | 123 | 2.21 | 70 | 2.38 | 477 | 4 155 | 4.10 | 4 632 |
| Business Services | 195 | 12.78 | 134 | 17.05 | 329 | 11.84 | 732 | 10.52 | 563 | 10.09 | 305 | 10.39 | 2 258 | 13 660 | 13.48 | 15 918 |
| Household Services | 174 | 11.40 | 73 | 9.29 | 154 | 5.54 | 388 | 5.57 | 316 | 5.67 | 186 | 6.34 | 1 291 | 8 000 | 7.89 | 9 291 |
| Total | 1526 | 100.00 | 786 | 100.00 | 2779 | 100.00 | 6 960 | 100.00 | 5 578 | 100.00 | 2 936 | 100.00 | 20 565 | 101 365 | 100.00 | 121 930 |
| **Region** | | | | | | | | | | | | | | | | |
| Greater Paris Region | 338 | 22.15 | 133 | 16.92 | 672 | 24.18 | 1 172 | 16.84 | 792 | 14.20 | 350 | 11.92 | 3 457 | 21 856 | 21.56 | 25 313 |
| North East | 291 | 19.07 | 154 | 19.59 | 452 | 16.26 | 1 216 | 17.47 | 1 013 | 18.16 | 471 | 16.04 | 3 597 | 14 339 | 14.15 | 17 936 |
| South East | 297 | 19.46 | 207 | 26.34 | 549 | 19.76 | 1 597 | 22.95 | 1 229 | 22.03 | 781 | 26.60 | 4 660 | 24 001 | 23.68 | 28 661 |
| South West | 241 | 15.79 | 102 | 12.98 | 400 | 14.39 | 1 084 | 15.57 | 934 | 16.74 | 504 | 17.17 | 3 265 | 15 323 | 15.12 | 18 588 |
| Central Region | 136 | 8.91 | 67 | 8.52 | 291 | 10.47 | 686 | 9.86 | 573 | 10.27 | 308 | 10.49 | 2 061 | 9 117 | 8.99 | 11 178 |
| North West | 223 | 14.61 | 125 | 15.90 | 415 | 14.93 | 1 205 | 17.31 | 1 037 | 18.59 | 522 | 17.78 | 3 527 | 16 727 | 16.50 | 20 254 |
| Total | 1526 | 100.00 | 786 | 100.00 | 2779 | 100.00 | 6 960 | 100.00 | 5 578 | 100.00 | 2 936 | 100.00 | 20 565 | 101 365 | 100.00 | 121 930 |

## Appendix 1-2. Additional results

**Table 1-16 Estimations of the influence of group affiliation using information form Diane and Lifi**

| Variables | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects |
|---|---|---|---|---|---|
| GROUP MEMBERSHIP (No) | REF. | REF. | REF. | REF. | REF. |
| GROUP MEMBERSHIP (Yes) | 0.002 | 0.001 | 0.081 | 0.069 | 0.063 |
| | (0.002) | (0.002) | (0.002)*** | (0.002)*** | (0.002)*** |
| After2009 | 0.022 | 0.018 | 0.012 | 0.0051 | 0.004 |
| | (0.003)*** | (0.003)*** | (0.003) | (0.002)*** | (0.002)** |
| SIZE | | | -0.012 | -0.011 | -0.006 |
| | | | (0.001)*** | (0.001)*** | (0.001)*** |
| AGE | | | -0.154 | -0.126 | -0.127 |
| | | | (0.001)*** | (0.001)*** | (0.001)*** |
| LIQUIDITY | | | | -0.136 | -0.121 |
| | | | | (0.003)*** | (0.003)*** |
| LEVERAGE | | | | | 0.019 |
| | | | | | (0.002)*** |
| SECTOR | - | Yes | Yes | Yes | Yes |
| REGION | - | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.0008 | 0.0213 | 0.1471 | 0.2013 | 0.2056 |
| LL | -62138.636 | -60864.057 | -53042.219 | -49671.262 | -49402.701 |
| Number of obs. | 132 530 | 132 530 | 132 530 | 132 530 | 132 530 |

Note: Table 1-16 displays the results of different specifications of the Logit models estimating the influence of group affiliation over a sample of 132, 530 French companies with complete information from Diane and Lifi sources. All estimations include industry and region dummies and control for the stage of the economy.

**Table 1-17 Estimations of the influence of group membership (Lifi)**

| Variables | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects | Av. Marginal effects |
|---|---|---|---|---|---|
| GROUP MEMBERSHIP (No) | REF. | REF. | REF. | REF. | REF. |
| GROUP MEMBERSHIP (Yes) | -0.056 | -0.046 | 0.037 | 0.031 | 0.019 |
| | (0.003)*** | (0.003)*** | (0.003)*** | (0.005)*** | (0.004)*** |
| After2009 | 0.023 | 0.018 | 0.001 | 0.004 | 0.003 |
| | (0.003)*** | (0.003)*** | (0.003) | (0.003)** | (0.003)** |
| SIZE | | | -0.007 | -0.006 | -0.001 |
| | | | (0.001)*** | (0.001)*** | (0.001)*** |
| AGE | | | -0.152 | -0.122 | -0.123 |
| | | | (0.001)*** | (0.001)*** | (0.001)*** |
| LIQUIDITY | | | | -0.137 | -0.122 |
| | | | | (0.003)*** | (0.003)*** |
| LEVERAGE | | | | | 0.021 |
| | | | | | (0.003)*** |
| SECTOR | - | Yes | Yes | Yes | Yes |
| REGION | - | Yes | Yes | Yes | Yes |
| Pseudo $R^2$ | 0.0042 | 0.0234 | 0.1402 | 0.1956 | 0.2006 |
| LL | -61928.218 | -60730.261 | -53467.518 | -50024.093 | -49711.287 |
| Number of obs. | 132 530 | 132 530 | 132 530 | 132 530 | 132 530 |

Note: Table 1-17 displays the results of different specifications of the Logit models estimating the influence of group characteristics over a sample of 132, 530 French companies using information on group affiliation form only Lifi source. All estimations include industry and region dummies and control for the stage of the economy.

# Chapter 2: Company rescue vs liquidation: what influence of group affiliation and group characteristics?

## Introduction

Bankruptcy proceedings are often analyzed by economists as legal instruments designed to find the best possible outcome for defaulting companies. This means, one of the main goals, bankruptcy proceedings should achieve is finding the outcome able to guarantee the maximization of *ex post* company value, knowing that the defaulted company is part of economic and social environments likely to be affected by the chosen outcome. Value maximization can be achieved through two alternative ways, either the reorganization of company's assets if the latter is allowed to continue, or their liquidation in view to reimburse as many creditors as possible when reorganization is clearly impossible. The reorganization/liquidation arbitration is primarily determined by each bankruptcy system's orientation. In this line, two main systems can be distinguished around the world: on the one side the pro-debtor systems which promote company reorganization and seek to minimize the social consequences of bankruptcy and, on the other side, the pro-creditors systems which rather aim at the protection of creditors' interests, and the strict application of financial contacts (Recasens, 2004).

In its current configuration, the French bankruptcy law can be viewed typically pro-debtor. It provides two court-administrated procedures: the Judicial Reorganization ("*Procédure de Redressement Judiciaire*") and the Judicial Liquidation ("*Procédure de Liquidation Judiciaire*"). The Reorganization procedure aims to allow the company staying in business through the implementation of a rehabilitation plan, while the Liquidation procedure consists in finding a better allocation for companies' assets through their sale. The choice of opening one of these two procedures is ordered by a court decision, which makes the French bankruptcy system particularly interesting to be analyzed. Indeed, despite its clear pro-debtor orientation, French bankruptcy law gives judges full power to decide whether to save or to eliminate a failing company. In this regard, bankruptcy judges act as screening devices while trying to find the outcome able to maximize the value of bankrupt companies (Aghion et al., 1994).

The pro-debtor orientation of the French bankruptcy system, popularized by World Bank *Doing Business* reports which are mainly based on the "legal origin theory" inherited from the Law and Finance literature of LaPorta et al. (1998), supports that the behavior of French bankruptcy judges is stereotyped. The main reason is the typical high level of formalism of bankruptcy procedures in civil law countries, which makes judges less incline to deviate from the national law (LaPorta et al., 2008). Statistics on bankruptcy openings in France suggest that the latter hypothesis may not match well with the reality. Indeed, 70% of procedures annually opened in France are immediate liquidations (i.e. liquidations without any reorganization attempt), what drives us to question the pro-debtor orientation of the system.

This chapter tries to answer the following questions: if the behavior of French courts is entirely set by the national bankruptcy system's orientation, then what explains the observed high rate of liquidations? What are judges' motives for liquidation, relatively to reorganization?

Using data at company level, we explore the determinants of judges' arbitration between the reorganization and liquidation of bankrupt companies in order to help understand, in a more reliable way, bankruptcy law enforcement in France. The originality of our work lies essentially in the "law in action" analysis which is still lacking within the existent literature (Kirat and Serverin, 2001). The review of previous studies on the legal aspects of bankruptcy reveals that most of the time, legal systems are the core of the analysis and little attention is paid to law enforcement, leaving the bankruptcy decision making an under-investigated area.

This chapter contributes to the limited empirical evidence on the functioning and screening behavior of European bankruptcy systems. It is among the very few studies that explore the functioning of French collective proceedings. To our knowledge, the only paper dealing with bankruptcy law enforcement inside French courts was written by Blazy, Chopard, Fimayer and Guigou in 2011. The main insight gained from this study suggests that the screening behavior of French courts is mainly driven by a business rescue and employment preservation concern. Based on a sample of 942 French bankruptcy filings over the period 1989-2005, the authors explore courts' choice between liquidation, reorganization and sale, and study the extent to which judges' final decision is consistent with the objectives of the French bankruptcy legislation. Focusing on two main dimensions: company characteristics (size, age, legal form, sector affiliation and priority ranking debt structure), and

the causes of bankruptcy, the authors suggest that social considerations highly prevail in courts' arbitration between company rescue and liquidation.

Our analysis aims somehow to complement Blazy et al. (2011)'s research, by addressing the reorganization/liquidation dilemma from a more economic perspective. To do so, we particularly focus on the influence of company financial and economic characteristics measured by different balance sheet ratios prior to the triggering of the procedure. Moreover, we test for the influence of company's local environment characteristics measured by the rate of unemployment, the aim being there to assess the significance of the social dimension in the decision making process. More interestingly, we account for company ownership structure measured by business group affiliation and group characteristics. Companies in a bankruptcy procedure being treated in practice as solely independent entities regardless of their affiliation to a business group[54], we explore the extent to which company affiliation to a business group has an influence on its rescue chances. This question is all the more legitimate since previous literature on business groups' internal capital markets insists on both the advantages and the shortcomings of financial, commercial and managerial ties, companies maintain with their groups, and their impact on firm performance (Khanna and Yafeh, 2005; Buchuck et al., 2014). Our empirical setting is a unique sample of 20,621 French bankrupt firms over two distinct periods: 2006 to 2007 and 2009 to 2012. Interestingly, the breach in our data, which is mainly due to data limitations, allows us to detect any change in courts' behavior subsequent to the economic downturn of 2008. Logit estimations predicting the probabilities of reorganization relative to liquidation offer two interesting results. First, it is shown that courts actively encourage employment preservation and business safeguard, as prescribed by the French legislator. Second, our findings suggest courts' sensitivity to firm affiliation to a business group and business groups' characteristics.

The remainder of the chapter is structured as follows. The next section reviews the previous empirical and theoretical literature on legal aspects of bankruptcy. Section 2.2 portrays the French legal system of bankruptcy. Section 2.3 describes our hypotheses. Section 2.4 portrays the data and presents the model. Sections 2.5 and 2.6 discuss the results of estimations applied to different cutoffs of our sample. The final section concludes.

[54] Some exceptions exist however; allowing bankruptcy courts to extend the procedure to the other members of the group (See section 2.3.3 for details).

## 2.1. Related literature

Much of the literature on bankruptcy deals with its legal aspects. The recent increase in the number of studies focusing on the legal dimension of bankruptcy is often attributed to the interest aroused by World Bank's *Doing Business* reports (Blazy et al., 2011). Initiated by the economists, La Porta, Lopez-de-Silanes, Schleifer and Vichny[55], the *Doing Business* reports have led to many studies on the influence of national bankruptcy codes, but also on the advantages and shortcomings of existing bankruptcy systems. Although influential, these reports have received a lot of severe critics given their "weak theoretical and methodological foundations"[56].

Two important dimensions are usually analyzed in previous studies from the legal literature on bankruptcy: the system and the legal practices. Both dimensions are however not equally addressed. Indeed, most of the existing studies focus on the system rather than the application of the law. Often based on a judgmental interpretation of *"Law on the books",* bankruptcy legal literature is still lacking a *"Law in action"* analysis (Levratto, 2007; Lascoumes and Serverin, 1988).

### 2.1.1. The pro-debtor/pro-creditors dilemma: finding the right balance between ex ante and ex post efficiency of bankruptcy procedures

On the system side, the relative efficiency of existing pro-debtor and pro-creditors bankruptcy systems is often at the heart of the analysis. In this regard, the general view largely adopted by international financial institutions is that creditor friendly laws (i.e. pro-creditors systems) might be more efficient than debtor friendly ones.

Both the theoretical and empirical debates on the relative efficiency of existing bankruptcy systems suggest that no consensus has been reached yet regarding what procedure is the best. This difficulty is mainly due to the fact that a bankruptcy law is assigned different objectives, not always compatible (Cornelli and Felli, 1997). A "good" bankruptcy law should be able to serve two main objectives: *ex post* efficiency and *ex ante* efficiency.

The *ex post* efficiency of bankruptcy law is achieved through the maximization of *ex post* value of company's assets. In other words, a "good" bankruptcy procedure should be managed so as to find a better allocation for company's assets. Therefore, the choice between reorganizing, selling as a going concern or liquidating the failing company should be done in

[55] The Law and Finance literature set up by La Porta, Lopez-de-Silanes, Schleifer and Vichny suggest that legal tradition largely influences corporate financing and governance, but also determines the efficiency level of bankruptcy systems.
[56] See Levratto (2007) and Vilanova (2007) for details.

such a way so as to guarantee the maximization of *ex post* value of the reallocated assets. Such reallocations would lead to Schumpeterian-like "creative destruction" that may offer welfare gains for the different stakeholders.

Another important goal of bankruptcy law is its *ex ante* efficiency. The efficiency in the *ex-ante* sense is to endow debtors and creditors with optimal incentives and behavior before bankruptcy occurs. Indeed, the different company stakeholders anticipate the effects of bankruptcy law even before any sign of financial distress is at the horizon, and adjust their behavior accordingly. Two main effects on the incentives are of relevance: debtor's replacement during the procedure and the protection of creditors' interests.

The effect of bankruptcy procedures on managers of defaulting firms has been studied extensively in previous literature. In particular, sanctions applied to debtors are seen to provide them the right incentives to manage their firms so as to avoid bankruptcy, for example by investing in less risky projects (Aghion et al. 1992). Alternatively, the protection of creditors' claims is also very important for the efficiency properties of bankruptcy procedures. Cornelli and Felli (1997) suggest that the maximization of creditors' overall proceeds from the bankruptcy, and more particularly the way these proceeds are distributed to creditors, have clear *ex ante* efficiency benefits.

It is known that pro-debtor systems' main concern is company rescue and employment preservation; the underlying assumption being that the elimination of a bankrupt company is likely to entail substantial social and economic disruptions in the market. From a theoretical point of view, the enforcement of a debtor-friendly system is mainly motivated by an *ex post* social and economic concern. Contrastingly, pro-creditors systems rather seek creditors' protection and the strict application of financial contracts, suggesting that the underlying rationale for a creditor-friendly law is the promotion of *ex ante* effectiveness (Recasens, 2004). Advocates of the introduction of more leniencies towards debtors in existing formal procedures argue that the debtor-friendliness may help avoid abusive liquidations and create good incentives to managers, in particular for specific assets acquisitions. Frouté (2007) underlines that debtors are not the only beneficiaries of such a feature. Indeed, debtor-friendly laws may not be opposed to creditors' interests since both creditors and the economy as a whole could benefit from the debtor friendliness. Frouté's theoretical model shows that the lenient signal sent by judges to debtors allows preventing bad behavior by companies, which may help ultimately improve their own screening behavior. Consequently, the risk born by creditors is reduced, leading *in fine* to the enhancement of the financing conditions of the economy.

Alternatively, Recasens (2003) questions the value of leniency with regard to debtors within bankruptcy procedures. Using previous empirical evidence on the outcomes of reorganization and liquidation procedures in the US, Canada, UK and Sweden, the author concludes that there might be no need for lenient bankruptcy laws which often allow for inefficient reorganizations. Indeed, the comparison of procedures' outcomes measured by the duration and costs of the procedure, the violation of the absolute priority rule[57] and the rate of judgement errors, shows that globally typical pro-creditor procedures do not display worse results than pro-debtor ones. More recently, Biais and Recasens (2011) explain that flexible laws might be optimal only if the proportion of honest judges in the economy is large enough.

### 2.1.2. The bankruptcy decision making

Along with the ongoing debate on the efficiency properties of pro-debtor and pro-creditors bankruptcy systems, stands another one regarding the way bankruptcy should be solved. Two alternative mechanisms can be distinguished in this respect: market-oriented and court-oriented solutions.

Regarding market solutions, an active academic literature has examined the efficiency of cash auctions[58] typical of the Swedish auction bankruptcy system, relatively to structured bargaining procedures[59] as represented by the US Chapter 11 Bankruptcy Code. The design of an efficient and optimal bankruptcy procedure remains however a very complex task, especially since the results in this field are still very different. While some researchers view bargaining-based procedures as the best solution to the failure of market mechanisms – even if costly –, others consider that market-oriented solutions are better suited given the structural problems inherent to the prevailing bargaining-based approaches.

Regarding court-oriented solutions, the most interesting question which is stilly barely explored relates to the criteria courts take into consideration when resolving the case of a bankrupt company. Most of existing evidence in this field falls however under behavioral approaches, ignoring the economics of the task.

[57] According to Weiss (1999, p. 286), the absolute priority rule is violated "when senior claimants are not fully satisfied before junior claimants receive any payment".

[58] In an auction procedure, the company ceases to exist as a legal entity after filing for bankruptcy. The control of the company is transferred to a trustee whose mission is to sell, piecemeal or as a going-concern, company's assets at their highest price.

[59] In a structured bargaining procedure, the company continues to exist as a legal entity upon entering bankruptcy. During the process, company's equity and debt holders negotiate on whether assets should be restructured or liquidated.

#### *2.1.2.1. Alternative procedures to the bargaining based-approach*

The structural problems inherent to the prevailing bargaining based approaches; such found in the Chapter 11 US Bankruptcy Code, have led to much theoretical and empirical research on alternative solutions. The most important critics addressed to structured bargaining procedures relate to the potential conflicts of interests likely to arise due to the diverging objectives of bargaining claimholders. Conflicts of interests are claimed to complicate bankruptcy resolution, increase its cost and lead finally to inefficient continuations (Strömberg, 2000). Bebchuk (1997) adds three major shortcomings which concern assets valuation, value dissipation during the procedure and deviations from contractual priority rights. Alternative mechanisms such as auctions and options approaches have been introduced to try overcoming these limits.

Research on market-oriented mechanisms for bankruptcy resolution starts with the pioneering paper of Roe (1983), followed later by Baird and Jackson (1988) who argue that the bankruptcy reorganization procedure should be eliminated given its poor results. Roe (1983) first suggested that auctions can reduce distributional conflicts of traditional bargaining-based procedures. By selling a small share of company's stock on the market, firm value can be assessed based on market valuation. Firm shares are then distributed to the creditors according to the absolute priority rule. Baird and Jackson (1988) later extended Roe (1983)'s approach so as to include all firm assets in the sale operation. Under the auction regime, which includes features from both reorganization and liquidation procedures, the failing firm can be sold as a going concern or freed from its debts to repay creditors according to the absolute priority rule.

From the empirical literature, Thorburn (2000) emphasizes that auction bankruptcy procedures are particularly suited for small firms' restructuring. Using the outcomes of Chapter 11 reorganization cases as benchmarking, auctions of small Swedish firms are shown to be quicker, to have lower costs and to help avoid deviations from the absolute priority rule. Moreover, market values of going-concern auction recoveries reported show that creditors in going-concern auctions recover practically the same fraction of face value as creditors of larger companies in Chapter 11. Thorburn (2000) argues that the lack of interest conflicts among the claimants involved in auction procedures would explain such results.

Although auctions seem to be a good alternative to bargaining procedures, many doubts have been expressed regarding the suitability of this approach. Auctions have repeatedly been criticized due to their inherent problems, such as: market illiquidity, strategic behavior of bidders (Chopard, 2004; Eckbo and Thorburn, 2009) and fire sales (Strömberg,

2000). From the theoretical literature, Strömberg (2000) challenges the hypothesis of Thorburn (2000) suggesting that their might be no conflicts of interests between claimholders in an auction procedure. Carrying out an empirical validation of his model using Swedish data, Strömberg (2000) underlines that auctions often lead to fire sale liquidations which however can be avoided through sale-back mechanisms[60].

Another alternative to the bargaining procedures is the options approach introduced by Bebchuk (1988) and later advocated by Aghion et al. (1992). Under the options approach, failing firms are involved in an automatic financial restructuring where all claimants receive options with respect to the restructured firm, according to the relative priority of their claims. The division of firm value results then from the participants' own decisions to exercise their option rights. Given this, the effectiveness of an option mechanism does not depend on the correct valuation of the firm by the market, contrarily to auctions (Ben Lakhal, 2011). The contribution of Aghion et al. (1992) to the options approach lies in the "solicitation of bids" mechanism added to the options scheme. At the first stage of the procedure, option rights are allocated to the claimants who can propose both cash and non-cash bids. Second, the "new" shareholders vote to select one of the cash bids or to maintain the company as a going concern.

Options have received relatively little attention from researchers. Dilger (2000) analyses Bebchuk's proposal for bankruptcy reform and concludes that auctions are better suited than options for bankruptcy resolution. First, because the participants do not necessarily need less information as suggested by Bebchuk, and second, because options are biased against junior creditors. Dilger argues that participants involved in options procedure seem to need more information since every single participant has to make his own decisions and therefore his own estimate of firm value. Moreover, the insufficient information may have different consequences for the participants, especially for junior participants who are systematically at a disadvantage since they tend to make mistakes in estimating the value of the bankrupt firm.

#### *2.1.2.2. The reorganization/liquidation decision*

With regards to court-oriented solutions, the Chapter 11 of the US Reorganization Code remains the most explored topic. A significant debate on Chapter 11 can be found in the law and financial economics literature, making this procedure the "most prominent and

[60] Sale-back represents the case where a firm is repurchased by its former owner when put into sale. Managers are by default better informed than outsiders about the true value of the firm; therefore the other potential buyers should worry about overpaying if they win (Povel and Singh, 2006).

controversial feature" of bankruptcy law (Mooradian, 1994; page.1403). The most addressed issue in this field is the reorganization/liquidation dilemma and the costs and benefits associated to both procedures.

A number of economists argue that Chapter 11 is inefficient because it allows bad or inefficient firms to continue in operation, impeding company's assets to be reallocated in more productive employments. In her theoretical model, White (1994) shows that both efficient and inefficient firms are allowed to reorganize under Chapter 11. Advocates of judicial reorganization consider it as the best efficient solution which helps avoid unnecessary liquidations and reduce the social costs of bankruptcy (Cabrillo and Depoorter, 1999; Mooradian, 1994). Cabrillo and Depoorter (1999) argue that liquidation procedure entails losses in company value often sustained by specific physical and human capital assets. Using a model of public debt restructurings within asymmetric information, Mooradian (1994) examines the influence of Chapter 11 bankruptcy protection on investment practices. He shows that costs imposed by Chapter 11 are beneficial, first because they allow avoiding inefficient liquidations and second because they help discouraging the opportunistic behavior of inefficient firms trying to mimic the behavior of efficient ones.

In a bankruptcy procedure, it is essential to evaluate firm's assets and liabilities in the most accurate way, since the decision between the liquidation and reorganization usually depends on this valuation. Finding the right value of failing firms is a real challenge since most bankruptcy codes are very vague when dealing with company value (Cabrillo and Depoorter, 1999). Given the difficulty to predict the value of continuation and liquidation for the same firm, finding the best solution becomes practically impossible (Blazy and Chopard, 2004; White, 1989).

Within the empirical literature on bankruptcy, very little is found about courts' behavior with respect to the reorganization/liquidation decision of bankrupt firms. From a theoretical perspective, the pioneering research in this field lies in the articles of Bullow and Shoven (1978) and White (1981). In Bulow and Shoven's theoretical model, the decision whether to keep a distressed company in business or to liquidate it belongs to both equity holders and the bank lender so as to maximize the total value of the coalition's claim. According to the model, the probability of continuance depends on the value of bondholder claims, the value of cash or free assets and the liquidation value of physical assets. The model is later extended and enhanced by Fisher and Martel (2009) who use data from bankrupt firms in Canada, and show that the relative size of public claims, the legal form of the firm and the asset/debt ratio add significant explanatory power to Bullow and Shoven's model.

Morrison (2007) studies the behavior of American bankruptcy judges using information on all Corporate Chapter 11 filings in Chicago during 1997. His findings show that the continuation bias, commonly ascribed to the Chapter 11 process, is either nonexistent or empirically unimportant, underlying that US commercial courts rarely allow failing firms to remain under their protection when their liquidation would be optimal. In particular, Morrison underlines that companies that are reorganized exhibit symptoms of financial distress, while those that are quickly liquidated display characteristics of economic distress.

Evidence from both inside and outside the US on commercial courts' behavior towards bankrupt companies suggests that judges are sensitive to outside pressures. Using firm level data related to bankruptcy filings in Russian regional commercial courts between 1998 and 1999, Lambert-Mogiliansky et al. (2007) find that reorganizations are more frequent in regions with strong governors, concluding that Russian commercial judges are significantly biased in favor of strong regional governors. Rachlinski et al. (2007) use survey data to analyze the ability of specialized bankruptcy judges to resist to common heuristics that can lead them to make poor decisions. Different hypothetical cases are tested and the results show that specialized judges are vulnerable to outside pressures, although they seem to resist to a number of distractions that would affect ordinary decision-makers. Nonetheless, the authors do not find evidence that specialization has any beneficial effect on judges' behavior towards bankrupt companies.

French courts' arbitration between the reorganization and liquidation of bankrupt companies has received little attention from scholars. To our knowledge, the only exception in this field lies in the paper of Blazy et al. (2011) who try to understand the French dilemma associated with court resolution of bankruptcy. Using firm level data relative to 942 SMEs' bankruptcy filings between 1989 and 2005, the authors explore courts' choice between the liquidation, reorganization and sale, focusing mainly on its consistency with the objectives of the French legal system. Data on firm characteristics such as the cause of default, size, age, legal form and sector affiliation, combined with information on procedure's management suggest that social considerations highly prevail in French court's arbitration between company rescue and liquidation. The sensitivity of courts' arbitration to certain factors, namely the financial and economic health of the company, is however not assessed. Therefore, our analysis aims somehow to complement Blazy et al. (2011)'s research, by addressing the reorganization/liquidation dilemma from a more economic perspective. We particularly focus on the influence of company financial and economic characteristics measured by different balance sheet ratios prior to the triggering of the procedure.

Furthermore, we test for the influence of a set of factors so far not included in previous research. In the following section, we portray the French legal system of bankruptcy and discuss our testable hypotheses.

## 2.2. Legal framework

Since the late 1990s, numerous European countries have amended their bankruptcy codes making them converge more towards debtor friendly systems. The increase of both economic fairness and efficiency through the share of risks between debtors and creditors is often used to justify this convergence (Brouwer, 2006; Frouté, 2007). In most cases, the guiding principle is the replacement of existing liquidation based procedure by a more flexible one able to save activity and employment as much as possible. Typically, a Chapter 11-like formal reorganization procedure is introduced to save companies that are financially distressed but economically viable[61].

When looking back at the several amendments which have reformed the French bankruptcy law since the late 1980s, one can easily realize that the same process has been triggered well before in the country. In its current configuration, French bankruptcy system is typically oriented towards debtors although its latest amendments reveal a growing attention in favor of creditors' protection and involvement in the judicial process. Indeed, its objectives can still be ranked as follows: activity continuation, employment preservation and creditors repayment.

From the First World War till the early 1960s, French bankruptcy law was characterized by a strong harshness towards debtors. The rule was to punish the debtor unable to pay his debts by applying sanctions including assets confiscation and incarceration. The growing attention paid to business rescuing since the mid-1960s motivated the reforms of March 1, 1984 and January 25, 1985 which constitute the basic pillars of the French "modern" bankruptcy system[62]. The legislation of 1985 allows for an observation period aimed to diagnosing the economic and financial situation of the business, during which courts may choose between three possible solutions: a plan for continuing the business, or a plan for

[61] In this matter, the German and English cases are very illustrative. The German "Insolvenzordnung" code which came into force in 1999 has significantly contributed to the gradual approximation of the German bankruptcy system with the American-typical pro-debtor one. This is mainly due to the creation of a novel category of proceedings, the "Insolvenzplan" which offers opportunities of continuation for companies under a U.S.-like style of debtor-in possession model. Besides, the UK "Enterprise Act" of 2002 has profoundly reshaped the country's insolvency law which has long been regarded as an extreme creditor-friendly one. The act was designed so as to facilitate company rescue and to produce better returns for creditors as a whole.

[62] Law No.84-148 regarding the amicable settlement of company difficulties, and law No.85-98 regarding Companies Judicial Reorganization and Liquidation.

its sale if the company is allowed to continue under the initiated Reorganization procedure. Alternatively, a winding-up of the company should be ordered under a Liquidation procedure if none of the first two issues is possible.

Criticisms by creditors and financial institutions towards these laws, especially in light of the upsurge of bankruptcy filings, led to a further law in 1994[63] which preserves company rescue at the forefront and refines different aspects of existing procedures, so as to enhance difficulties' prevention and to accelerate bankruptcy resolution through court-administrated procedures. Law no. 94-475 of 10 June 1994 introduces a clear distinction between two types of collective insolvency proceedings: Judicial Reorganization and Judicial Liquidation procedures. The Reform of 1994 aimed particularly to speed the liquidation of hopelessly insolvent companies by giving the court the possibility to order immediate company liquidation, without necessarily being obliged to go through a court supervised Reorganization procedure.

In 2005, the French insolvency regime was extensively reformed by the law regarding Business Safeguard (the "Reform of 2005")[64]. One of the key features of this reform was the creation of a novel category of insolvency proceedings: the Safeguard procedure (*"Procédure de Sauvegarde"*), somewhat inspired by the US Chapter 11 reorganization procedure, and which enables financially distressed debtors, but not yet insolvent, to restructure under court's supervision. On March 14, 2014, Ordinance No. 2014-326 was adopted by the French parliament, reforming once again the French insolvency law. The main objectives of this reform include, notably, favoring the use of pre-insolvency proceedings and rebalancing the power among debtor and creditors. Incentives to use pre-insolvency tools are enhanced through the prohibition of default clauses, the restriction of administrators' fees, the enlargement of the scope of new money privilege[65] and the introduction of a pre-packed assets sale plan. Increasing the negotiating power of creditors is sought through the facilitation of proof of claims procedure and the possibility to propose an alternative plan to the one prepared by the debtor.

The latest Ordinance of 2014, came into force in July 2014, reveals a potential "turning point" in the path traced by all previous reforms. It actually contributes to re-balancing the rights between insolvent companies and creditors without however any

[63] Law no. 94-475 of 10 June 1994.
[64] Law no. 2005-645 regarding the Safeguarding of Businesses.
[65] Debts arising after the commencement of collective proceedings in France are given priority over debts incurred prior to the cessation of payments. Since the Ordinance of March 2014, the new money injected during the pre-insolvency "Conciliation" procedure can now benefit from this legal privilege.

significant change in the existing bankruptcy procedures. The formal procedures which apply to bankrupt companies in France remain the Reorganization procedure and the Liquidation procedure. The opening of one of these two proceedings can be initiated, either at the debtor request within 45 days of the cessation of payments, or upon a request of the Public Ministry, or even by a creditor assignment. The request must however be validated by a court decision, giving bankruptcy judges the full power to decide whether a company deserves to be saved or should rather be liquidated. The court decision in favor of reorganization or liquidation is in particular the main concern of this Chapter. The main features of French Judicial Reorganization and Judicial Liquidation procedures are provided in Appendix 1.

## 2.3. The decision process: do courts really promote activity continuation and employment preservation?

In light of the above portray of the French bankruptcy regime, it becomes clear that French bankruptcy law provides first of all for business continuation and employment preservation before creditors repayment. Nonetheless, it allows desperately recovering firms to be liquidated quickly in view to avoid assets impairment in lengthy, not worthy processes. Courts' motives for the reorganization relative to liquidation, actually binding their decision-making, remain however unclear. Therefore, our aim in this chapter is to contribute to bring some insights to the criteria of judges' selection between the rescue and the liquidation of failing companies.

### 2.3.1. Employment preservation: the influence of the number of employees and the local unemployment rate

Our first hypothesis states that French courts are biased in favor of employment preservation. To test this hypothesis, we consider two elements. The first one is the number of employees within the failing company, and the second is the unemployment rate of the employment area where company is located.

Given that French bankruptcy code sets clearly employment preservation at the forefront, we expect that larger firms might have higher probabilities of reorganization relative to smaller ones. We however consider that courts concern for employment is not limited to the number of employees of the failing company. In this sense, the decision to keep or to eliminate the firm would also depend on the local context of the firm. The effect of local context is measured using information on the unemployment rate of the firm employment area. A positive relationship is expected between the probability of reorganization and the local unemployment rate suggesting that companies might have higher chances to be

reorganized if the local unemployment rate is high. Previous empirical literature from French, Italian and UK data highlight the sensitivity of employment courts to the economic conditions, mainly those of the labor market (Marinescu, 2003; Ichino et al., 2003; Marinescu, 2011). Using data relative to dismissal cases in Italy, Ichino et al. (2003) show that Italian courts react actively to economic conditions, as they tend to judge more frequently in favor of the dismissed employees when the regional unemployment rate is high. Following these contributions, we test whether French commercial courts are sensitive to the local labor market conditions, assuming that courts might be more lenient towards firms whose local labor market conditions are relatively worse.

**Proposition 1. Larger firms, i.e. firms with more employees, are more likely to be reorganized.**

**Proposition 2. Firms operating in areas with higher unemployment rates are more likely to be saved.**

### 2.3.2. Business continuation or creditors repayment: the influence of firm financial and economic characteristics

Assuming that the decision between the liquidation and reorganization is based upon a valuation of firm's assets and liabilities, we test for the business continuation objective of French bankruptcy law using different propositions based upon the influence of a set of balance sheet ratios. These ratios are used to proxy for different aspects of firm financial and economic situation, mainly debt level, debt structure and economic profitability.

Firm financial literature identifies a number of company-specific measures of profitability, capital structure, cash flow and activity. The most important financial health measures remain debt, liquidity and profitability levels. These measures are commonly used for bankruptcy prediction since the pioneering models of Altman (1968) and Beaver (1966). The same indicators can still however be used to assess the severity of firm's economic and financial difficulties in models downstream to failure. Intuitively, firms with worse economic and financial situations must be classified upon immediate liquidations. In other words, companies with lower recovery perspectives have higher probabilities of liquidation relative to reorganization. This assumption is mainly driven by the orientation of the French legislator in favor of a treatment at the lowest cost for desperately recovering firms.

**Proposition 3. Firms with lower recovery prospects are more likely to be fast liquidated.**

For the evaluation of firm's recovery prospects, we first rely on two measures of firm activity which are the economic profitability and operating margins. In this sense, the lower the level of firm profitability, the more difficult it may be for the firm to restart. That being so, courts may be more in favor of fast liquidation if uncertainty about firm's recovery prospects is high.

**Proposition 3.a. More profitable firms have higher probabilities of reorganization relative to liquidation.**

Within the theory of corporate finance, bankruptcy costs of debt reflect the greater probabilities of financial distress associated with greater levels of debt. As leverage increases, the tax advantage of debt is offset by increasing costs, reflecting greater likelihood of distress (Leland, 1994). With regards to bankruptcy resolution, firm debt level is often interpreted as a proxy for case complexity and/or financial health (Dewaelheyns and Van Hulle, 2009). Therefore, the expected relationship between debt and the probability of reorganization relative to liquidation is negative, meaning that higher leveraged firms are more likely to be liquidated immediately.

**Proposition 3.b. Highly leveraged firms have lower probabilities of reorganization relative to immediate liquidation.**

The expected relationship between debt level and the probability of reorganization presented above should however be viewed in light of debt structure. In this sense, we imply that the severity of firm difficulties is different depending on whether firm debt is mainly financial or commercial. In particular, we assume that higher levels of commercial debt are more likely to reflect economic difficulties contrarily to high levels of financial debt which rather reflect financial difficulties. The higher level of bank and financial debt could even give a positive signal to judges underlying that firms that still manage to borrow from banks are trustworthy or at least are more economically viable.

**Proposition 3.c. Economic distress reflected by higher levels of commercial debt is associated with lower probabilities of reorganization relative to liquidation.**

**Proposition 3.d. Financially distressed firms characterized by higher levels of bank and financial debt have higher probabilities of reorganization relative to liquidation.**

With regards to firm debt structure, we further focus on social and fiscal debt, particularly in light of the bankruptcy law reform of 2005. The Safeguard reform act of 2005 introduced a number of important innovations to the French bankruptcy system. The most interesting one provides relates to the possibility given to bankrupt companies to benefit from

a waiver of their social or fiscal debt. In this line, Article L. 631-19 of Commercial Code allows public creditors to give relief all or part of the outstanding public debt of failing companies within a reorganization procedure. The aim is to enable public creditors to get involved in the bankruptcy resolution process so as to facilitate firm recovery and employment preservation. This mechanism is designed essentially for financial administrations, social security organizations and associations entrusted for the management of unemployment insurance *("Assurance Chômage")*. In connection with the foregoing, if the proportion of social claims in the total amount of firm debt is important, the probability of reorganization is expected to be higher. If firms can benefit from a relief of total or part of social debt, then firm's economic viability is not challenged, implying that reorganization might be the most suited issue.

**Proposition 3.e. Firms with relatively higher amounts of social debt have higher probabilities of reorganization relative to liquidation.**

Regarding firm viability, we further focus on both liquidity and asset specificity dimensions. Since the early univariate analysis of Beaver (1966) mainly based on the cash management dimension of firms, bankruptcy prediction models conventionally include different measures of liquidity. Liquidity ratios measure a firm's ability to pay operating expenses and other short-term or current liabilities. Low liquidity levels which are shown to increase the probability of bankruptcy would indicate either that the company is having financial problems, or that the company is poorly managed. Yet, the expected relationship between liquidity level and the probability of reorganization/liquidation of bankrupt firms is assumed to be dependent on whether courts are interested in reorganization or in fast liquidation. In this sense, the fast liquidating of a firm with low levels of cash would not be very attractive if the court's main concern is creditors' repayment.

If courts are interested in repaying creditors in priority instead of rescuing firm and employment, then the level of both available cash and assets easily convertible into cash would be positively linked to the probability of liquidation. The convertibility of assets into cash measure used is the assets specificity. Our assumption is that the higher the level of specific assets, the lower would be the probability of liquidation because the harder is to raise cash with these assets.

**Proposition 3.f. The impact of cash level on the probability of liquidation relative to reorganization depends on whether courts are interested in saving business and preserving jobs or serving creditors.**

### 2.3.3. Business group affiliation and the boundaries of firm evaluation

The controversy between control and limited liability, personal interest and group interest within parent-subsidiary context and the limits of the modern corporation law have recently been subject to vigorous debate. The corporate scandals of the last twenty years, such as the US Enron and EU Parmalat, rekindled a long and old debate over the issue of business groups' responsibilities. As corporate structures are becoming increasingly fragmented and complex, ascertaining the allocation of responsibility among affiliated corporations becomes challenging. These facts raise concern about the inadequacy of existing jurisdictional rules in addressing modern corporate structures (Schwartz, 2008).

When company is part of a corporate group, using the legal boundary of the firm for analyzing its behavior and organization might not always be appropriate (Cainelli and Iacobucci, 2009). The legal autonomy accorded to each member of a corporate group allows them to implement a mix of control and autonomy so that they can manage the risks associated with their investments and activities. For this reason, analyzing the firm without any consideration for its affiliation to a corporate group raises questions about the appropriateness of such approach.

The emergence of group structures is often linked to different reasons. These range from management efficiency to tax planning, and include compliance with national legislations and/or historical factors (Peter, 2006). Given this, business groups have previously been studied from two main perspectives: they are perceived i) as the result of market imperfections and failure; ii) as a financial device (Cainelli and Iacobucci, 2009). An extensive literature has been devoted to the business groups topic with a particular emphasize on the link between group affiliation and firm performance. But, much ambiguity remains with respect to the influence of group affiliation on firm performance (Bamiatzi et al., 2014). Some researchers underline positive effects on performance, especially for firms operating in emerging economies where markets are inefficient. Others strive to bring out their 'parasitic' nature raising concerns for their disruptive impact on firm performance through shareholders expropriation mechanisms. In its current configuration, French bankruptcy law does not provide for any special treatment for business groups. In accordance with the principle of separate personality and limited liability, each bankrupt company is treated as a separate entity solely liable for its own debts with its own assets. Recently however, the French legislation made a step forward towards the Anglo-Saxon "extended liability" approach, introducing exceptions to the principle of separate corporate personality. Articles L.233-5-1 of Commercial Code and L.512-17 of Environmental Law introduced several provisions

extending the liability of parent companies for the social and environmental debts of their affiliates. To extend the liability of affiliated companies to their parent company, at least one of two conditions need to be met: a fictitious company *("Fictivité de l'entreprise"),* or a merger of assets and liabilities between the affiliate and its parent company *("Confusion des patrimoines")* (Article L 621-6 of Commercial Code).

In connection with both the legal features of the French bankruptcy regime as well as the previous literature on the link between group affiliation and firm performance, our main concern in this chapter is to test for the influence of different aspects related to company affiliation to a business group on the probability of reorganization attempt. From the existing literature on business group affiliation and its influence on bankruptcy, it is commonly agreed that firms affiliated to business groups have lower risk of bankruptcy than their stand-alone counterparts. Indeed, affiliated firms are known to benefit from financial support from their group, through advances and credits, especially in case of transitional cash difficulties. Moreover, group membership can result in greater ease for affiliated to extend the terms of financing, renew their credits or reschedule their debts thanks to their ability to raise group equity guarantees (Nahmias, 2007). That said, we expect that group affiliated firms have higher chances to attempt reorganization than stand-alone firms.

**Proposition 4. Firms affiliated to business groups have higher probabilities of reorganization relative to liquidation than stand-alone firms.**

Beyond the attitude of commercial courts towards business groups, compared to stand-alone firms, we aim to explore the influence of business groups' characteristics on the probability of reorganization for group affiliated firms. In this regard, we focus on three elements: 1) group origin, 2) control of parent company over the bankrupt firm, and 3) the level of intragroup debt of bankrupt firms. In other words, we test whether courts' decision to reorganize an affiliated firm is moderated by business groups' characteristics.

The sensitivity of courts' decision to group characteristics is first tested using information on group origin, proxied by the origin of the parent company. Research on multinationals often underlines their 'footloose' character given their ability to shift production facilities of their struggling affiliates from one country to another (Görg and Strobl, 2003; Caves, 1996). Given this, we expect that French courts might be more willing to save firms affiliated to domestic business groups.

**Proposition 4.a. Firms affiliated to French business groups have higher chances to reorganize than firms affiliated to foreign business groups.**

Researchers focusing on the 'parasitic nature' of business groups often insist on the disruptive role of controlling shareholders. In this respect, business groups are described as vehicles for minority shareholders expropriation by controlling shareholders (Khanna and Yafeh, 2007). The transfer of resources from minority shareholders to controlling shareholders, referred to as "Tunneling" (Johnson et al., 2000; Bertrand et al., 2002), is shown to compromise the performance and activity continuation of affiliated firms. Conflicts of interests between minority and controlling shareholders inside business groups is sustained by the discrepancies between ownership and control, very common within such structures (Arrifin, 2014). In line with the foregoing, we expect that firms mainly controlled by their parent company have lower chances to attempt reorganization for two reasons, both raising doubts of commercial courts regarding the potential of recovery for the bankrupt affiliate. First, if the bankruptcy of the firm is deliberate and satisfies the desire of the group to reallocate the assets of the struggling firm towards more productive investments within the group, than it is expected that courts might be less encouraged to provide a second chance for the bankrupt affiliate. Deliberate bankruptcy within business groups is not surprising and is often put forward given the limited liability principle likely to give rise to moral hazard problems within affiliated firms (Bianco and Nicodano, 2006). Second, we argue that, even if the bankruptcy of the controlled firm is not volunteer, courts may have doubts about the group's will to later support the reorganizing affiliate. If the parent company did not succeed in preventing its affiliate from going bankrupt, this would either mean that the group never had the desire to save it, or did not have the financial capacities to do it.

**Proposition 4.b. Affiliated firms controlled directly by the parent company might have lower probabilities of reorganization.**

Finally, we focus on the amount of intragroup debt held by affiliated firms filing for bankruptcy. Literature from internal capital markets insists on the importance of liquidity smoothing practices as a tool for supporting financially distressed affiliated firms (Gopalan et al., 2007). In this respect, Gopalan et al. (2007) underline that intragroup financial commitments are very common and are used to prevent affiliated firms from going bankrupt. Therefore, it can be argued that the more an affiliate receives financial support from its group, the lower is its probability of bankruptcy, reflecting this way the group's willingness to avoid its collapse. Given this, we consider that higher amounts of intragroup debt can be interpreted as high cohesion within a group. Therefore, we expect in the following that courts might be more likely to save firms operating inside highly cohesive groups, more likely to be involved in the preservation of their struggling affiliates.

**Proposition 4.c. Firms with higher level of intragroup debt have more chances to reorganize.**

## 2.4. Data and econometric analysis

### 2.4.1. Data

Our sample includes 19,814 French firms under a collective procedure between the 1st of January 2006 and the 31st of December 2012, excluding the year 2008[66]. Data is drawn from all French jurisdictions, as recorded in BODACC (*"Bulletin Officiel des Annonces Civiles et Commerciales"*) database which provides extensive information on procedures opening in France. For each firm, financial data including information on group affiliation and group characteristics for the year prior to the filing are obtained from Diane database. Data is completed with information on unemployment rate of firms' employment zones provided by the National Institute of Statistics and Economic Studies (INSEE). INSEE defines an employment zone *("Zone d'emploi")* as a geographical area within which most of the labor force lives and works and in which establishments can find the main part of the labor force necessary to occupy the offered jobs. 304 employment areas are indeed identified based on a division of the French territory using information on the flows of commuting trips (i.e. flows of workers' movements from residence to work)[67].

We follow Blazy et al. (2011) and exclude all financial firms which depend on a specific bankruptcy code. We further exclude firms without employees and those for which the number of employees is unknown since one of our main concerns in this chapter is the employment preservation dilemma of the French bankruptcy regime. For each bankruptcy filing, we gather data about firms' financial characteristics including information on industry affiliation, date of establishment and geographic localization. Variables derived from the collected data are chosen in accordance with previous research and with consideration for different aspects specific to the French bankruptcy regime. The definitions of these variables are given in Appendix 2-2, Table 2-7.

### 2.4.2. Summary statistics and sample structure

Reorganization openings represent 54% of the sample, the other part being immediate liquidations. The time distribution of the sample shows a disparity between the numbers of procedures opening, which is relatively higher after 2009. The sample covers almost all business sectors in France. The sector classification used is drawn from the broader level of

[66] Data for the year 2008 are not available.
[67] Employment zones are identified based on the classification of 2010.

the French classification of activities proposed by INSEE (See Appendix 2, Table 2-9 for details). The sample mainly consists of very small firms and SMEs, contrarily to existing studies which are usually focused on very large firms, especially from the United States. 27% of the sample firms are affiliated to business groups, and 21% of them are domestic groups (See Appendix 2-2, Table 2-10).

**Table 2-1 Time structure of the sample**

| | Stand-alone | | Group affiliate | | Total | | |
|---|---|---|---|---|---|---|---|
| Year | Reorganization | Liquidation | Reorganization | Liquidation | Reorganization | Liquidation | Total |
| 2006 | 759 | 491 | 341 | 154 | 1,100 | 645 | 1,745 |
| 2007 | 175 | 320 | 98 | 112 | 273 | 432 | 705 |
| 2009 | 807 | 864 | 423 | 293 | 1,230 | 1,157 | 2,387 |
| 2010 | 2,636 | 2,164 | 1,358 | 611 | 3,994 | 2,775 | 6,769 |
| 2011 | 1,895 | 2,284 | 821 | 433 | 2,716 | 2,717 | 5,433 |
| 2012 | 936 | 1,126 | 471 | 242 | 1,407 | 1,368 | 2,775 |
| Total | 7,208 | 7,249 | 3,512 | 1,845 | 10,720 | 9,094 | 19,814 |

Note: This table represents the time series distribution of our data by the year of cessation and payments for both stand-alone and group affiliated firms.

Regarding firm financial and economic characteristics, significant differences exist between reorganizations and immediate liquidations. Firms immediately liquidated are younger than firms attempting reorganization. Both reorganized and liquidated firms exhibit very bad economic performance with negative average values of profitability and operating margins which however seem to be worse for liquidated companies. Firms liquidated immediately display, on average, higher levels of liquidity and debt relative to total assets than those that attempt reorganization. The average value of liquidity is 0.64 for firms liquidated quickly, against 0.51 for reorganizing firms. Besides, leverage ratio equals 1.33 for liquidated firms against 1.23 for reorganized ones. The relative weight of different debt classes also shows discrepancies between the two categories of firms. In particular, firms immediately liquidated exhibit on average lower levels of both financial and social debt with mean values of 0.11 and 0.18 respectively against 0.16 and 0.22 respectively for those attempting reorganization. The relative weight of trade debt does not show significant differences between the two categories of firms. This is also true for asset specificity measure. Finally, table 2-2 suggests that firms allowed to attempt reorganization are located in areas with higher unemployment rates than liquidated ones.

**Table 2-2 Firm financial and economic characteristics**

| Variable | | Reorganization | Liquidation | Total | Variable | | Reorganization | Liquidation | Total |
|---|---|---|---|---|---|---|---|---|---|
| Age | Mean | 2.17 | 1.92 | 2.05 | Social debt | Mean | 0.22 | 0.18 | 0.20 |
| | Median | 2.14 | 1.86 | 2.00 | | Median | 0.17 | 0.09 | 0.14 |
| | SD | 0.85 | 0.80 | 0.84 | | SD | 0.21 | 0.23 | 0.22 |
| Leverage | Mean | 1.21 | 1.33 | 1.26 | Profitability | Mean | -0.19 | -0.26 | -0.22 |
| | Median | 0.98 | 0.96 | 0.97 | | Median | -0.06 | -0.07 | -0.07 |
| | SD | 0.94 | 2.10 | 1.58 | | SD | 0.55 | 1.50 | 1.10 |
| Liquidity | Mean | 0.51 | 0.64 | 0.57 | Operating Marg | Mean | -0.14 | -0.22 | -0.17 |
| | Median | 0.43 | 0.51 | 0.46 | | Median | -0.03 | -0.03 | -0.03 |
| | SD | 0.43 | 0.66 | 0.55 | | SD | 0.50 | 1.43 | 1.04 |
| Financial debt | Mean | 0.16 | 0.11 | 0.14 | Asset Spec | Mean | 0.14 | 0.12 | 0.13 |
| | Median | 0.08 | 0.00 | 0.02 | | Median | 0.08 | 0.06 | 0.07 |
| | SD | 0.20 | 0.18 | 0.19 | | SD | 0.16 | 0.16 | 0.16 |
| Trade pay. | Mean | 0.27 | 0.28 | 0.27 | Unemp Rate | Mean | 9.34 | 9.22 | 9.28 |
| | Median | 0.24 | 0.24 | 0.24 | | Median | 9.00 | 8.80 | 8.90 |
| | SD | 0.20 | 0.22 | 0.21 | | SD | 1.99 | 1.92 | 1.96 |

Note: Table 2-2 displays summary statistics for a sample of 19,814 firms, distinguishing firms in a reorganization attempt and firms directly liquidated.

### 2.4.3. Model

To assess the determinants of the decision of reorganization or liquidation of failing firms, we apply a binary Logit model which classifies firms into two categories: i) reorganization attempts, and ii) liquidations. Logit model has been intensively used for bankruptcy classification since the pioneering paper of Ohlson (1980).

We consider a binomial regression where the response variable $Y$ follows a Bernoulli distribution. Variable $Y$ takes two values: 1 if the company is allowed to attempt reorganization, and 0 if company is directly liquidated.

$$P(Y = 1|\boldsymbol{X} = x) = F'(x'\beta)$$

where $F$ is a strictly increasing cumulative distribution function, $\boldsymbol{X} \in \mathbb{R}^{\boldsymbol{p}}$ is a vector of predictor variables and $\boldsymbol{\beta} \in \mathbb{R}^{\boldsymbol{p}}$ is the vector of unknown regression coefficients. The probability of the event of reorganization $(Y = 1)$ for a given company is given by:

$$Pr(Y = 1|X) = \frac{e^{\beta_0 + X\beta}}{1 + e^{(\beta_0 + X\beta)}} = \frac{1}{1 + e^{-(\beta_0 + X\beta)}}$$

## 2.5. Results

Table 2-3 below provides the logistic regression results of different model specifications applied to the entire sample. In all specifications, we control for firm's sector affiliation and geographic localization. We also include a dummy variable which controls for

the stage of the economy. Variable *Before 2009* exhibits a significant positive coefficient, implying that the probability of reorganization relative to immediate liquidation is higher in more stable periods. This means either that judges are more lenient in more stable macroeconomic conditions, or that companies which filed for bankruptcy after 2009 had a worse situation, leading judges to choose immediate liquidation as the best solution. In a recent paper, Kremp et al. (2013) show that the economic downturn of 2008-2009 had a significant impact on French companies, leading to an increase in the number of bankruptcy filings attributable to the crisis.

**Table 2-3 Logit estimations of the choice between Reorganization and Liquidation for the whole sample**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| VARIABLES | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef |
| Before 2009 | 0.14*** | 0.14*** | 0.14*** | 0.15*** | 0.15*** | 0.15*** | 0.13*** | 0.12** |
| | (0.046) | (0.046) | (0.046) | (0.047) | (0.047) | (0.047) | (0.047) | (0.047) |
| AGE | 0.20*** | 0.20*** | 0.23*** | 0.22*** | 0.22*** | 0.21*** | 0.19*** | 0.19*** |
| | (0.020) | (0.020) | (0.020) | (0.020) | (0.021) | (0.020) | (0.020) | (0.020) |
| SME | 1.35*** | 1.35*** | 1.40*** | 1.32*** | 1.32*** | 1.33*** | 1.26*** | 1.29*** |
| | (0.044) | (0.044) | (0.045) | (0.045) | (0.046) | (0.045) | (0.046) | (0.046) |
| Large | 2.36*** | 2.36*** | 2.30*** | 2.29*** | 2.29*** | 2.29*** | 2.15*** | 2.33*** |
| | (0.481) | (0.481) | (0.483) | (0.485) | (0.485) | (0.485) | (0.482) | (0.486) |
| UNEMP Rate | | 0.01 | 0.02* | 0.02** | 0.02*** | 0.02*** | 0.03*** | 0.02*** |
| | | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) | (0.009) |
| LIQUDITY | | | -0.71*** | -0.66*** | -0.67*** | -0.67*** | -0.67*** | -0.67*** |
| | | | (0.049) | (0.051) | (0.053) | (0.051) | (0.052) | (0.052) |
| LEVERAGE | | | -0.12*** | -0.10*** | -0.08*** | -0.06*** | -0.06*** | -0.06*** |
| | | | (0.016) | (0.015) | (0.021) | (0.014) | (0.014) | (0.014) |
| FINANC DEBT | | | | 0.96*** | 0.94*** | 0.94*** | 0.90*** | 0.942*** |
| | | | | (0.088) | (0.088) | (0.088) | (0.088) | (0.088) |
| TRADE PAY | | | | 0.04 | 0.04 | | | |
| | | | | (0.079) | (0.079) | | | |
| SOC & FISC DEBT | | | | 0.39*** | 0.41*** | 0.41*** | 0.41*** | 0.39*** |
| | | | | (0.080) | (0.080) | (0.080) | (0.080) | (0.080) |
| PROFITABILITY | | | | | 0.09** | | | |
| | | | | | (0.041) | | | |
| ASSETS SPEC | | | | | 0.10 | | | |
| | | | | | (0.106) | | | |
| OPER MARGIN | | | | | | 0.15*** | 0.15*** | 0.15*** |
| | | | | | | (0.036) | (0.035) | (0.035) |
| GROUP MEMB | | | | | | | 0.45*** | 0.46*** |
| | | | | | | | (0.037) | (0.036) |
| Pre-bank Proc | | | | | | | | -0.66*** |
| | | | | | | | | (0.096) |
| Constant | -0.20 | -0.30 | 0.08 | -0.23 | -0.26 | -0.25 | -0.29 | -0.31 |
| | (0.255) | (0.265) | (0.270) | (0.272) | (0.276) | (0.271) | (0.274) | (0.274) |
| Sector | YES | YES | YES | YES | YES | YES | YES | YES |
| Region | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 19,814 | 19,814 | 19,814 | 19,814 | 19,814 | 19,814 | 19,814 | 19,814 |
| Pseudo R-squared | 0.0837 | 0.0837 | 0.0980 | 0.1042 | 0.1049 | 0.1052 | 0.1107 | 0.1125 |
| LL | -12541.644 | -12523.729 | -12328.004 | -12243.464 | -12233.02 | -12229.958 | -12154.32 | -12129.864 |

Note: Table 2-3 displays the estimated coefficients of different specifications of the Logit model estimating the probabilities of reorganization for a sample of 19,814 firms filing for bankruptcy between 2006 and 2012.

In the first two columns, we focus on the employment preservation concern of French bankruptcy judges. Firm size exhibits a positive sign which remains very significant throughout all estimations. In contrast, local unemployment rate shows no significant influence but becomes positive and very significant once we control for firm economic and

financial characteristics (cf. columns 4 to 8). Both results suggest that bankruptcy courts play an active role in saving jobs. More precisely, firms are shown to benefit from higher chances of reorganization if they have more than 10 employees and are located in areas with high unemployment rates.

Firm age and the probability of reorganization relative to liquidation are also positively linked, implying that older companies have better chances to attempt reorganization than younger ones. The link between firm age and the probability of bankruptcy has been repeatedly highlighted in previous studies. Stinchcombe (1965) first underlined the higher risk of mortality among young organizations. The difficulty to implement new rules and routines (Stinchcombe, 1965), the low level of capitalization (Lussier, 1995), and the difficulty to access to financial resources (Thornhill and Amit, 2003) are often used to explain this age-dependent pattern. The higher probabilities of reorganization associated with old firms could therefore reflect the willingness of judges to give a chance to attempt reorganization to firms which intrinsically might have higher potential of recovery.

The estimated coefficients for *Liquidity* and *Leverage* ratios are negative and significant across all specifications. Studies from bankruptcy prediction literature commonly agree on the relevance of profitability, liquidity and leverage measures for discriminating between failing and non-failing firms. Altman (1968) first showed that firms with higher probabilities of bankruptcy suffer from cash flow problems and high leverage. Here, we find that firms with more cash and debt have higher probabilities of quick liquidation, which would mean that liquidation is more likely to be chosen when firm liquidation value is higher. We argue that the liquidation value of a firm is all the more high if the amount of available cash as well as the amount of assets easily convertible to cash, are high. The estimated coefficient of *Liquidity* suggests that French judges are less likely to allow firms with higher liquidity levels to reorganize. Besides, if failing firms with higher amounts of debt relative to assets are less likely to benefit from a reorganization attempt, this would mean that courts are not motivated in keeping on the market firms which are more likely financially distressed. Debt structure variables, however, further show that the probability of reorganization is positively linked with both the relative amount of financial and social debt. As argued in proposition 3.e, the possibility for firms in reorganization to benefit from a relief of total or part of their social debt might explain the observed outcome.

Results from Table 2-3 suggest additionally that the decision of reorganization/liquidation is also determined by the firm's economic performance as suggested by the coefficients of *Operating Marg* and *Profitability* which both are shown to

enhance the probability of reorganization relative to liquidation. Firms with higher economic performance measured by the operating margins and the economic profitability are more likely to benefit from a reorganization attempt. This result validates our assumption that the continuation and employment preservation concern of French courts still depends on firm's economic viability.

The seventh specification of the model highlights the influence of group affiliation on the probability of firm reorganization. The coefficient of *GROUP MEMB* variable is positive and significant at 1%, suggesting that firms affiliated to business groups are more likely to attempt reorganization, compared to stand-alone firms. We conclude that courts are more lenient towards firms affiliated to business groups. In view to better understand this result, we will further explore in Table 2-4 the influence of group characteristics on the probability of reorganization for affiliated firms.

Finally, variable *Pre-bank Proc* which indicates whether firm has been engaged in a pre-bankruptcy procedure of *Conciliation* or *Safeguard*[68] before going bankrupt shows that firms which has already been subject to pre-bankruptcy procedure are less likely to attempt reorganization. Such behavior might reflect judges' reluctance to give a second chance to firms that failed to convert the first chance into a success.

Logit estimations applied to only group affiliated firms are shown in Table 2-4 below. With regards to group characteristics, both group origin, measured by the variable *Domestic GR*, and firm's intragroup indebtedness towards the group, measured by the variable *Group debt* lead to significant results. The positive coefficient estimated for group origin implies that firms belonging to French business groups have significantly higher probabilities of reorganization than firms belonging to foreign business groups. In addition, the negative sign of *Group debt*, coefficient suggests that firms with higher levels of debt to their group are less likely to be reorganized. As expected, judges seem to be more lenient towards affiliates of domestic firms. Nonetheless, contrarily to our expectations, the negative coefficient of the variable *Group debt* variable means that judges are less likely to allow firms to reorganization if they hold higher amounts of debt to their groups. In this respect, we can interpret this behavior as courts' reaction to their doubts about the group's ability to later bring support to

[68] Conciliation and Safeguard are both pre-insolvency proceedings designed only for debtors who are not insolvent yet. C*onciliation* applies to debtors facing actual or foreseeable legal, economic or financial difficulties, and are either not insolvent yet, or are in such situation for not more than 45 days. It is conducted by a court-appointed practitioner whose mission is to help reach an agreement with its creditors. The Safeguard procedure is very similar to the US Chapter 11. It can only be activated on the initiative of the debtor when "there exists a serious likelihood of saving the business", in view to "facilitate the reorganization of the business and allow the maintenance of jobs" (Law No. 2005-845 of July 26, 2005)

the failing firm during the reorganization process. Indeed, one can imagine that if bankruptcy was unavoidable for the firm despite the financial support provided by its group, this leads to raise doubts about the group's power to save the bankrupt firm at a later date.

**Table 2-4 Logit estimations of the probability of reorganization for group affiliated firms**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef |
| Before 2009 | -0.01 | 0.03 | -0.02 | -0.02 | 0.02 | -0.004 |
| | (0.090) | (0.091) | (0.090) | (0.091) | (0.091) | (0.091) |
| Domestic GR | | 0.32*** | | | 0.33*** | 0.36*** |
| | | (0.090) | | | (0.091) | (0.091) |
| Major Cont. | | | -0.16 | | -0.14 | -0.158 |
| | | | (0.112) | | (0.113) | (0.113) |
| GROUP debt | | | | -0.46*** | -0.52*** | -0.52*** |
| | | | | (0.153) | (0.161) | (0.162) |
| Age | 0.16*** | 0.14*** | 0.15*** | 0.16*** | 0.15*** | 0.15*** |
| | (0.041) | (0.042) | (0.041) | (0.041) | (0.042) | (0.042) |
| SME | 1.26*** | 1.19*** | 1.25*** | 1.25*** | 1.18*** | 1.22*** |
| | (0.081) | (0.083) | (0.081) | (0.081) | (0.083) | (0.083) |
| Large | 2.36*** | 2.16*** | 2.28*** | 2.34*** | 2.07*** | 2.14*** |
| | (0.746) | (0.745) | (0.750) | (0.743) | (0.747) | (0.750) |
| Unemp Rate | 0.03 | 0.03 | 0.03* | 0.03* | 0.03* | 0.03* |
| | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) | (0.018) |
| Liquidity | -0.81*** | -0.84*** | -0.82*** | -0.84*** | -0.87*** | -0.86*** |
| | (0.096) | (0.097) | (0.096) | (0.096) | (0.096) | (0.096) |
| Leverage | -0.08** | -0.09** | -0.08** | -0.05* | -0.06* | -0.06** |
| | (0.039) | (0.041) | (0.039) | (0.030) | (0.031) | (0.031) |
| Financial debt | 1.25*** | 1.25*** | 1.26*** | 1.24*** | 1.24*** | 1.32*** |
| | (0.192) | (0.191) | (0.192) | (0.192) | (0.192) | (0.192) |
| Social debt | 0.51*** | 0.54*** | 0.51*** | 0.50*** | 0.55*** | 0.52*** |
| | (0.179) | (0.179) | (0.179) | (0.180) | (0.180) | (0.180) |
| Operating Marg | 0.22*** | 0.22*** | 0.22*** | 0.22*** | 0.23*** | 0.23*** |
| | (0.063) | (0.065) | (0.064) | (0.060) | (0.062) | (0.062) |
| Pre-bank Proc | | | | | | -0.78*** |
| | | | | | | (0.159) |
| Constant | -0.33 | -0.33 | -0.17 | -0.31 | -0.17 | -0.21 |
| | (0.566) | (0.574) | (0.576) | (0.568) | (0.586) | (0.590) |
| Sector | YES | YES | YES | YES | YES | YES |
| Region | YES | YES | YES | YES | YES | YES |
| Observations | 5,357 | 5,357 | 5,357 | 5,357 | 5,357 | 5,.357 |
| Pseudo R-squared | 0.1189 | 0.1207 | 0.1192 | 0.1207 | 0.1231 | 0.1267 |
| LL | -3039.4351 | -3033.0747 | -3038.4381 | -3032.2084 | -3023.9873 | - 3011.6343 |

Note: Table 2-3 displays the estimated coefficients of different specifications of the Logit model estimating the influence of firm and group characteristics on the probability of reorganization for a sample of 5,357 affiliated firms filing for bankruptcy between 2006 and 2012.

Results in terms of firm financial and economic characteristics are globally consistent with the previous ones with however some differences, notably for variables *Before 2009, Unemp Rate* and *Leverage.* More specifically, it is shown that younger and larger affiliated companies benefit from higher probabilities of bankruptcy. They are also more likely to benefit from the chance to attempt reorganization if they exhibit better economic performance and have relatively higher levels of both financial and social debt. The local concern of judges regarding the unemployment rate of firm employment area is however not confirmed since *Unemp Rate* variable exhibits a positive, but marginally significant, coefficient. This means

that courts' decision to save or to liquidate an affiliated firm disregards the characteristics of firm's local environment. It also disregards the macroeconomic conditions since courts' decisions seem not to be influenced by the date of bankruptcy filing. In this respect, the variable *Before 2009* is not significant across all estimations. And finally, as found previously, firms filing for bankruptcy after conversion of a pre-bankruptcy procedure have lower chances to attempt reorganization.

## 2.6. Additional tests

In order to test the stability of our results, further estimations are conducted across the sample at different cutoffs according to different criteria related to macroeconomic conditions, geographic localization, firm size and sector affiliation. The first set of estimations (cf. Table 2-5) applies to both group affiliated and stand-alone firms, and the second one (cf. Table 2-6) applies only to group affiliated firms.

Since the economic downturn of 2009, France registers annually around 60,000 bankruptcies, mainly immediate liquidations. In 2009, the number of bankruptcy openings reached 63,000 procedures and was the highest since the historical peak of bankruptcies in 1993. The first two columns of Table 2-5 display the specifications estimating the probabilities of reorganization for firms bankrupt before and after the economic downturn of 2009. The results suggest that firm financial and economic characteristics have more explanatory power in less stable macroeconomic periods. Indeed, some variables measuring firm financial structure and economic performance are less or no significant before 2009, namely firm age, share of social debt and operating margins. Besides, the influence of local unemployment remains significant only after 2009. The main insight one can gain from all these results is that courts' judgments are more rigorously based on firm financial and economic characteristics in unstable periods. In addition, judges' concern for local environment characteristics is more pronounced in unstable periods. Both results may reflect a more rigid behavior of French courts during unstable economic conditions, towards both failing firms and their local environment. Unsurprisingly, the relative weight of social debt is more significant after 2009 given that the recommendation relating to the reduction of social and fiscal debt was introduced in the Safeguard reform act of 2005 only. *GROUP MEMB* variable is significantly positive before and after 2009, showing that judges are lenient towards firms affiliated to business groups, relative to stand alone ones, regardless of the macroeconomic conditions.

**Table 2-5 Logit estimations of the probability of reorganization for the entire sample according to the stage of the economy, firm localization and firm size**

| | BEFORE 2009 | AFTER 2009 | G.Paris.Region | OUT.GPR | VERY SMALL | SME |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| VARIABLES | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef |
| Before 2009 | | | 0.19* | 0.11** | 0.08* | 0.43*** |
| | | | (0.108) | (0.052) | (0.050) | (0.159) |
| Age | 0.07 | 0.21*** | 0.23*** | 0.19*** | 0.13*** | 0.46*** |
| | (0.066) | (0.021) | (0.049) | (0.022) | (0.022) | (0.049) |
| SME | 1.83*** | 1.24*** | 0.93*** | 1.39*** | | |
| | (0.164) | (0.048) | (0.094) | (0.054) | | |
| Large | 1.66 | 2.47*** | 2.17*** | 2.36*** | | |
| | (1.057) | (0.538) | (0.627) | (0.747) | | |
| Unemp Rate | 0.01 | 0.03*** | -0.05 | 0.04*** | 0.03*** | 0.01 |
| | (0.026) | (0.010) | (0.036) | (0.008) | (0.010) | (0.024) |
| Liquidity | -0.59*** | -0.68*** | -0.59*** | -0.69*** | -0.67*** | -0.74*** |
| | (0.146) | (0.055) | (0.126) | (0.056) | (0.057) | (0.137) |
| Leverage | -0.13*** | -0.05*** | -0.04 | -0.06*** | -0.05*** | -0.18** |
| | (0.047) | (0.014) | (0.040) | (0.015) | (0.014) | (0.075) |
| Financial debt | 1.008*** | 0.92*** | 1.34*** | 0.81*** | 0.91*** | 0.94*** |
| | (0.264) | (0.094) | (0.247) | (0.093) | (0.093) | (0.294) |
| Social debt | 0.19 | 0.43*** | 0.14 | 0.45*** | 0.56*** | -0.28 |
| | (0.227) | (0.086) | (0.168) | (0.091) | (0.087) | (0.214) |
| Operating Marg | 0.03 | 0.17*** | 0.35*** | 0.11*** | 0.16*** | -0.00 |
| | (0.089) | (0.031) | (0.076) | (0.038) | (0.039) | (0.106) |
| GROUP MEMB | 0.24** | 0.49*** | 0.47*** | 0.45*** | 0.47*** | 0.37*** |
| | (0.101) | (0.039) | (0.092) | (0.040) | (0.041) | (0.086) |
| Pre-bank Proc | -0.94** | -0.65*** | 0.41 | -0.79*** | -0.64 | -0.75*** |
| | (0.532) | (0.098) | (0.269) | (0.103) | (0.125) | (0.164) |
| Constant | 0.67 | -0.38 | 0.73 | 0.19 | -0.09 | -0.13 |
| | (1.112) | (0.285) | (1.054) | (0.280) | (0.290) | (0.702) |
| SECTOR | YES | YES | YES | YES | YES | YES |
| REGION | YES | YES | | | YES | YES |
| Observations | 2,450 | 17,364 | 3,301 | 16,513 | 15,569 | 4,195 |
| Pseudo R-squared | 0.1158 | 0.1143 | 0.1023 | 0.1050 | 0.0555 | 0.1184 |
| LL | -1485.7089 | -10615.15 | -2003.3013 | -10107.77 | -10169.917 | -1886.7368 |

Note: Table 2-5 displays the results of different specifications of the Logit model estimating the probabilities of reorganization for a sample of 19,817 firms, partitioned by three variables accounting respectively for the year of the procedure opening, the location of the firm and its size.

Statistics relative to the French economy published by the National Institute of Statistics and Economic Studies (INSEE) show that the Greater Paris Region (*Ile-de-France*) contributes to near 30% of the total GDP in France. Therefore, in Table 2-5, we test whether any differences exists between judges' behavior in the Greater Paris Region and the other regions, given the economic importance of the former. In columns 3 and 4 of Table 2-5, we estimate the probabilities of reorganization relative to liquidation inside the Greater Paris Region (GPR) and outside. We find no significant difference in courts' behavior regarding firms' non-financial characteristics, namely age, size and group membership. This means that firm age and size, as well as affiliation to a business group enhance the probability of reorganization relative to liquidation. However, estimation results displayed above show significant differences regarding firm's financial characteristics. In particular, the amount of total debt as well as the ratio social debt to total debt has no significant influence on courts'

decision. In addition, judges seem to disregard both macroeconomic and local conditions in GPR, contrarily to outside, since the estimated coefficients of *Before 2009* and *Unemp Rate* are practically non-significant from a statistical point of view. Finally, we also show that only in the GPR, pre-bankruptcy procedures have no significant influence on the judicial outcome. Taken together, these results lead us to question whether judges in the GPR are more lenient relatively to judges operating elsewhere. Could the high numbers of requests of collective procedure openings be the source of the likely leniency of bankruptcy courts revealed by our results?

For further investigation of the judicial outcome of bankruptcy opening requests within French courts, we estimate the same model specifications on both stand-alone and group affiliated firms, using criteria of firm size. Given the clear emphasize of French bankruptcy law in favor of employment preservation, estimations displayed in columns 5 and 6 aim to detect the existence of any potential difference in courts' behavior according to the number of job losses that firm exit is likely to entail. Our previous estimations showed that firm size, measured by the number of employees, significantly increases the probability of reorganization relative to liquidation, implying that French courts are actually concerned by saving jobs. Columns 5 and 6 show estimations applied to very small and SME respectively[69]. The regression coefficients globally imply that group affiliation is positively linked to the probability of reorganization for both very small and SME. However, the coefficients of firm performance measures exhibit lower significance for SME than for very small firms, suggesting that the arbitration between reorganization and liquidation might be less strict regarding larger firms, which once again evidences the employment preservation concern of French courts. Finally, *Social debt* variable exhibits a positive and significant coefficient for smaller firms, but no significance for larger firms. If the positive sign is actually linked with the chance given to firms to benefit from a reduction of their social debts, then the higher significance of the social debt for smaller firms is logical. Indeed, the relative amount of social debt might be higher for firms with more employees.

The last Table displayed below presents the same estimations as those described above, but applied this time only to group affiliated firms. The results of Table 2-6 globally show the same findings as for the stand-alone and group affiliated considered together. Briefly, we find that financial and economic characteristics of group affiliated firms are less influent in more stable macroeconomic conditions. Group characteristics are more significant

[69] Large firms are excluded given their relative poor number.

outside the GPR and less significant for larger firms. Similarly to what previously found, firm economic performance is more significant for firms with less employees.

**Table 2-6 Logit estimations of the probability of reorganization for group affiliated firms according to the stage of the economy, firm localization and firm size**

| | BEFORE 2009 | AFTER 2009 | G.Paris.Region | OUT.GPR | VERY SMALL | SME |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| VARIABLES | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef | Logit-Coef |
| Before_2009 | | | 0.54*** | -0.11 | -0.09 | 0.45** |
| | | | (0.230) | (0.099) | (0.102) | (0.247) |
| Domestic GR | 0.91 | 0.36*** | 0.83*** | 0.25*** | 0.33*** | 0.7** |
| | (0.618) | (0.093) | (0.222) | (0.100) | (0.118) | (0.151) |
| Major Cont. | -0.13 | -0.13 | 0.05 | -0.22 | -0.09 | -0.25 |
| | (0.281) | (0.125) | (0.236) | (0.131) | (0.139) | (0.208) |
| GROUP debt | -0.75*** | -0.53*** | -0.42 | -0.57*** | -0.59*** | -0.29 |
| | (0.367) | (0.174) | (0.300) | (0.193) | (0.175) | (0.405) |
| Age | 0.13 | 0.16*** | 0.18* | 0.14*** | 0.04 | 0.45*** |
| | (0.137) | (0.044) | (0.107) | (0.045) | (0.049) | (0.079) |
| SME | 1.83*** | 1.16*** | 0.87*** | 1.29*** | | |
| | (0.274) | (0.088) | (0.179) | (0.095) | | |
| Large | 0.472 | 2.68** | 2.02** | 2.24** | | |
| | (1.175) | (1.056) | (1.037) | (1.048) | | |
| Unemp rate | -0.01 | 0.04* | 0.02 | 0.03 | 0.03 | 0.02 |
| | (0.052) | (0.020) | (0.073) | (0.018) | (0.021) | (0.040) |
| Liquidity | -1.39*** | -0.81*** | -0.73*** | -0.93*** | -0.89*** | -0.92*** |
| | (0.273) | (0.104) | (0.196) | (0.112) | (0.107) | (0.239) |
| Leverage | -0.26* | -0.03 | 0.03 | -0.08** | -0.04 | -0.25 |
| | (0.140) | (0.034) | (0.062) | (0.035) | (0.028) | (0.189) |
| Financial debt | 1.69*** | 1.23*** | 1.76*** | 1.14*** | 1.17*** | 1.59*** |
| | (0.560) | (0.204) | (0.542) | (0.205) | (0.210) | (0.502) |
| Social debt | 0.67 | 0.51*** | 0.06 | 0.64*** | 0.84*** | -0.32 |
| | (0.514) | (0.194) | (0.402) | (0.205) | (0.203) | (0.413) |
| Op. Margin | 0.28 | 0.22*** | 0.36** | 0.25*** | 0.23*** | 0.08 |
| | (0.194) | (0.063) | (0.170) | (0.071) | (0.071) | (0.212) |
| Pre-bank proc | -2.11** | -0.74*** | -0.58 | -0.94*** | -0.78*** | -0.89*** |
| | (0.996) | (0.161) | (0.558) | (0.165) | (0.228) | (0.237) |
| Constant | 1.11 | -0.46 | -0.26 | 0.52 | 0.42 | -0.49 |
| | (0.708) | (0.603) | (0.727) | (0.591) | (0.708) | (0.938) |
| SECTOR | YES | YES | YES | YES | YES | YES |
| REGION | YES | YES | | | YES | YES |
| Observations | 697 | 4,652 | 750 | 4,605 | 3,485 | 1,841 |
| Pseudo R-squared | 0.1801 | 0.1234 | 0.1201 | 0.1245 | 0.0584 | 0 .1174 |
| LL | -381.5041 | -2612.4654 | -456.26607 | -2543.174 | -2252.7934 | -723.77396 |

Note: Table 2-6 displays the results of different specifications of the Logit model estimating the probabilities of reorganization for a sample of 5,357 affiliated firms, partitioned by three variables accounting respectively for the year of the procedure opening, the location of the firm and its size.

## Conclusion

French bankruptcy system offers a specific framework to restructure viable firms and liquidate those with no recovery possibilities. In this regard, French bankruptcy law is particularly interesting given the full power granted to commercial courts for deciding whether to save or to eliminate a failing firm. Bankrupt firms can ask for the opening of one of the two bankruptcy procedures offered by the French bankruptcy code: the Judicial Reorganization or the Judicial Liquidation, within 45 days from the date of the cessation of payments. A petition can also be made by an unpaid creditor, the public prosecutor or the

court on its own motion. Nonetheless, the official opening of the reorganization or liquidation procedure is subject to a validation by the court dealing with the bankruptcy case.

Judges' arbitration between the preservation and the elimination of bankrupt firms is the subject of this chapter Precisely, the aim of this chapter is to determine the circumstances in which French commercial courts prefer reorganization over liquidation In its current configuration, French bankruptcy system is particularly favorable to business safeguard, with three main objectives ranked as follows: i) employment preservation, ii) business continuation and iii) creditors repayment. The relative high number of immediate liquidations opened annually in the country brought us to question judges' relative motives for each procedure.

This chapter contributes to the limited literature on the functioning and screening behavior of European and particularly French commercial courts. Our empirical setting is a unique sample of firms declared in cessation of payments over the years 2006 to 2007 and 2009 to 2012. Data used gathers information including firm's financial and economic characteristics, ownership structure and characteristics of the local labor market. Our hypotheses are structured around four main issues: i) the employment preservation concern of bankruptcy judges, ii) firm viability, as measured by different financial and economic ratios, iii) the influence of macroeconomic and firm local market circumstances on the judicial outcome, and finally iv) judges concern for firm capital structure, particularly business group affiliation and business groups' characteristics.

Binary logit regressions applied to different cutoffs of our sample lead to very interesting results. The analysis of firms' economic and financial characteristics show that courts explicitly promote the continuation of firms with better economic performance and lower level of debt to total assets. Our results particularly show the active role played by French courts for promoting employment preservation. First, larger firms (i.e. those employing more employees) are shown to have higher chances to benefit from a reorganization attempt. In addition, the probability of deciding to allow a firm to attempt reorganization is all the more high if the local labor market conditions are not good (i.e. the local unemployment rate is important). Finally, courts' decision to save a larger company seems not to be conditional to firm's economic performance, suggesting again the leniency of judges towards debtors when employment preservation is possible. Courts' attitude towards firm affiliation to a business group is also evaluated. Results show that firms controlled by business groups have higher chances of reorganization than stand-alone firms. Liquidity smoothing practices of business groups, known to grant financial support for affiliated financial in case of financial distress might explain courts' behavior. Overall, our results

suggest that French bankruptcy law implementation by bankruptcy courts is widely determined by the objectives established by the French legislator. They further show judges' sensitivity to firm ownership characteristics.

# Appendices of Chapter 2

### Appendix 2-1. Overview of the French collective proceedings

#### A. Judicial Reorganization procedure (*"Redressement Judiciaire"*)

The Judicial Reorganization procedure aims to allow the debtor company to recover from difficulties if these seem remediable. The reorganization procedure can be initiated either at the request of the debtor within 45 days after the cessation of payments or by the court on its own motion in the case of a failure of a Conciliation procedure. An observation period of maximum six months, renewable once, and exceptionally twice is opened for the aim of the evaluation of firm reorganization prospects. The opening judgment of the Judicial Reorganization procedure leads to an automatic stay against creditors in favor of the debtor. Court appoints an administrator (*"Administrateur judiciaire"*) whose mission is to supervise company's management and a representative of the creditors (*"Mandataire judiciaire"*) whose mission is to receive and verify the proofs of claims, and more generally, to initiate legal actions on their behalf and in their own interest. During the observation period, the administrator evaluates company's recovery prospects and decides whether business should be continued under a rehabilitation plan, sold as a going concern to a third party, or put into liquidation. Sale of all assets or sale of the business as a whole to a third party may only be ordered if the court notices the inability of current management to successfully reorganize the business. The reorganization procedure can at any time be closed and converted to a Judicial Liquidation procedure if company recovery becomes clearly impossible.

#### B. Judicial Liquidation procedure (*"Liquidation Judiciaire"*)

The Judicial Liquidation procedure aims to liquidate a company, by selling its business as a whole or each asset individually when reorganization is impossible. The French bankruptcy law allow courts to open a Judicial Liquidation procedure without any observation period when business rescue is manifestly impossible. Otherwise, the liquidation can take place at any time during the observation of the relevant insolvency procedure since recovery becomes obviously impossible.

In a judicial liquidation, debtor's assets are sold and the proceeds are used to repay creditors on a prorata basis subject to the order of priorities prescribed by the French legislation. The court appoints a liquidator ("Liquidateur judiciaire") who replaces company manager and exercises all the powers of the management. The liquidator also acts on behalf of the creditors as a whole and verifies the proof of claims.

## Appendix 2-2. Data and Sample characteristics

**Table 2- 7 Definition of variables**

| Variable Name | Definition | Expected sign on the probability of reorganization |
|---|---|---|
| **Firm financial and economic characteristics** | | |
| SIZE | Categorical variable:<br>Very Small [1-10[ employees;<br>SME [10-250[ employees;<br>Large ≥ 250employees | + |
| AGE | Log(years between the date of establishment and the date of bankruptcy) | + |
| LIQUIDITY | Ratio: (Current Assets-Inventory and W.I.P)/ Current Liabilities | +/- |
| LEVERAGE | Ratio: Total Debt/Total Assets | - |
| FINANC DEBT | Ratio: Financial Debt/Total Debt | + |
| TRADE PAY | Ratio: Trade Debt/Total Debt | - |
| SOC & FISC DEBT | Ratio: Social & Fiscal Debt/Total Debt | + |
| PROFITABILITY | Ratio: Operating Income/Total Assets | + |
| OPER MARGIN | Ratio: EBITDA/Net Sales | + |
| ASSETS SPEC | Ratio: Fixed Assets – Land and Buildings/Total Assets | +/- |
| GROUP MEMB | Dummy: value=1 if company is affiliated to a business group | + |
| **Group characteristics** | | |
| UCO CONTROL | Dummy: value=1 if company is controlled at more than 50% by the parent company | +/- |
| Domestic GR | Dummy: value=1 if company is controlled by a domestic group | + |
| GROUP DEBT | Ratio: Net borrowing from the group/ Total Assets | + |
| **Firm local environment characteristics** | | |
| UNEMP RATE | Local unemployment rate of firm employment area at the year prior to bankruptcy filing | + |

**Table 2-8 Correlation matrix**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| REORGANIZATION (1) | 1 | | | | | | | | | | |
| AGE (2) | 0.149*** | 1 | | | | | | | | | |
| | (0.000) | | | | | | | | | | |
| LEVERAGE (3) | -0.0398*** | -0.0316*** | 1 | | | | | | | | |
| | (0.000) | (0.000) | | | | | | | | | |
| LIQUIDITY (4) | -0.115*** | 0.0928*** | -0.222*** | 1 | | | | | | | |
| | (0.000) | (0.000) | (0.000) | | | | | | | | |
| FINANC DEBT (5) | 0.141*** | 0.0358*** | -0.0600*** | -0.181*** | 1 | | | | | | |
| | (0.000) | (0.000) | (0.000) | (0.000) | | | | | | | |
| TRADE PAY (6) | -0.00857 | 0.141*** | -0.0680*** | 0.128*** | -0.137*** | 1 | | | | | |
| | (0.227) | (0.000) | (0.000) | (0.000) | (0.000) | | | | | | |
| SOC & FISC DEBT (7) | 0.0711*** | 0.203*** | -0.0544*** | 0.247*** | 0.0622*** | -0.0468*** | 1 | | | | |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | | | | | |
| PROFITABILITY (8) | 0.0347*** | 0.0273*** | -0.348*** | 0.0870*** | 0.0305*** | 0.0219** | -0.000189 | 1 | | | |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) | (0.979) | | | | |
| OPER MARGIN (9) | 0.0375*** | 0.0219** | -0.470*** | 0.0851*** | 0.0374*** | 0.0225** | -0.00417 | 0.879*** | 1 | | |
| | (0.000) | (0.002) | (0.000) | (0.000) | (0.000) | (0.002) | (0.557) | (0.000) | | | |
| ASSETS SPEC (10) | 0.0367*** | -0.203*** | 0.0288*** | -0.265*** | 0.0814*** | -0.141*** | -0.171*** | -0.0247*** | 0.00379 | 1 | |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.001) | (0.594) | | |
| GROUP MEMB (11) | 0.139*** | 0.147*** | -0.0310*** | 0.0199** | 0.0555*** | 0.130*** | 0.0502*** | 0.0245*** | 0.0188** | -0.0882*** | 1 |
| | (0.000) | (0.000) | (0.000) | (0.005) | (0.000) | (0.000) | (0.000) | (0.001) | (0.008) | (0.000) | |
| *N* | 19814 | | | | | | | | | | |

**Table 2- 9 Sample characteristics**

| | Stand-alone | | | Group affiliates | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Reorganization** | **Liquidation** | **Total** | **Reorganization** | **Liquidation** | **Total** | **Reorganization** | **Liquidation** | **Total** |
| **SIZE** | | | | | | | | | |
| Very Small | 5,404 | 6,678 | 12,082 | 1,945 | 1,542 | 3,487 | 7,349 | 8,220 | 15,569 |
| SME | 1,786 | 568 | 2,354 | 1,540 | 301 | 1,841 | 3,326 | 869 | 4,195 |
| Large | 18 | 3 | 21 | 27 | 2 | 29 | 45 | 5 | 50 |
| **Total** | **7,208** | **7,249** | **14,457** | **3,512** | **1,845** | **5,357** | **10,720** | **9,094** | **19,814** |
| **REGION** | | | | | | | | | |
| Greater Paris Region | 943 | 1,608 | 2,551 | 403 | 347 | 750 | 1,346 | 1,955 | 3,301 |
| North East | 1,336 | 1,19 | 2,526 | 627 | 320 | 947 | 1,963 | 1,51 | 3,473 |
| South East | 1,682 | 1,565 | 3,247 | 836 | 412 | 1,248 | 2,518 | 1,977 | 4,495 |
| South West | 1,31 | 1,071 | 2,381 | 533 | 251 | 784 | 1,843 | 1,322 | 3,165 |
| Central Region | 734 | 654 | 1,388 | 429 | 179 | 608 | 1,163 | 833 | 1,996 |
| North West | 1,203 | 1,161 | 2,364 | 684 | 336 | 1,020 | 1,887 | 1,497 | 3,384 |
| **Total** | **7,208** | **7,249** | **14,457** | **3,512** | **1,845** | **5,357** | **10,720** | **9,094** | **19,814** |
| **SECTOR** | | | | | | | | | |
| Food industry | 57 | 18 | 75 | 5 | 20 | 25 | 77 | 23 | 100 |
| Manufacturing industry | 1,143 | 623 | 1,766 | 216 | 870 | 1,086 | 2,013 | 839 | 2,852 |
| Construction | 1,58 | 2,077 | 3,657 | 651 | 1,099 | 1,75 | 2,679 | 2,728 | 5,407 |
| Retailing | 1,299 | 1,700 | 2,999 | 554 | 691 | 1,245 | 1,990 | 2,254 | 4,244 |
| Transport and Mail | 367 | 318 | 685 | 53 | 163 | 216 | 530 | 371 | 901 |
| Hotels and Restaurants | 989 | 613 | 1,602 | 49 | 164 | 213 | 1,153 | 662 | 1,815 |
| NTIC | 184 | 243 | 427 | 49 | 90 | 139 | 274 | 292 | 566 |
| Real Estate | 180 | 220 | 400 | 26 | 31 | 57 | 211 | 246 | 457 |
| Business services | 817 | 917 | 1,734 | 177 | 291 | 468 | 1,108 | 1,094 | 2,202 |
| Household services | 591 | 520 | 1,112 | 65 | 93 | 158 | 685 | 585 | 1,270 |
| **Total** | **7,208** | **7,249** | **14,457** | **3,512** | **1,845** | **5,357** | **10,720** | **9,094** | **19,814** |

**Table 2- 10 Business groups characteristics**

| | **Reorganization** | | **Liquidation** | | **Total** |
|---|---|---|---|---|---|
| **UCO Control** | Number | Percentage | Number | Percentage | Total |
| Major Control | 3,139 | 64.88% | 1,699 | 35.12% | 4,838 |
| Minor Control | 373 | 71.87% | 146 | 28.13% | 519 |
| **Total** | **3,512** | | **1,845** | | **5,357** |
| **Group Origin** | Number | Percentage | Number | Percentage | Total |
| Domestic GR | 869 | 77.18% | 257 | 22.82% | 1,126 |
| Foreign GR | 2,643 | 62.47% | 1,588 | 37.53% | 4,231 |
| **Total** | **3,512** | | **1,845** | | **5,357** |

# Chapter 3: Post-reorganization survival: a semi-parametric and non-parametric analysis of firm characteristics[70]

## Introduction

The Judicial Reorganization procedure (*"Procédure de Redressement Judiciaire"*) is one of the main features of the French bankruptcy regime. Introduced by the law No. 85-94 of January 1985, the French reorganization procedure can be initiated either at the request of the insolvent debtor within 45 days of the cessation of payments or by the court on its own motion if an ongoing conciliation procedure could not lead to an agreement[71]. During an observation period of 6 months from the procedure opening, renewable twice exceptionally, a court appointed administrator evaluates firm's recovery prospects and decides whether business should be continued under a reorganization plan, sold as going concern to a third party, or liquidated[72].

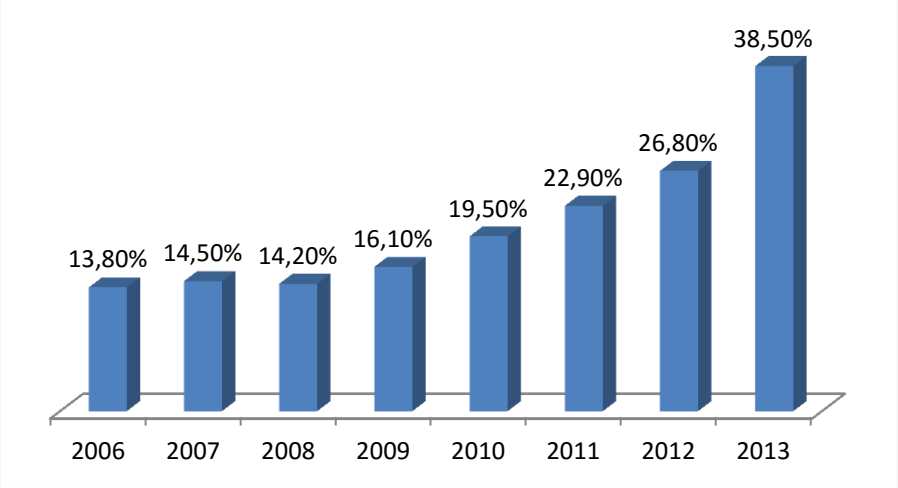
The existing body of evidence on post-bankruptcy survival has so far largely focused on the US Chapter 11. Still, little is known about it determinants in the French case, even though very interesting to be analyzed. Indeed, despite the strong emphasis of the French legislator to the reorganization and restructuring of distressed firms, only a small share of insolvent firms benefit from the chance to restructure under a reorganization procedure. On average, around 30% only of firms filing for bankruptcy annually are allowed to restructure under a reorganization procedure[73]. In addition, among firms restructuring under court supervision, a large majority fail, as shown by the important number of conversions of reorganization procedures into liquidations. According to recent statistics published by Ellisphere (cf. figure 3-1 below), less than 14% of firms which entered a reorganization procedure in 2006 are still alive 7 years later.

In the event of insolvency, reorganization through the court is designed to be an efficient tool for resolving financial distress of insolvent firms. Firms under reorganization are given the opportunity to restructure their assets, liabilities and other obligations under a court

[70] This chapter is part of a paper coauthored with Sylvain Barthélémy, Nadine Levratto and Benjamin Trempont.
[71] Debtors suffering from difficulties, but not insolvent yet, can restructure under one of the two informal pre-insolvency proceedings available in France: the Mandat ad hoc and the Conciliation. Both are intended to facilitate negotiations between the debtor and its main creditors under the supervision of a court-appointed third-party, in view to reach a consensual agreement and avoid the opening of a formal bankruptcy procedure.
[72] Sale of the business as a whole to a third party, may only be ordered if the court notices the inability of current management to successfully reorganize the business.
[73] Since 2009, the number of annual bankruptcy procedures fluctuates around 63,000.

appointed trustee. A reorganization plan is expected to be agreed on with the aim of providing firms, the possibility to return to normal business operations. However, many reorganized firms fail to achieve this ultimate goal, ending up in a liquidation procedure, halfway to success.

**Figure 3-1 Survival rates of reorganizations in France (2006-2013)** [74]




Source: Ellisphere (2014)

Historically, corporate bankruptcy reorganization has generated varying results with respect to the subsequent firm performance. While some firms emerge as more efficient than their benchmark, others are eliminated from the market if rehabilitation attempts turn out to be desperate. Given this, some previous researchers have pointed out the inability of reorganization procedures to accurately filter firms which deserve to be reorganized. This assessment gave rise to many studies relating to various post-bankruptcy aspects, focusing mainly on firm post-bankruptcy survival and performance.

Literature related to post-bankruptcy has long focused on the success of bankruptcy reorganization procedures in view to criticize or defend the effectiveness of the process. Still, up to now, much doubt exists about whether court supervised reorganizations do facilitate the recovery and enhance the performance of insolvent firms, or lead only to keeping, longer alive, desperately recovering firms. Evidence from previous researches focusing on post-reorganization performance of firms emerging from bankruptcy suggests that "successful reorganization does not necessarily guarantee post-reorganization success" (Dawley et al., 2003: 413). Nonetheless previous empirical evidence is not convergent. Some suggest that post-reorganized firms tend to badly perform (Lopucki and Whitford, 1993; Hotchkiss, 1995; Hotchkiss and Mooradian, 1997); others report that reorganization can enhance firms' stock

[74] Annual survival rates are computed as the fraction of reorganizations surviving until October 2014

performance (Eberhart et al., 1999), or find that firms neither underperform nor overperform after Chapter 11 reorganization (Alderson and Betker, 1999; Jory and Madura, 2010).

Beyond the success issue of reorganization, the post-reorganization performance of emerging firms has captured the attention of several scholars. Both dimensions are associated to different factors which encompass the characteristics of emerging firms (Altman, 2009; Denis and Rodgers, 2007; Moulton and Thomas, 1993), the operating environment (Maksimovic and Philips, 1998; Platt and Platt, 2002) and the reorganization process (Datta and Iskandar-Datta, 1995; Dawley et al., 2002; Hotchkiss, 1995; Sudarsanam and Lai, 2011).

In post-bankruptcy research, the importance of non-financial variables has been acknowledged by several authors (Barniv et al., 2002; Laitinen, 2011). Laitinen (2011) argues that the prediction of the final outcome of bankruptcy might be complicated since most bankrupt firms tend to share similar characteristics of distress, making the use of non-financial variables of high interest. Bogan and Sandler (2012) underline that the question of what variables most influence post-bankruptcy survival remains open, given the divergent results from the different valuation techniques used, performance measures included and firm characteristics evaluated.

The present chapter falls within the scope of the previously mentioned literature by trying to bring evidence on firm survival from French data. The purpose of our analysis is not to debate the merits of the French reorganization procedure. Our aim is only to explore the determinants of firm survival after bankruptcy using individual data relative to French bankrupt firms. The originality of our work is twofold. First, we study the impact of firms' ownership characteristics, so far not used in previous literature related to post-bankruptcy survival, although known to influence firm performance. Second, we perform two estimation techniques: a non-parametric one, using Random Forests model and a semi-parametric one using a duration analysis. The former is particularly useful because it helps overcome some obstacles related to parametric estimation techniques, and the second allows taking into account survival time, rarely acknowledged in previous research. We use Random Forests to explore the factors that most influence the likelihood of liquidation at different time horizons. Besides, we use the Cox model to investigate the variables that explain the time spent in reorganization before liquidation.

We follow a sample of firms through their restructuring process and document factors that influence the outcome of reorganization. We explore the extent to which the fundamental measures of firm operational, financial structure and performance are related to the duration and outcome of French reorganization filings. We further account for a number of factors, so

far not examined in the literature, although they could have an important impact on the outcome of bankruptcy. In this sense, we focus on the influence of firm ownership structure proxied by affiliation to a business group, and account for group characteristics. Studying the influence of firm ownership structure is of major interest since previous theoretical and empirical evidence insist on the link between firms' ownership structure and performance (Berle and Means, 1932; Dewaelheyns and Van Hulle, 2009; Gopalan et al., 2007).

Our analysis is among the very few studies that explore the length of time spent in procedures outside the U.S. Our work is also original since our sample comprises primarily SMEs, not analyzed in this field. Previewing our results, we find that firm structural and financial characteristics have a strong power to explain survival at different time horizons. Nonetheless, our findings suggest that very few of firm financial characteristics used previously for bankruptcy prediction, are useful for predicting the final outcome of reorganization, once a reorganization plan is voted. This might reveal that more than firm financial characteristics, the reorganization plan, its characteristics and the way it is implemented, might explain the survival of reorganizing firms. Our work contributes to understanding the bankruptcy restructuring of French firms. It is important to predict the final resolution of bankruptcy since the survival prospect of a firm involved in bankruptcy might have implications for the different stakeholders of the firm.

The investigation in this chapter proceeds as follows. In Section 1 we review the theoretical background as well as the related empirical evidence. In Section 2 we provide extensive descriptive statistics for the relevant sample. We further discuss the methodology used for the empirical analysis. Results and interpretations are given in Section 3.

## 3.1. Literature review and testable hypotheses

### 3.1.1. Court reorganization procedures: a controversial issue

Over the last two decades, research on insolvency has been particularly concerned by the efficiency properties of bankruptcy systems, more particularly, the efficiency of court-supervised restructuring proceedings. Previous literature related to post-bankruptcy focuses mainly on two dimensions: the success of reorganization procedure and the post-bankruptcy performance of firms emerging from the process. In this sense, existing studies had often two different scopes: debating the merits of the reorganization procedure and exploring factors that are crucial to its success.

A wide range of both theoretical and empirical studies in this field are devoted to the U.S. Chapter 11 reorganization procedure which has long been a controversial issue. Main

critics contend that "Chapter 11 is overly concerned with preventing the premature liquidation of viable firms, and thereby fails to let firms that are clearly nonviable, to be liquidated in a timely manner" (Denis and Rodgers, 2007:101). A number of surveys provided evidence that some inefficient firms are allowed to restructure under Chapter 11. Early studies of Flynn (1989) and Jensen (1992) report that less than 25% of firms under reorganization succeed in adopting a reorganization plan and remain as going concerns. These figures are later confirmed later by LoPucki and Whitford (1993), and Hotchkiss (1995) on large public firms under Chapter 11. The authors' findings support that Chapter 11 is significantly biased towards the continuation of unprofitable firms. Indeed, even though large firms are found very likely to adopt a reorganization plan, more than 30% of them, later undergo a private or even a court-supervised restructuring. Chatterjee et al. (1996) argue that Chapter 11 is more likely to be used by economically nonviable firms since viable firms generally restructure privately.

Along with the ongoing critique of the overall effectiveness of Chapter 11, previous studies contributed to the debate on whether court supervised restructuring procedures grant the survival of economically viable firms and correctly eliminate those that are no longer viable going concerns. White (1994) provides that within information asymmetries, it is hard to differentiate between viable and nonviable failing firms. As a result, any reorganization procedure may operate with error: type I error occurs if economically inefficient firms are saved and type II error occurs if economically efficient firms are piecemeal liquidated. In her paper, White (1994) develops a game theoretic model which explains why type I error may occur in Chapter 11 bankruptcy procedure[75], in other words, why firms that file under Chapter 11 fail to successfully reorganize. According to White's findings, filtering failure may occur because managers of both efficient (resp. inefficient) firms benefit from making their firms appear less (resp. more) efficient than they actually are. This implies that Chapter 11's inefficiency is greatly due to the role granted to management within the procedure. A reform of Chapter 11 providing for the reduction of managers' control over the reorganization process is thus needed (White, 1994).

### 3.1.2. Ex post efficiency of reorganization procedures: the measures of 'success'

One key issue in the evaluation of bankruptcy reorganizations efficiency is the definition of 'success'. Measures of success used in previous studies are numerous. A reorganization procedure is often said to be successful if a reorganization plan is confirmed

[75] White (1994)'s model does not allow type II error to occur, because very rare. Using a sample of Canadian firms attempting reorganization, Fisher and Martel (2004) confirm that type II error is four times less likely to occur than Type I error.

(Flynn, 1989; Jensen, 1992; Warren and Westbrook, 2009). Alternatively, success of the reorganization procedure is related to firm survival. In this line, a successful reorganization is equivalent to the emergence of the firm as a going concern (Morse and Shaw, 1988; Altman et al. 2009; Laitinen, 2011), without any subsequent bankruptcy filing (Platt and Platt, 2002), with a level of total assets at least equal to fifty percent of pre-bankruptcy (Moulton and Thomas, 1993). More broadly, the success of a reorganization procedure is defined according to bankruptcy outcomes, so as, to each outcome of the reorganization process, is associated a level of success. Researchers such as Moulton and Thomas (1993), Daily (1995) and Barniv et al. (2002), classify reorganizations into four categories according to the possible outcomes: successful reorganizations, partially successful reorganizations, mergers or acquisitions and liquidations. Successful reorganizations are attributed to firms which maintain their corporate identities, continue as publicly traded firms on the national stock exchanges and have postreorganization assets of more than 50 percent of prebankruptcy levels. Partially successful reorganizations relate to firms which continue as going concerns but fail to meet at least one of the qualifications stipulated for classification as successful reorganizations. Mergers or acquisitions represent acquisition of the reorganized firm by a previously existing firm and liquidation denotes the elimination of the firm from the market.

Warren and Westbrook (2009) rise that choosing the appropriate definition of success is not a simple task and can be subject to considerable debate. Indeed, their findings show that results can be sensitive to the definition selected. The authors add that plan confirmation rate must be the central measure of success in Chapter 11. In fact, the latter leads to a success rate of Chapter 11, which is twice what conventional wisdom holds. Kahl (2002) adds that assessing the viability of a firm after reorganization requires times, therefore, one cannot easily judge whether a reorganization procedure is successful or not. In this sense, the subsequent restructurings are not necessarily evidence that reorganization should not have taken place. In this chapter, we follow Denis and Rodgers (2007) and take no position on what constitutes reorganization success or failure. We rather focus on the fate of firms attempting reorganization under court supervision. Our main concern is to focus on the liquidation decisions likely to occur within the reorganization process and to distinguish factors which may explain the time spent under reorganization before liquidation.

### 3.1.3. Post-reorganization survival and performance: measures and determinants

Beyond the success issue of the reorganization process, a handful of researchers focused on post-reorganization survival and performance of bankrupt firms. From that

perspective, the success of a reorganization procedure would reflect the extent to which firm performance has improved at the end of the process. Performance measures used previously are manifold. They include firms' operating performance (Denis and Rodgers, 2007; Hotchkiss, 1995; Hotchkiss and Mooradian, 2004), ability to meet cash-flow projections (Alderson and Betker, 1999; Maksimovic and Philips, 1998; McHugh et al. 1998), and stock market performance (Eberhart et al. 1999; Morse and Shaw, 1989; Goyal et al. 2003; Lee and Cunney, 2004; Jory and Madura, 2010).

Overall, existing evidence on post-reorganization performance reveals results' sensitivity to the performance measure used. Using a sample of 197 publicly traded firms that filed for chapter 11 between 1979 and 1988, Hotchkiss shows that near 40% of emerging firms continue to experience operating losses in the three subsequent years. Based on information relative to the cash flows returned to debt and equity holders, Alderson and Betker (1999) underline that firms emerging from Chapter 11 neither underperform, nor overperform after their emergence, although their operating margins appeared to be poor. Eberhart et al. (1999) evaluate the stock expected returns of firms emerging from Chapter 11 between 1990 and 1993 and show excessive positive returns after emergence in the long term. Jory and Madura (2010) as well use information on post-bankruptcy stock returns, relative to a sample of 184 firms filing for Chapter 11 between 1980 and 2006. They show that the mean post-bankruptcy stock performance of emerging firms is similar to the performance of matching firms. The authors argue that the large amount of information produced within the reorganization process significantly contributes to correctly valuing firms emerging from it.

Given the scope of our analysis which aims to bring more insights into the operating of the French reorganization process, we disregard sample-firms' performance. Instead, we focus on the determinants of both, their probability to emerge from the process at different time horizons, and the determinants of the time spent in reorganization before liquidation. For this end, we rely on the existing literature focusing on the determinants of post-bankruptcy survival and firm performance.

As suggested before, a significant share of existing literature is devoted to the success of reorganization procedures, more particularly to post-emergence performance. Time spent under reorganization is however less explored. Nonetheless, both strands of literature use almost the same explanatory variables. These relate mainly to three dimensions: the firm (financial and operating performance, characteristics and governance factors), the operating environment (industry and industry performance) and the reorganization process (restructuring and refocusing strategies).

In the following, we review existing studies on determinants of post-reorganization performance and time spent under reorganization. We elaborate in accordance several propositions in connection with the duration of reorganization procedures and the probability of failure.

#### *3.1.3.1. Firm-specific characteristics*

Literature identifies a number of firm-specific variables related to the length of the time spent in reorganization, as well as the performance after emerging from reorganization. Variables are often selected based on previous literature related to bankruptcy prediction, assuming that their might potentially be useful for predicting the final resolution of bankruptcy as well (Barniv et al., 2002). These variables include measures of size, profitability, liquidity, leverage and asset specificity, etc.

##### 3.1.3.1.1. Firm size, age and asset specificity

Moulton and Thomas (2003) stress that firm size dominates all other factors used for the prediction of reorganization success. The relevance of firm size[76] is revealed in many previous studies (Barniv et al., 2002; Denis and Rodgers, 2007; Dewaelheyns and Van Hulle, 2009; Moulton and Thomas, 1993). Researchers agree that firm size is negatively related to the probability of liquidation, and positively related to the time spent under reorganization. Large firms have higher chances to emerge successfully from a reorganization process because they are deemed too big to fail (Denis and Rodgers, 2007) and have sufficient and varied assets that make them more able to survive substantial losses in the reorganization process (Denis and Rodgers, 2007; Moulton and Thomas, 1993). Moreover, large firms are more likely to be economically viable (Denis and Rodgers, 2007), thanks to their potential successful businesses that can serve as the core of the reorganized firms (Moulton and Thomas, 1993). Dewaelheyns and Van Hulle (2009) argue that the reason why larger firms survive more a reorganization lays in creditors' (mainly banks) incentives to cooperate, since the potential gain of cooperation with larger firms is higher. Besides, the positive relationship between firm size and the time spent in reorganization highlighted by Denis and Rodgers (2007) and Dewaelheyns and Van Hulle (2009), can be attributed to the complexity of assessing the viability of a large company. Moulton and Thomas (1993) add that few investors might be able, or at least incited to acquire a large risky firm at high prices.

[76] Firm size is often measured as the total of assets at the end of the last fiscal year before bankruptcy filing.

Following previous literature, we expect that firm size[77] significantly influences post-reorganization probability of bankruptcy, as well as the time spent in reorganization before liquidation. We argue that larger firms have intrinsically greater chances of recovery after a bankruptcy. Large organizational size is known to provide firms a number of advantages. Large firms have more resources and support a large number of routines, allowing them to be more resilient to hazards and uncertainties (Moore, 1997). Intuitively, we expect that larger firms are more likely to avoid liquidation within a reorganization procedure, or at least, stay longer in the process for several reasons. First, the large amount of assets owned by big corporations can be sold in part, providing cash for activity continuation, and allowing the company to stay longer in reorganization. This assumption should however be moderated by the level of asset specificity. Dewaelheyns and Van Hulle (2009) find that firms with higher specific assets levels stay longer in reorganizations; indeed, investors are less likely to be incited to sell firm's assets if these can only generate low values. Following the same assumption, we expect a positive relationship between asset specificity and the duration of the reorganization procedure. Second, the liquidation decision of a larger firm can take more time, because judges might carefully decide to terminate a large company, given the relatively serious consequences this decision could generate to firms' stakeholders.

In addition to organization size, firm age has also been associated to organization performance and risk of failure. The predominant view is consistent with a liability of newness (Stinchcombe, 1965), whereby young organizations suffer from a number of disabilities related to their difficulty to establish stable and trusty relationships with the stakeholders, their weak management (Thornhill and Amit, 2003) and their low level of capitalization at creation (Lussier, 1995). Firm age has so far not been related to post-bankruptcy survival or performance. Nevertheless, we rely on the same arguments used for firm size, and expect that younger companies, intuitively, less viable than older firms, have higher probabilities of liquidation. Besides, we consider that older firms might stay longer in reorganization thanks to their human, financial and economical capital accumulated throughout their years of existence, which make the liquidation decision harder for the court.

**Proposition 1. Firm size and age influence both the probability of liquidation after reorganization and the time spent in reorganization.**

**Proposition 1.a. Firm size and age are inversely related to the probability of liquidation after reorganization.**

[77] Following common practice, we measure firm size as the natural logarithm of total of assets at the last fiscal year prior to filing.

**Proposition 1.b. Firm size and age, and the time spent in reorganization are positively related.**

**Proposition 1.c. Firm level of specific assets is positively associated to the time spent in reorganization**

#### 3.1.3.1.2. Firm financial health

Different proxies for firm financial health have been used to assess post-bankruptcy performance and probability of liquidation. In this line, Altman et al. (2009) explore the probability of filing for 'Chapter 22' (i.e. filing a subsequent bankruptcy petition for firms emerging from Chapter 11) with a revised version of the well-known Z'' score prediction model[78]. The new Z" score includes four variables which measure firm levels of liquidity, solvency, profitability and leverage. Using data from the first financial statements following the emergence from Chapter 11, relative to a sample of 86 firms under Chapter 11, Altman et al. (2009) underline that firms filing for a second bankruptcy exhibit higher leverage and lower profitability levels, shortly after emerging the first time.

The relevance of financial ratios for explaining the survival and the time spent under reorganization has been highlighted by other researchers as well. Denis and Rodgers (2007) explore the extent to which fundamental measures of financial structure and performance are related to the duration and outcome of Chapter 11 filings. They find that the pre-filing operating performance is significantly positively related to post-Chapter 11 operating performance. Firm financial structure, proxied by the level of debt is also shown to influence the outcome of bankruptcy. Denis and Rodgers (2007) show that firms with greater pre-filing liability ratios are more likely to reorganize successfully[79]. They argue that firms with higher pre-bankruptcy leverage may be less economically distressed, implying that they are more likely to reorganize than lower leveraged firms. Contrastingly, Dewaelheyns and Van Hulle (2009) assume that the overall level of debt is an indicator of the severity of the financial difficulties of filing firms. Their findings show that leverage and the duration of the process are positively related, suggesting that more complex cases take longer time to be settled.

Based on the previous research and the lessons from corporate finance, we consider that firm financial health measured by its level of profitability, operating performance and debt significantly determines the outcome of the procedure, as well as the time spent in the process. Firm performance proxied by its economic profitability and operating performance is

[78] In the new version of the Z" score, four variables instead of five are included, and coefficients are re-estimated.
[79] The authors specify that leverage is unrelated to post-bankruptcy profitability.

expected to positively influence the bankruptcy outcome, so that economically viable firms are expected to stay longer in reorganization and have higher chances to reorganize successfully. Besides, the overall level of debt is expected to negatively influence the probability of liquidation. As suggested by Lemmon et al. (2009), more indebted firms are more likely to be financially distressed rather than economically distressed. Consistently with the pecking order theory developed by Myers (1984), a higher level of leverage ex ante is associated with lower expected costs of financial distress. Given this, we expect that firms highly leveraged have lower chances to reorganize and therefore spend less time in reorganization before liquidation. For more robustness, we differentiate between commercial and financial debt, implying that the higher levels of commercial debt is more likely to reflect economic distress, more difficult to remedy than a short-term liquidity problem reflected by higher levels of financial debt.

Following Kim and Kim (1999), we further investigate the impact of liquidity level on the outcome of reorganization, under the assumption that the level of current assets is negatively related to the probability of reorganization. Indeed, creditors of a bankrupt firm might be more incited to cooperate and allow the latter to continue, if the level of tangible assets hardly convertible into cash is higher.

**Proposition 2. Firm financial health can be used as a proxy for post-bankruptcy prospects.**

**Proposition 2.a. Higher levels of profitability and operating performance prior to filing are positively associated with greater going concern value after bankruptcy.**

**Proposition 2.b. Time spent in reorganization before liquidation is negatively related to performance and operating margins measures.**

**Proposition 2.c. Overall level of debt decreases the probability of fast liquidations of reorganizing firms.**

**Proposition 2.d. The level of commercial debt is more likely to increase the probability of liquidation than financial debt.**

**Proposition 2.e. Higher liquidity levels are positively related to the probability of fast liquidation.**

#### 3.1.3.1.3. Reorganization strategies and management changes

Many studies underline the relevance of corporate refocusing and restructuring strategies for improving firm's post-bankruptcy performance. In this line, Dawley et al. (2002) bring up that firms refocusing their activities after bankruptcy can significantly improve their performance as measured by the three to five years of industry adjusted return on assets. Using a sample of 135 firms which filed for Chapter 11 between 1980 and 1989, Datta and Iskandar-Datta (1995) examine various forms of restructuring which include financial, operational asset, governance and labor restructurings. They find that asset and governance restructuring are particularly beneficial for improving the performance of reorganized firms. Sudarsanam and Lai (2001) investigate the effect of the same turnaround strategies and find results consistent with those of Datta and Iskandar-Datta. They use a sample of 166 UK bankrupt firms between 1985 and 1993, and underline that recovery firms are more involved in asset restructuring in the sense of forward looking expansionary and external market focused investments. In the same vain, Denis and Rodgers (2006) show that firms are more likely to emerge as going concerns and to achieve post-reorganization profitability if they significantly reduce assets and liabilities while in Chapter 11.

Following Datta and Iskandar-Datta (1995), a handful of authors underlined the influence of governance restructuring on post-reorganization performance of bankrupt firms. In this field, the role of management changes during the reorganization process has been repeatedly acknowledged. Bogan and Sandler (2012) examine factors which contribute most to post-bankruptcy survival and find that new management is positively related to post-bankruptcy survival. Using a sample of 131 publicly traded companies reorganizing under Chapter 11, the authors stress that "bankruptcy can be a viable tool for reorganization, if appropriately implemented" (Bogan and Sandler, 2012: 610). Hotchkiss (1995) previously reached the same results, implying that management's role in Chapter 11 is an important source of bias towards the continuation of non-viable firms. Hotchkiss (1995) explains that poor performance associated with the continued involvement of original management is likely to be induced by two alternative mechanisms. First, new management has little incentives to lead firms with poor recovery prospects. Second, Chapter 11 bias towards the continuation of management is likely to encourage the sub-optimal behavior of existing management.

Both dimensions the restructuring strategies and the management changes during the reorganization process do not fall within the scope of our analysis. Our aim is not to study the restructuring behavior of reorganizing firms, but rather examine the pre-filing characteristics

of both firms and their environment and explore their potential influence on the outcome and duration of the reorganization process.

#### *3.1.3.2. Governance factors and business group affiliation*

In addition to management changes, research involving governance patterns within bankruptcy survival includes variables accounting for board size and composition (Daily, 1995; Gales and Kesner, 1994), equity ownership (Daily, 1996; Daily and Dalton, 1994; Kim, 2006) and audit committee characteristics (Charitou et al., 2007; Chen, 2003). Based on the same classification of reorganization outcomes proposed by Moulton and Thomas (1993), Daily (1995) brings evidence supporting that board composition significantly influences, the outcomes of a bankruptcy procedure. Using a sample of 70 listed firms filing for Chapter 11 reorganization during the years 1980 through 1986, the author finds that the proportion of outside directors within the board of directors is positively associated with a successful Chapter 11 reorganization. Gales and Kesner (1994) focus as well on board composition and size, and show that outside directors in the board of bankrupt firms are more likely to be involved in improving post-bankruptcy performance. Besides, Daily (1996) investigated the monitoring role of equity holdings by institutional investors in reorganization procedures. She finds no incidence on the time spent in Chapter 11, unlike Kim (2006) and Charitou et al. (2006) who provide evidence supporting that, equity shareholdings by managers and institutional investors significantly contribute to the enhancement of post-reorganization performance.

Among previous studies which relate firm governance patterns to post-reorganization survival, to our knowledge, only one paper focused on the influence of firm ownership using information on business group affiliation. In this regard, Dewaelheyns and Van Hulle (2009) explore the determinants of the time spent in reorganization by all Belgian limited liability stock corporations that filed for reorganization between 1998 and 2003, focusing on firm affiliation to a business group as well as the overall financial health of business groups, filing-firms belong to. Overall, their findings support that subsidiaries of healthy business groups are eliminated faster from the procedure, suggesting that business groups tend to benefit from their networks to terminate quickly the problems of their weak affiliates.

Literature focusing on the influence of group affiliation on bankruptcy risk is not huge. The main insight gained from previous empirical studies is consistent with an inverse relationship between firm affiliation to a business group and bankruptcy risk (Becchetti and Sierra, 2003; Dewaelheyns and Van Hulle, 2006), although much ambiguity exists with

respect to the influence of group affiliation on firm performance (Bamiatzi et al., 2014). Liquidity smoothing practices are shown to be widely used by business groups to support their affiliates, especially when the latter undergo financial difficulties (Gopalan et al., 2007). Intragroup financial transfers are argued to be driven by strategic, taxation (Dewaelheyns and Van Hulle, 2006), or other group-specific motivations (Khanna and Yafeh, 2005). Gopalan et al. (2007) argue that the bankruptcy of group affiliated firms is likely to induce negative consequences to the group as whole, namely group image and reputation. Using data from Japanese business groups, they show that the bankruptcy of one group affiliated company generates a drop in the overall level of investments, profits and external financing of the other group members.

Given the challenges associated with firm bankruptcy within a business group, we expect that group affiliation might reduce the risk of reorganization failure for affiliated firms. This is particularly plausible since business groups are deemed to make efforts trying to limit the damage to their reputation by bringing support to their weak affiliates. Besides, banks may have stronger incentives to cooperate with a business group member, rather than a stand-alone firm, especially if they consider a long-term relationship with the group as a whole (Dewaelheyns and Van Hulle, 2009). Nonetheless, we believe that the relationship between group affiliation and the outcome of bankruptcy reorganization might not be straightforward. In other words, we imply that the influence of group affiliation on the outcome of reorganization procedures might be moderated by business groups' characteristics.

Numerous researchers argue that multinational companies are inherently 'footloose' given their ability to shift their production facilities from one country to another if the present environment changes to their disadvantage (Görg and Strobl, 2003; Caves, 1996). Using Japanese data related to business groups, Inui et al. (2009) stress that multinationals tend to close their weaker affiliates. If foreign business groups are actually less incited to bring support to their struggling affiliates, than this would lead to a negative link between group affiliation to a foreign group and the time spent in reorganization.

Furthermore, group affiliation is often argued to give rise to moral hazard problems leading controlling shareholders to adopt opportunistic behavior. Corporate law considers each group component as a separate legal entity; therefore, the limited liability within business group members explains why controlling shareholders might be incited to terminate the activity of an affiliated firm in order to relieve its debt burden (Bianco and Nicodano, 2006). In accordance with the principle of separate legal entity and limited liability each bankrupt company within a business group is treated as a separate entity solely liable for its

own debts with its own asset, under French bankruptcy law. Such feature has been shown to particularly encourage opportunistic behavior of parent companies within business groups in France, leading their affiliates to go bankrupt with huge amounts of unpaid social or environmental debts[80]. Having said that, we think that there are good reasons to expect that such behavior might be exacerbated if the reorganized firm is controlled ultimately by its parent company. Literature related to internal capital markets often raise concerns for the disruptive role of business groups on firm performance and survival. In this respect, business groups are often viewed as vehicles for minority shareholders expropriation by the controlling shareholder (Khanna and Yafeh, 2007). Therefore, we imply here that moral hazard problems are more likely to be significant if the firm is majorly controlled by a main corporate owner. To sum up, this would lead to a negative link between the control of the parent company and the time spent in reorganization and a positive link with the probability of liquidation.

**Proposition 3. Business Group affiliation influences both the probability of liquidation and the time spent under reorganization for group affiliated companies.**

**Proposition 3.a. Group affiliated firms have lower probabilities of liquidation than stand-alone firms, therefore might spend longer time in the reorganization procedure.**

**Proposition 3.b. The control of the parent company over the sample-affiliated firms reduces both the probability of liquidation and the length of the procedure.**

**Proposition 3.c. The pre-bankruptcy level of intragroup financial debt held by affiliated firms reduces the probability of fast liquidation for affiliated firms.**

**Proposition 3.d. Domestic business group affiliation reduces the hazard of liquidation for affiliated firms.**

#### *3.1.3.3. The operating environment*

Literature focusing on the determinants of firm survival after bankruptcy further point out the importance of firm's operating environment. Maksimovic and Philips (1998) investigate the role of industry demand on assets redeployment decisions under Chapter 11 and find that industry health is an important determinant of survival for reorganized plants.

[80] The Metaleurop case is very illustrative in this regard. Metaleurop Company was voluntarily put into liquidation by its parent company in order to get rid of huge environmental liabilities left unpaid after the liquidation of the company. Liquidators in charge of this case managed to obtain the extension of the responsibility to the parent company, due to the confusion between the affiliate and parent company wealth revealed.

Similarly, Denis and Rodgers (2006) find that more favorable industry climate increases the survival chances for firms in Chapter 11 reorganization. They also suggest that firms spend less time in Chapter 11 the higher the median operating performance is within their industry. Dewaelheyns and Van Hulle (2009) measure the average of sales growth and average of operating performance margin of the reorganizing firm's industry as proxies for the state of the industry. The results reveal a positive relationship between industry conditions and the length of the procedure, suggesting that companies in better performing industries are allowed to stay longer in the reorganization procedure.

In addition to industry conditions, the overall macroeconomic environment seems to influence the post-reorganization prospects of bankrupt firms. In this line, Hotchkiss (1995) compare her results to those of Platt and Platt (2002), and conclude that the main difference may be due to the relatively better macroeconomic conditions into which the sample structured firms of Platt and Platt (2002), emerged. Therefore, we use control variables for both macroeconomic conditions and industry affiliation, assuming that both have an influence on the final outcome of bankruptcy.

**Proposition 4. Both industry and macroeconomic conditions influence the final resolution of the reorganization process.**

**Proposition 4.a. Better macroeconomic conditions at the moment firm filed the reorganization enhance firm chances to avoid liquidation.**

## 3.2. Empirical analysis

### 3.2.1. Data selection and descriptive statistics

The sampling procedure follows a two-step approach in which we (1) create a unique sample of firms that filed for a reorganization procedure from 2006 to 2007 and from 2009 to 2012[81] and (2) track each firm's path in the reorganization process, from the moment reorganization is opened to its resolution (if the procedure ended by a liquidation procedure within the time interval studied). Data gathered originate from BODACC[82] database which provides an extensive amount of information related to collective proceedings initiated inside French courts. Due to data availability, we had and information gap in the year 2008. In other words, information about what occurred in 2008, for all reorganizations opened in 2006 and 2007 is not available. In order to overcome the inherent limitations this gap could generate to our empirical analysis, information was collected manually. For each reorganization

[81] Data for the year 2008 is not included due to data availability.
[82] BODACC is the *Bulletin Officiel des Annonces Civiles et Commerciales.*

procedure initiated between 2006 and 2007, we manually collect information about liquidation decisions (if theses really occurred) within the reorganization process from two publicly available sources: "Societe.com" and "Verif.com"[83].

Following common practice, we complete data with information on financial accounts and ownership from firms' financial statement relative to the last fiscal year before the cessation of payments[84]. Data is obtained from Diane database which gathers annual financial and accounting information for French firms[85]. After excluding firms with incomplete information as well as firms from the financial service industries[86], the sampling procedure provides a sample of 10,423 firms under reorganization. Table 3-1 depicts the year distribution of reorganization openings and liquidation decisions relative to our sample-firms. The bulk of the sample reorganizations are centered on the years 2010 to 2012, which coincides with the aftermath of the economic recession of 2009. Over the 10,423 reorganization openings, we observe a total of 5,935 liquidations. The total number of censored observations, i.e. time-series of firm data that do not end with an explicit failure event, is 4,488 which is equivalent to 43% of the sample. Table 3-1 also provides information on reorganization cases leading to the adoption of a reorganization plan. Plan confirmations are 2,205, which represents almost 21% of reorganization procedures openings.

**Table 3-1 Sample structure**

| Sample year | Reorganizations entering | | Exits due to liquidation | | Censored data | | Plan confirmations | |
|---|---|---|---|---|---|---|---|---|
| | N. | % | N. | % | N. | % | N. | % |
| 2006 | 963 | 9.24 | 680 | 70.61 | 283 | 29.39 | 34 | 3.53 |
| 2007 | 1,001 | 9.60 | 815 | 81.42 | 186 | 18.58 | 12 | 1.20 |
| 2009 | 154 | 1.48 | 111 | 72.07 | 43 | 27.93 | 55 | 35.71 |
| 2010 | 2,982 | 28.61 | 1,991 | 66.76 | 991 | 33.24 | 1,188 | 39.84 |
| 2011 | 2,824 | 27.09 | 1,643 | 58.18 | 1,181 | 41.82 | 893 | 31.62 |
| 2012 | 2,499 | 23.98 | 695 | 27.81 | 1,804 | 72.19 | 23 | 0.9 |
| Total | 10,423 | 100 | 5,935 | 56.94 | 4,488 | 43.06 | 2,205 | 21.15 |

Note: Table 3-1 depicts the time series distribution of sample firms entry and exit from reorganization. A firm is considered as exiting the reorganization procedure, if a liquidation decision is ordered by the court.

Table 3-2 below displays the time-series distribution of failure events (i.e. liquidations). The first column denotes the number of years spent in reorganization. The second column indicates the number of subjects at risk of failure (liquidation) at the time shown in the first column. The third column shows the number of firms failing (liquidated) at

[83] Both sources are available online and provide a wide range of legal and financial information on firms operating in France.
[84] In France, only firms that are classified bankrupt upon cessation of payments can benefit from a collective procedure of reorganization.
[85] Around 1.3 million companies established in France are annually covered by Diane source.
[86] Firms from financial services sector are not included in the analysis because they depend on a specific bankruptcy code.

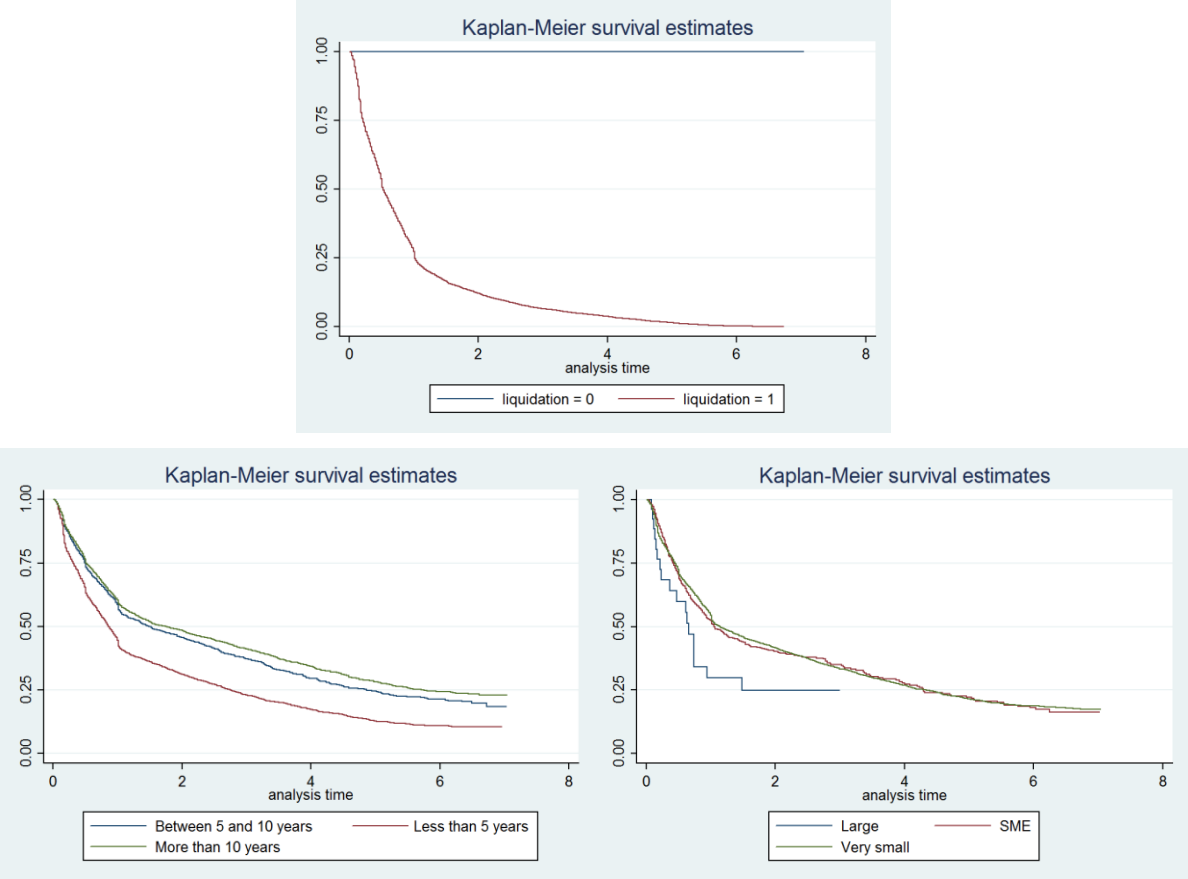
each time. The survivor function displayed in the fourth column is the Kaplan-Meier (1958) estimate. It indicates the probability for sample-firms, of surviving beyond time $t$. Survivor function estimates suggest that only 54% of the sample is still operating after the first year. It also suggests that only 17% of the sample firms are still operating 7 years after the reorganization opening.

**Table 3-2 Data structure and frequency of liquidation**

| Time | Beg. Total | Fail | Survivor function | Std. Error | [95% Conf. Int.] | |
|---|---|---|---|---|---|---|
| 1 | 4,339 | 4,302 | 0.5426 | 0.0052 | 0.5323 | 0.5528 |
| 2 | 2,269 | 903 | 0.4156 | 0.0055 | 0.4048 | 0.4263 |
| 3 | 941 | 343 | 0.3340 | 0.0060 | 0.3223 | 0.3458 |
| 4 | 689 | 168 | 0.2687 | 0.0066 | 0.2558 | 0.2817 |
| 5 | 554 | 135 | 0.2159 | 0.0067 | 0.2030 | 0.2292 |
| 6 | 332 | 71 | 0.1864 | 0.0066 | 0.1735 | 0.1996 |
| 7 | 4 | 13 | 0.1729 | 0.0075 | 0.1586 | 0.1878 |

Note: Table 3-2 depicts the times series distributions of liquidation and censored events for a sample of French reorganized firms between 2006 and 2012. Time denotes the number of years spent in reorganization. Time 1 is equivalent to the year of opening the reorganization procedure.

**Figure 3-2 Kaplan-Meier survivor estimates**




Note: Figure 3-2 is based on a sample of 10,423 French reorganized firms between 2006 and 2012. The nonparametric estimate of the survivor function is the Kaplan and Meier (1958) estimate.

Selected Kaplan and Meier (1958) product-limit estimates of the survivor functions are graphed in Figure 3-2. They are given by:

$$S(t) = \prod_{j|t_j \leq t} \left( \frac{n_j - d_j}{n_j} \right)$$

where $n_t$ is the population alive and $d_t$ is the number of failures respectively at time $t$.

For illustration, the top graph of Figure 3-2 presents survivor functions for sample-reorganizing firms. The censored observations are plotted along the upper horizontal line. The survivor curve for liquidated firms suggests that the one-year survival rate for liquidated firms is only 25%. The lower graphs of Figure 3-2 depict the survivor curves of firms broken down by categorical variables of age and size[87]. At any point of time, the curve depicting the survival of older firms is strictly above that of younger firms. By contrast, the survivor curves for firm size suggest that larger firms drop out strictly earlier than their smaller counterparts. It is worth noticing that the survivor curves for firms partitioned by age category do not intersect, contrarily to firm size. This can be interpreted as a first indication that some variables do not satisfy the proportionality assumption underlying the Cox proportional hazards model applied in this chapter.

Table 3-3 contains summary statistics for sample-firms partitioned by the variable failure (liquidation) which indicates whether reorganizing firm is liquidated during the studied period or whether information on liquidation is censored. Statistics displayed are related to both the whole sample of all firms attempting reorganization and the subsample of only firms with a confirmed reorganization plan. Selected summary statistics on firm financial characteristics suggest that liquidated firms are globally younger than firms surviving till the end of the study, regardless of plan confirmation. Liquidated firms are also on average smaller, have lower levels of financial debt and are less performant economically. Liquidated firms are also on average more leveraged than firms surviving till the end of the year 2012. They however do not display significant differences in terms of liquidity, debt and assets specificity levels when looking at plan confirmations.

[87] The size categories are defined based on the French classification of firms. Very small firms are defined as firms with a total amount of assets lower or equal to 2 million euro. SME are firms with a total amount of assets not exceeding 43 million euro, and finally, large firms have a total amount of assets which exceeds 43 million euro.

**Table 3-3 Sample descriptive statistics**

| | | Total Sample | | | Plan Confirmations | | |
|---|---|---|---|---|---|---|---|
| | | **Liquidations** | **Censored** | **Total** | **Liquidations** | **Censored** | **Total** |
| AGE | Mean | 1.89 | 2.17 | 2.01 | 1.92 | 2.14 | 2.11 |
| | Median | 1.81 | 2.16 | 1.97 | 1.84 | 2.13 | 2.10 |
| | Std | 0.91 | 0.85 | 0.90 | 0.89 | 0.83 | 0.84 |
| SIZE | Mean | 12.46 | 12.64 | 12.54 | 12.30 | 12.58 | 12.54 |
| | Median | 12.32 | 12.55 | 12.43 | 12.23 | 12.51 | 12.46 |
| | Std | 1.43 | 1.28 | 1.37 | 1.19 | 1.24 | 1.24 |
| LIQUIDITY | Mean | 0.60 | 0.75 | 0.67 | 0.48 | 0.47 | 0.47 |
| | Median | 0.45 | 0.42 | 0.44 | 0.40 | 0.39 | 0.39 |
| | Std | 3.73 | 17.28 | 11.68 | 0.36 | 0.41 | 0.40 |
| LEVERAGE | Mean | 1.38 | 1.14 | 1.27 | 1.16 | 1.17 | 1.17 |
| | Median | 0.96 | 0.96 | 0.96 | 0.97 | 0.97 | 0.97 |
| | SD | 9.11 | 0.89 | 6.90 | 0.56 | 0.96 | 0.91 |
| ASSETS SPEC | Mean | 0.14 | 0.14 | 0.14 | 0.14 | 0.15 | 0.15 |
| | Median | 0.08 | 0.08 | 0.08 | 0.09 | 0.08 | 0.08 |
| | Std | 0.17 | 0.17 | 0.17 | 0.16 | 0.18 | 0.17 |
| OPER MARGIN | Mean | -0.17 | -0.10 | -0.14 | -0.15 | -0.13 | -0.13 |
| | Median | -0.04 | -0.01 | -0.03 | -0.05 | -0.03 | -0.03 |
| | Std | 0.67 | 0.38 | 0.56 | 0.38 | 0.45 | 0.44 |
| TRADE PAY | Mean | 0.28 | 0.26 | 0.27 | 0.27 | 0.26 | 0.26 |
| | Median | 0.25 | 0.24 | 0.24 | 0.25 | 0.22 | 0.23 |
| | Std | 0.20 | 0.19 | 0.20 | 0.19 | 0.19 | 0.19 |
| FINANC DEBT | Mean | 0.16 | 0.18 | 0.17 | 0.16 | 0.18 | 0.18 |
| | Median | 0.06 | 0.10 | 0.08 | 0.05 | 0.10 | 0.09 |
| | Std | 0.20 | 0.21 | 0.21 | 0.21 | 0.22 | 0.21 |
| PROFITABILITY | Mean | -0.21 | -0.14 | -0.18 | -0.20 | -0.18 | -0.18 |
| | Median | -0.07 | -0.05 | -0.06 | -0.08 | -0.06 | -0.07 |
| | Std | 0.72 | 0.40 | 0.60 | 0.40 | 0.46 | 0.45 |

Note: Table 3-3 displays descriptive statistics for the financial and economic characteristics of sample of 10,423 firms attempting reorganization between 2006 and 2012.

### 3.2.2. Methodology

In view to explore several aspects related to the survival of French firms under reorganization, we conduct a two-stage analysis: the first one aims to assess the variables which discriminate the best between surviving and liquidated firms and the second one aims to explore the determinants of the survival time of the reorganized firms.

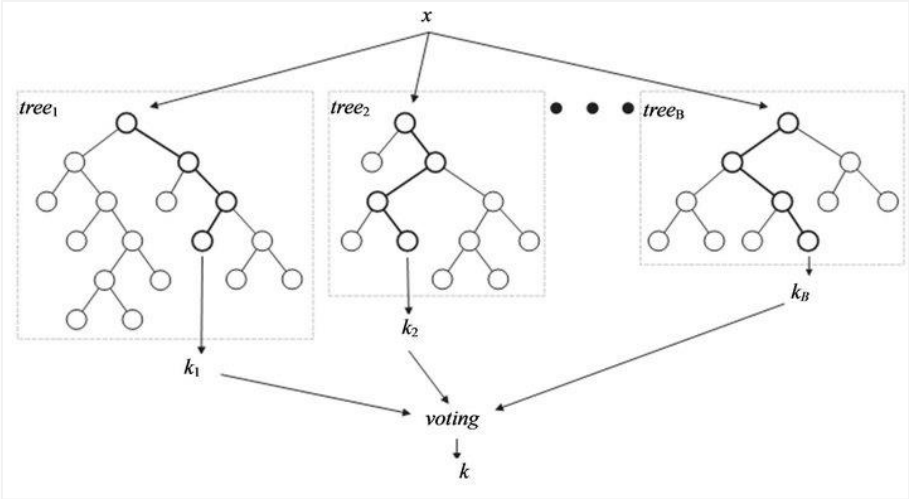
The first stage of investigation is achieved using a Random Forest model. Introduced by Breiman in 2001, Random Forests algorithm is a classifier consisting of a collection of decision trees[88] drawn from bootstrap samples built from the studied sample. At each node of the tree, Random Forests select a random subset of variables which are used as candidates to find the best split for the node. The purpose of this two-step randomization is the decorrelation of the trees, so that the variance of the forest ensemble is reduced (Chen & Ishwaran, 2012). After a large number of trees are generated, they vote for the most popular class of variables (Figure 3-3). We do not limit ourselves to use simple regression trees

[88] Random Forests is often a collection of hundreds to thousands of trees, where each tree is grown using a bootstrap sample of the original data (Chen & Ishwaran, 2012).

because, despite being a very compelling method, they suffer from a major problem of instability[89] (Breiman, 1996).

The construction of a Random Forests algorithm can be summarized by the following steps: i) *n* tree bootstrap samples are first drawn from the original data, ii) a tree for each bootstrap data is then grown by randomly selecting variables for splitting each node into two child nodes, iii) information is finally aggregated from the *n* trees. An interesting feature of Random Forests is the measure of variable importance that can be used to rank variables according to their explanatory power (Chen and Ishwaran, 2012). Variable importance is estimated by looking at the change in the error prediction rate when data for each variable is permuted while all others are left unchanged (Liaw and Wiener, 2002).

**Figure 3-3 General architecture of a Random Forest**




Source: Nguyen et al. (2013)

The second stage of investigation proceeds with a survival analysis. Survival time is measured as a nonnegative random time-variable T which measures the time elapsed between the opening of the reorganization procedure and the decision of liquidation. The main advantage from survival analysis is the use of censored data (i.e. firms for which information on what happened after entering the reorganization process is missing). The instantaneous rate of failure at time $t$ given that the firm survives until $t$ is given by the hazard function $\lambda(t)$ which is defined as the limit:

$$\lambda(t) = \lim_{\Delta \to 0} \frac{P(t \leq T + \Delta t | T \geq t)}{\Delta t}$$

[89] An algorithm is said "unstable" if the latter fails to make a clear distinction between persistent and random patterns in the data, a phenomenon known as *overfitting*

The numerator is the conditional probability that failure will occur in the interval $[t, t + dt)$ given that the firm has survived until $t$, and the denominator is the width of the interval.

We use the Cox (1972) proportional hazard model which is the reference model for multivariate survival analysis. In a Cox model, firm hazard of failure $\lambda(t|x_j)$ is computed as a multiplicative function of a common baseline hazard $\lambda_0(t)$ and a firm-specific vector of covariates $X = (x_1, \dots, x_j)$. The firm hazard of failure can be written as follows:

$$\lambda(t|x_j) = \lambda_0(t)\exp(x_1\beta_1 + \cdots + x_j\beta_j) = \lambda_0(t)\exp(x_j\beta)$$

The Cox model is semi-parametric, since it considers the risk of failure of a given firm as depending on a baseline hazard which remains unspecified, and a risk which depends on firm's characteristics measured by the vector of explanatory variables. The main assumption of this model is the proportionality hypothesis which requires that hazard ratios are constant over time, or equivalently that the relative hazard rate of two different firms is solely explained by the parametric part of the model (i.e. firm characteristics). This results in the following relationship between the hazard ratios of two different individuals:

$$HR = \frac{\hat{h}(t, X^*)}{\hat{h}(t, X)} = \frac{h_0(t)\exp(\sum_{j=1}^{p}\beta_j X_j^*)}{h_0(t)\exp(\sum_{j=1}^{p}\beta_j X_j)} = \exp(\sum_{j=1}^{p}\hat{\beta}_j (X_j^* - X_j))$$

Several methods exist to test for this assumption. In this paper, we have analyzed the Schoenfeld residuals[90], but do not report results for sake of brevity. In most tested models, size, sector and region are shown to deviate from this assumption. To resolve this issue, all models are stratified with these variables as stratas[91]. The stratification process allows variables to be adjusted for without estimating their effect. It also allows the form of the underlying hazard function to vary across levels of stratification variables.

Let $Z_1, \dots Z_k$ denote the variables not satisfying the proportional hazard assumption, and $Z^*$ the categorical variable of all possible combinations between the $Z_k$ variables. Stratas are then the categories of $Z^*$. The general stratified Cox model is given by:

$$\lambda_g(t|X) = \lambda_{0g}\exp(\beta_1 x_1 + \cdots + \beta_p x_p)$$

[90]Schoenfeld residuals after a Cox model are defined for each predictor variable in the model. The null hypothesis for the test on proportional hazards base on the scaled Schoenfeld residuals is that the slope of Schoenfeld residuals against a function of time is zero for each predictor variable. A non-zero slope is thus an indication of a violation of the proportional hazard assumption. To compute theses residuals, we used the 'estat phtest, detail' Stata command, for each model specification.

[91] Stata 12.1 software allows up to five strata variables

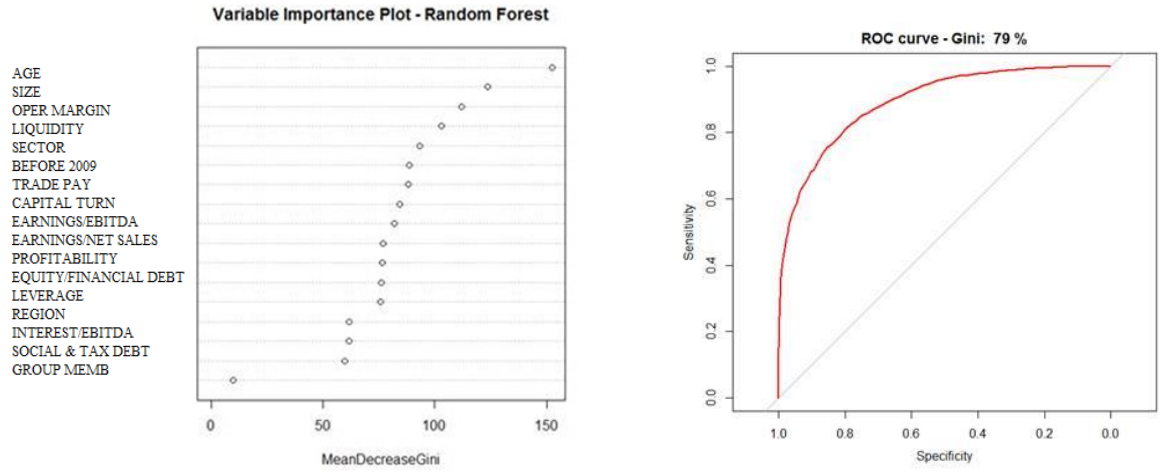
with $g = 1, \ldots, k^*$ strata defined from $Z^*$, and $X_1, \ldots X_p$ the variables satisfying the proportional hazards assumption.

## 3.3. Results and discussions

### 3.3.1. Random forests

The first stage of our empirical analysis is a Random Forests model applied to the entire sample of 10,423 firms which entered a reorganization procedure between 2006 and 2012. Kaplan-Meier survival estimates displayed in Figure 3-2 show that sample-firms' survival rate drop out to 50% by the first year after reorganization opening. Therefore, we first build a forest of 100 trees in view to identify the determinants of firm liquidation within the first year of reorganization. The response variable equals 1 if the firm is liquidated before the end of the year after the opening of the reorganization procedure and 0 otherwise. The explanatory variables include firm structural characteristics and a wide range of financial and economic health indicators. Figure 3-4 displays the results relative to the Random Forest at the one year-time horizon. The left graph plots the variable importance measure produced. The measure of variable importance provided by the Random Forests algorithm can be used to rank variables (Chen & Ishwaran, 2012). It is estimated by looking at the change in the error prediction rate when data for each variable is permuted while all others are left unchanged (Liaw and Wiener, 2002).

**Figure 3-4 Variable importance plot: one-year horizon (100 trees)**

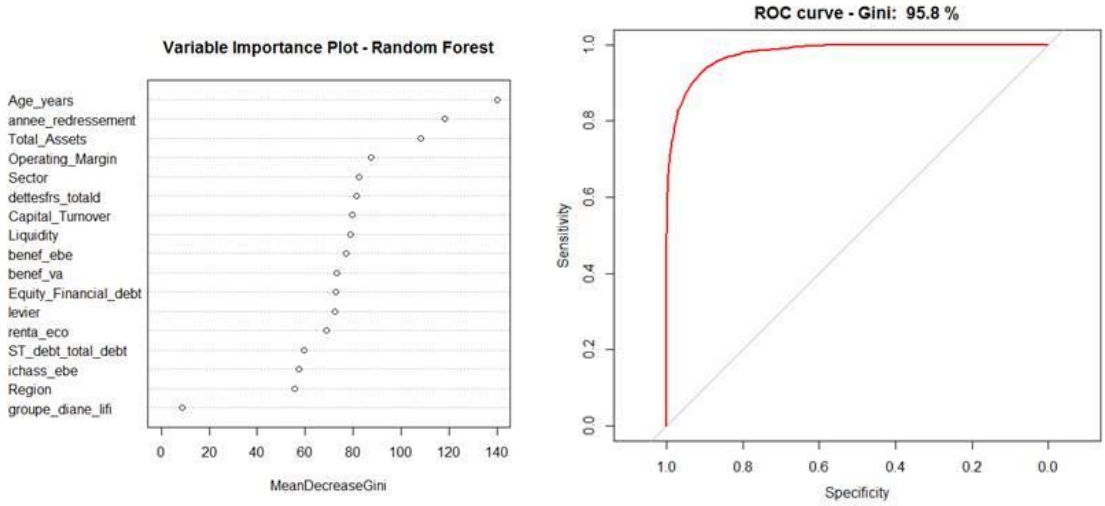



The left graph of Figure 3-4 shows that among all variables included in the dataset, firm age has the greatest influence on the outcome variable of liquidation within the first year of reorganization. By order of importance, firm size (measured as the total amount of assets), operating margins, liquidity level (measured by the quick ratio), sector affiliation as well as

the macroeconomic conditions (proxied by the variable *Before 2009*) have the greatest explanatory power of firm probability of liquidation within the first of reorganization. Firm profits and leverage are also shown to influence the risk of liquidation at the one-year horizon.

The graph also shows that firm affiliation to business group is classified at the lowest rank, suggesting that group membership has practically no influence on the probability of liquidation within one year. The major shortcoming of Random Forests is that variable ranking does provide information only on the intensity of the influence of each variable, without any information on the way the explanatory variable influences the response variable. Nonetheless, the results provided by Random Forests model remain very useful. Indeed, contrarily to classical parametric models, Random Forests is not based on binding assumptions regarding the distribution of the data. It particularly allows including an infinite number of variables without any concern for the potential multicollinearity problem between variables. This enables us to explore all possible variables with have a significant explanatory power of the probability of liquidation within the reorganization process. The overall accuracy of our model is presented in the right graph which plots the sensitivity (true positive rate) in function of the specificity of the model (the false positive rate). The graph shows that the forest has a GINI index estimated around 79% equivalent to an AUC[92] of 89.25%, which suggest that the model is quite adequate.

**Figure 3-5 Variable importance plot: two-years horizon (100 trees)**




We again apply the same algorithm over the entire sample of reorganizing firms. The outcome variable is now binary, accounting for firm's status (liquidated/still operating) by the

[92] Area under the ROC-curve (AUC) is a measure of performance for prediction accuracy. The higher the value of AUC, the better the model is. Gini calculation is closely related to the calculation of AUC. It can be computed by GINI=2*AUC-1.

second year after reorganization opening. The results are presented in Figure 3-5. Globally, variable ranking remains almost the same with firm age as the most influent variable on the probability of liquidation within two years from reorganization opening. The only significant difference with the first model is the variable *Before 2009* accounting for the macroeconomic conditions and which is particularly powerful to explain firm survival (or equivalently, liquidation) until the year-2 after bankruptcy. The overall accuracy of the model is shown in the right graph figure 3-5. The GINI index of 95.8, equivalent to an AUC of 97.9% suggests that firm characteristics (age, size and sector) and financial health measures, as well as the macroeconomic conditions are very significant determinants of firm survival in the first two years of the reorganization process.

### 3.3.2. Survival analysis

In view to bring more insights into firm survival after bankruptcy, we focus in the following on the determinants of the time-span elapsed until liquidation. Therefore, the second stage of analysis proceeds with a survival analysis performed using the Cox Proportional Hazards model. Survival time for firms liquidated within the studied period (i.e. until December 2012) is computed as the time elapsed between the liquidation decision and the reorganization opening. For firms with censored data, i.e. firms for which information on liquidation is not available, the survival time is the time elapsed between the reorganization opening and the end of the studied period (i.e. end of the year 2012). Table 3-4 below provides detailed results of different specifications of the Cox model applied to the entire sample of firms filing for reorganization. All estimations are stratified with sector, region and size as stratas.

The estimated hazard ratios displayed in Table 3-4 indicate that firm age decreases the hazard of liquidation. Indeed, the hazard ratio of the variable AGE equals 0.765 and is significant at 1%. This means that an increase of firm age by one year reduces the hazard of liquidation by 23.5%. This result is not surprising since older firms are deemed to have better abilities to resist to shocks hitting directly or indirectly their activities (Stinchcombe, 1965; Thornhill and Amit, 2003). Similarly, the variable *Before 2009* accounting for the stage of the economy suggests that firms entering a bankruptcy procedure before the economic downturn of 2009 are able to survive longer in the reorganization procedure. This could either mean that the crisis of 2009 had severe consequences on French firms, making their recovery process more difficult, or that the creditors where less incited to cooperate with reorganizing firms in unfavorable economic climate. The effect of debt leverage is as predicted. Higher levels of

debt relative to total assets are likely to increase the hazard of liquidation for reorganizing firms.

**Table 3-4 Survival analysis: total sample**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio |
| AGE | 0.765*** | 0.765*** | 0.759*** | 0.764*** | 0.761*** | 0.760*** | 0.787*** |
| | (0.012) | (0.012) | (0.012) | (0.012) | (0.012) | (0.012) | (0.014) |
| BEFORE 2009 | 0.654*** | 0.654*** | 0.648*** | 0.655*** | 0.650*** | 0.649*** | 0.603*** |
| | (0.023) | (0.023) | (0.023) | (0.023) | (0.023) | (0.023) | (0.025) |
| LIQUIDITY | | 1.000 | | | | | |
| | | (0.001) | | | | | |
| LEVERAGE | | 1.007*** | 1.007*** | | 1.006*** | 1.006*** | 1.006*** |
| | | (0.001) | (0.001) | | (0.001) | (0.001) | (0.001) |
| ASSETS SPEC | | | | 0.871 | | | |
| | | | | (0.074) | | | |
| OPER MARGIN | | | | 0.883*** | 0.896*** | | 0.902*** |
| | | | | (0.018) | (0.018) | | (0.021) |
| TRADE PAY | | | 1.353*** | | 1.352*** | 1.352*** | 1.371*** |
| | | | (0.096) | | (0.096) | (0.096) | (0.108) |
| FINANC DEBT | | | 0.772*** | | 0.780*** | 0.777*** | 0.775*** |
| | | | (0.053) | | (0.053) | (0.053) | (0.058) |
| PROFITABILITY | | | | | | 0.920*** | |
| | | | | | | (0.018) | |
| GROUP MEMB | | | | | | | 0.988 |
| | | | | | | | (0.031) |
| Log likelihood | -26879.663 | -26872.12 | -26852.003 | -26864.17 | -26840.803 | -26844.604 | -22218.1 |
| LR ($chi^2$) | 415.66*** | 426.49*** | 466.51*** | 446.64*** | 488.91*** | 481.31*** | 398.77*** |
| No. of failures | 5,935 | 5,935 | 5,935 | 5,935 | 5,935 | 5,935 | 5,036 |
| No. of observations | 10,423 | 10,423 | 10,423 | 10,423 | 10,423 | 10,423 | 9,318 |

Note: Table 3-4 displays the results of different Cox proportional hazards model estimating the survival of a sample of 10,423 French firms attempting reorganization between 2006 and 2012. Results displayed are the hazard ratios.

Nonetheless, it is worth noting that the hazard ratio is not significantly different from 1, suggesting that the effect of firm leverage might be marginal. In contrast, the hazard of liquidation is likely to be lower for a relatively higher level of financial debt. Our suggestion is that firms with more financial debt are more likely to be viable. Indeed, financial institutions are more likely to provide funding for firms they believe have sufficient capacity to repay their debt later. Turning to the impact of firm economic performance as measured by the ratio of operating margins and the ratio of profitability, we find that firms with better economic performance survive longer after bankruptcy. Finally the hazard ratio of group affiliation to a business groups is not significant implying that stand-alone firms and affiliated firms have equal hazards of liquidation. In the following we aim to explore in more depth whether business group affiliation benefits equally to all group affiliated firms. For this aim,

we only focus on group affiliated firms and evaluate whether group characteristics have any influence on firms' hazard of liquidation.

Table 3-5 below reports the results of Cox model applied to our subsample of 3,029 affiliated firms. All estimations are stratified by sector and region as stratas. The estimated effects of firm age, leverage and economic profitability on the hazard of liquidation are the same as previous. Interestingly, firm size and affiliation to a domestic business group are shown to increase the hazard of liquidation for group affiliated firms. This means that larger firms and those affiliated to French business groups are liquidated faster than smaller ones. Still, the estimated effect of affiliation to a French group on the hazard of liquidation is stronger than that of firm size. These results indicate that either French judges are biased towards the rescue of domestic groups, or that domestic groups are less involved in the rescue of their struggling affiliates. In contrast, the hazard of liquidation is likely to be reduced by the control of the parent company.

**Table 3-5 Survival analysis: group affiliated firms**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio |
| AGE | 0.832*** | 0.827*** | 0.824*** | 0.819*** | 0.820*** | 0.824*** | 0.824*** | 0.820*** |
| | (0.027) | (0.027) | (0.027) | (0.027) | (0.027) | (0.027) | (0.027) | (0.026) |
| SIZE | 1.050** | 1.050** | 1.049** | 1.058*** | 1.039*** | 1.050*** | 1.061*** | 1.028 |
| | (0.021) | (0.021) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) | (0.022) |
| BEFORE 2009 | 0.495*** | 0.488*** | 0.487*** | 0.491*** | 0.506*** | 0.487*** | 0.494*** | 0.502*** |
| | (0.039) | (0.039) | (0.039) | (0.039) | (0.039) | (0.039) | (0.039) | (0.041) |
| LIQUIDITY | | 1.208*** | 1.187*** | 1.205*** | 1.219*** | 1.223*** | 1.225*** | 1.216*** |
| | | (0.037) | (0.039) | (0.038) | (0.039) | (0.039) | (0.039) | (0.037) |
| LEVERAGE | | 1.027** | 1.028** | 1.036*** | 1.031** | 1.034** | 1.026 | |
| | | (0.011) | (0.011) | (0.013) | (0.013) | (0.013) | (0.013) | |
| ASSETS SPEC | | | | 0.858 | | | | |
| | | | | (0.178) | | | | |
| OPER MARGIN | | | | 0.766*** | 0.765*** | 0.759*** | 0.753*** | 0.776*** |
| | | | | (0.059) | (0.058) | (0.058) | (0.058) | (0.061) |
| TRADE PAY | | | 1.309* | 1.258 | | | | |
| | | | (0.186) | (0.179) | | | | |
| FINANC DEBT | | | 0.771* | 0.793 | | | | |
| | | | (0.114) | (0.118) | | | | |
| DOMESTIC GR | | | | | 1.198*** | | | 1.183** |
| | | | | | (0.08) | | | (0.08) |
| MAJOR CONTROL | | | | | | 0.806*** | | 0.819** |
| | | | | | | (0.065) | | (0.066) |
| GROUP DEBT | | | | | | | 1.107 | 1.202 |
| | | | | | | | (0.137) | (0.137) |
| Log likelihood | -6314.1008 | -6302.4903 | -6297.8138 | -6291.9877 | -6292.5111 | -6292.6376 | -6291.7689 | -6286.1417 |
| LR ($chi^2$) | 131.25*** | 154.47*** | 163.82*** | 175.47*** | 174.43*** | 174.17*** | 166.61*** | 177.87*** |
| No. of failures | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 |
| No. of observations | 3,029 | 3,029 | 3,029 | 3,029 | 3,029 | 3,029 | 3,029 | 3,029 |

Note: Table 3-5 displays the results of different Cox proportional hazards model estimating the survival of a sample of 3,029 French affiliated firms attempting reorganization between 2006 and 2012. Results displayed are the hazard ratios.

Contrarily to what expected, the estimated hazard ratio of *MAJOR CONTROL* variable suggests that the hazard of liquidation for firms majorly controlled by their parent company is 20% lower everything else constant. This positive relationship between the percentage of control of the parent company and firm survival provides evidence that parent companies might be more involved in the rescue of their controlled affiliates. Firm liquidity is found to increase the hazard of liquidation, suggesting that firms with lower levels of liquidity are less likely to be liquidated in a short period of time after the filing.

**Table 3- 6 Survival analysis during observation period and after plan confirmation for the entire sample**

| | **Survival up to 6 months** | | | **Survival after plan confirmation** | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio |
| AGE | 0.754*** | 0.759*** | 0.764*** | 0.782*** | 0.760*** | 0.805*** |
| | (0.017) | (0.017) | (0.022) | (0.058) | (0.057) | (0.064) |
| SIZE | | | | 0.874** | 0.880** | 0.883** |
| | | | | (0.050) | (0.049) | (0.048) |
| BEFORE 2009 | 0.765*** | 0.763*** | 0.751*** | 0.901*** | 0.899 | 0.875 |
| | (0.041) | (0.040) | (0.049) | (0.288) | (0.289) | (0.311) |
| LIQUIDITY | 1.000 | | | 0.854 | | |
| | (0.001) | | | (0.153) | | |
| LEVERAGE | 1.007*** | 1.007*** | 1.007*** | 0.879 | | |
| | (0.001) | (0.001) | (0.001) | (0.073) | | |
| ASSETS SPEC | | 1.101 | | | 0.551 | |
| | | (0.138) | | | (0.217) | |
| OPER MARGIN | | 0.885*** | 0.890*** | | 1.019 | |
| | | (0.021) | (0.023) | | (0.120) | |
| TRADE PAY | 1.263** | 1.263** | 1.272** | 2.197** | 2.181** | 2.767*** |
| | (0.128) | (0.128) | (0.143) | (0.712) | (0.682) | (0.919) |
| FINANC DEBT | 0.627*** | 0.636*** | 0.644*** | 0.790 | | |
| | (0.064) | (0.065) | (0.073) | (0.248) | | |
| GROUP MEMB | | | 1.004 | | | 0.889 |
| | | | (0.047) | | | (0.121) |
| SECTOR dummies | - | - | - | NO | NO | NO |
| REGION dummies | - | - | - | NO | NO | NO |
| Log likelihood | -13941.169 | -13931.375 | -11382.705 | -2120.4663 | -2121.1746 | -1923.2886 |
| LR ($chi^2$) | 208.37*** | 227.95*** | 178.67*** | 71.76*** | 70.35*** | 62.38*** |
| No. of failures | 2,734 | 2,734 | 2290 | 305 | 305 | 305 |
| No. of observations | 10,423 | 10,423 | 9,318 | 2,205 | 2,205 | 2,205 |

Note: Table 3-6 displays the results of different Cox proportional hazards model estimating the survival of different cutoffs of a sample of 10,423 French firms attempting reorganization between 2006 and 2012. Columns 1 to 3 estimate the survival up to 6 months after the procedure opening. Columns 4 to 6 estimate the survival of 2,205 firms after reorganization plan confirmation. Results displayed are the hazard ratios.

The opening decision of a Judicial Reorganization procedure leads to an observation period of 6 months renewable twice exceptionally. During the observation period, a court appointed administrator evaluates firm's recovery prospects and decides whether business

should be continued under a reorganization plan or sold as going concern to a third party or liquidated. Given this, we pursue our analysis of firm survival within reorganizations, focusing on two distinct elements: the observation period and the reorganization plan. The first set of estimations are presented in the columns 1 to 3 of Table 3-6 and aim to explore firm survival during the observation period for all sample-firms, more particularly, the first 6 months. All estimations are stratified by sector, region and size.

**Table 3-7 Survival analysis during observation period and after plan confirmation for group affiliates**

| | **Survival up to 6 months** | | | | **Survival after plan confirmation** | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio | Haz.Ratio |
| AGE | 0.788*** | 0.797*** | 0.802*** | 0.790*** | 0.857 | | | |
| | (0.036) | (0.037) | (0.036) | (0.036) | (0.123) | | | |
| SIZE | | | | | 0.774** | 0.720*** | 0.717*** | 0.735*** |
| | | | | | (0.072) | (0.071) | (0.071) | (0.076) |
| BEFORE 2009 | 0.677*** | 0.633*** | 0.643*** | 0.658*** | 0.495 | | | |
| | (0.085) | (0.085) | (0.080) | (0.083) | (0.392) | | | |
| LIQUIDITY | 1.175*** | 1.195*** | 1.198*** | 1.195*** | 0.731 | | | |
| | (0.040) | (0.039) | (0.039) | (0.039) | (0.313) | | | |
| LEVERAGE | 1.012 | | | | 1.130 | | | |
| | (0.026) | | | | (0.276) | | | |
| OPER MARGIN | 0.738*** | 0.7195*** | 0.727*** | 0.729*** | | | | |
| | (0.083) | (0.082) | (0.082) | (0.082) | | | | |
| TRADE PAY | 1.358 | | | | 5.344*** | 5.529*** | 5.41*** | 5.87*** |
| | (0.284) | | | | (3.22) | (3.21) | (3.09) | (3.42) |
| FINANC DEBT | 0.746 | | | | 0.663 | | | |
| | (0.164) | | | | (0.439) | | | |
| DOMESTIC GR | 1.200** | | | 1.183** | 0.69 | | | 0.726 |
| | (0.111) | | | (0.111) | (0.322) | | | (0.33) |
| MAJOR CONTROL | | 0.731*** | | 0.754** | | 1.199 | | 1.177 |
| | | (0.086) | | (0.086) | | (0.53) | | (0.52) |
| GROUP DEBT | | | 1.205 | 1.161 | | | 1.848 | 1.922 |
| | | | (0.190) | (0.186) | | | (1.92) | (2.07) |
| Log likelihood | -2910.4591 | -2912.1885 | -2914.485 | -2909.7123 | -509.03134 | -510.9639 | -510.88999 | -510.5405 |
| LR (chi$^2$) | 68.13*** | 64.67*** | 58.96*** | 68.51*** | 42.71*** | 38.18*** | 38.32*** | 39.02*** |
| No. of failures | 750 | 750 | 750 | 750 | 90 | 90 | 90 | 90 |
| No. of observations | 3,029 | 3,029 | 3,029 | 3,029 | 681 | 681 | 681 | 681 |

Note: Table 3-7 displays the results of different Cox proportional hazards model estimating the survival of different cutoffs of a sample of 3,029 French affiliated firms attempting reorganization between 2006 and 2012. Columns 1 to 3 estimate the survival up to 6 months after the procedure opening. Columns 4 to 6 estimate the survival of 681 affiliated firms after reorganization plan confirmation. Results displayed are the hazard ratios.

The second set of estimations are reported in the last three columns of Table 3-6 and aim to explore the survival after plan adoption of 2,205 sample firms with available information on reorganization plan adoption. All estimations are stratified by sector and region. Overall, estimated hazard ratios confirm that firm age reduce the hazard of liquidation at both the observation period and after plan adoption. Interestingly, firm size is shown to decrease the hazard of liquidation after adoption, suggesting that larger firms are more likely to survive after a reorganization plan is adopted. Macroeconomic conditions seem to have a significant influence only on firm survival on the short term (i.e. during the observation

period). Consistently with the findings of Barniv et al. (2002), our results suggest that accounting variables used in prior literature for predicting financial distress or bankruptcy are nor more useful to the predict the final bankruptcy resolution, in particular after plan adoption. This leads us to think that firm financial characteristics are strong determinants of survival in reorganization on the short term. In contrast, the success of reorganization plans might not depend significantly on firm characteristics but on the content of the plan and the way the plan is implemented.

The same estimations are applied for only group affiliated firms in both cases: survival during the observation period and survival after plan confirmation. Results are displayed in Table 3-7. Findings confirm the previous conclusions and further suggest that group characteristics are more significant to explain firm survival at the short term.

## Conclusion

Because of the controversial nature of bankruptcy reorganization procedure, it has been subject to active research. In this regard, the US Chapter 11 reorganization procedure was a matter of particular concern. In attempt to investigate the practical worth of the bankruptcy reorganization process, a great deal of research has been concerned by the 'success' of the procedure from different perspectives. Initial studies of the outcomes of bankruptcy were focused on the examination of the number of firms emerging from the process. Later the research was extended to finding the determinants of both the 'success' of the procedure as well as the performance of firms emerging from the process. The divergent results related to the various measures of 'success' and performance of emerging firms does not allow however to draw generalizable conclusions regarding the effectiveness of the process.

Rather than focusing on the efficiency properties of the bankruptcy reorganization procedure, we investigate in this chapter the determinants of firm survival after reorganization, taking into account the time spent under reorganization which is still scarcely explored in previous research. The originality of our work is attributable to the unique dataset which is drawn from a largely unexplored population, a sample of mostly small and medium sized firms. Our analysis is also original since it is among the very few studies to bring insights into European reorganization procedures and particularly France.

When predicting the final outcome of bankruptcy, the power of financial indicators might not be as effective, since most bankrupt firms might share similar characteristics. Therefore, the importance of the use of non-financial variables to complete the analysis

becomes very high (Laitinen, 2011). In this regard, we use new variables, partly used previously by Dewaelheyns and Van Hulle (2009). It is firm affiliation to a business group and business groups characteristics. The expected relationship between firm affiliation to a business group and the outcome of bankruptcy is mainly driven from the previous literature on business groups' internal capital markets and their impact on firm performance.

Using two empirical models, barely associated into one study, the semi-parametric Cox proportional Hazards model and the non-parametric Random Forests model, we reach strong evidence on the relevance of firms' financial and operational characteristics at triggering for the prediction of the outcome and duration of reorganization procedures, notably on the short term. Interestingly, our findings suggest that the power of firm financial characteristics as well as business groups' characteristics might however not be very high for predicting the final outcome of bankruptcy in particular after reorganization plan confirmation. These results lead us to think that, more than firm and group characteristics, the robustness of the reorganization plan and its implementation might have more explanatory power for predicting the final outcome of bankruptcy. A natural extension of this chapter would therefore be to explore the changes in firm financial situation during the reorganization process and their influence on the outcome of the procedure.

# Appendices of Chapter 3

**Table 3-8 Sample characteristics**

| | Whole sample | | | | | Plan Confirmation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Liquidations** | **%** | **Censored** | **%** | **Total** | **Liquidations** | **%** | **Censored** | **%** | **Total** |
| **REGION** | | | | | | | | | | |
| Greater Paris Region | 820 | 61.93 | 504 | 38.07 | 1,324 | 33 | 13.20 | 217 | 86.80 | 250 |
| North East | 1,098 | 56.57 | 843 | 44.43 | 1,941 | 48 | 12.63 | 332 | 87.37 | 380 |
| South East | 1,289 | 54.97 | 1,056 | 45.03 | 2,345 | 70 | 13.23 | 459 | 86.77 | 529 |
| South West | 1,068 | 57.85 | 778 | 42.15 | 1,846 | 70 | 17.81 | 323 | 82.19 | 393 |
| Central Region | 602 | 54.23 | 508 | 45.77 | 1,110 | 34 | 12.83 | 231 | 87.17 | 265 |
| North West | 1,058 | 56.97 | 799 | 43.03 | 1,857 | 55 | 14.18 | 333 | 85.82 | 388 |
| **Total** | **5,935** | | **4,488** | | **10,423** | **310** | | **1,895** | | **2,205** |
| **SECTOR** | | | | | | | | | | |
| Food industry | 34 | 50.00 | 34 | 50.00 | 68 | 1 | 4.76 | 20 | 95.24 | 21 |
| Manufacturing industry | 902 | 52.41 | 819 | 47.59 | 1,721 | 37 | 9.59 | 349 | 90.41 | 386 |
| Construction | 1,671 | 61.34 | 1,053 | 38.66 | 2,724 | 107 | 18.90 | 459 | 81.10 | 566 |
| Retailing | 1,121 | 57.75 | 820 | 42.25 | 1,941 | 48 | 12.83 | 326 | 87.17 | 374 |
| Transport and Mail | 279 | 55.91 | 220 | 44.09 | 499 | 16 | 15.24 | 89 | 84.76 | 105 |
| Hotels and Restaurants | 635 | 54.13 | 538 | 45.87 | 1,173 | 30 | 11.54 | 230 | 88.46 | 260 |
| NTIC | 145 | 54.92 | 119 | 45.08 | 264 | 3 | 7.32 | 38 | 92.68 | 41 |
| Real Estate | 106 | 58.56 | 75 | 41.44 | 181 | 6 | 15.38 | 33 | 84.62 | 39 |
| Business services | 661 | 59.76 | 445 | 40.24 | 1,106 | 30 | 13.82 | 187 | 86.18 | 217 |
| Household services | 381 | 51.07 | 365 | 48.93 | 746 | 32 | 16.33 | 164 | 83.67 | 196 |
| **Total** | **5,935** | | **4,488** | | **10,423** | **310** | | **1,895** | | **2,205** |
| **GROUP CHARACTERISTICS** | | | | | | | | | | |
| DOMESTIC GROUP | 379 | 49.61 | 385 | 50.39 | 764 | 6 | 5.13 | 111 | 94.87 | 117 |
| FOREIGN GROUP | 1,293 | 57.09 | 972 | 42.91 | 2,265 | 84 | 14.89 | 480 | 85.11 | 564 |
| **Total** | **1,672** | | **1,357** | | **3,209** | **90** | | **591** | | **681** |
| MAJOR CONTROL | 1,472 | 54.18 | 1,245 | 45.82 | 2,717 | 84 | 13.53 | 537 | 86.47 | 621 |
| MINOR CONTROL | 200 | 64.10 | 112 | 35.90 | 312 | 6 | 10.00 | 54 | 90.00 | 60 |
| **Total** | **1,672** | | **1,357** | | **3,209** | **90** | | **591** | | **681** |

**Table 3-9 Variables definitions**

| **Variable Name** | **Definition** |
|---|---|
| **Firm financial and economic characteristics** | |
| SIZE | Log(total assets) |
| AGE | Log(years between the date of establishment and the date of bankruptcy) |
| LIQUIDITY | Ratio: (Current Assets-Inventory and W.I.P)/ Current Liabilities |
| LEVERAGE | Ratio: Total Debt/Total Assets |
| FINANC DEBT | Ratio: Financial Debt/Total Debt |
| TRADE PAY | Ratio: Trade Debt/Total Debt |
| PROFITABILITY | Ratio: Operating Income/Total Assets |
| OPER MARGIN | Ratio: EBITDA/Net Sales |
| ASSETS SPEC | Ratio: Fixed Assets – Land and Buildings/Total Assets |
| GROUP MEMB | Dummy: value=1 if company is affiliated to a business group |
| **Group characteristics** | |
| UCO CONTROL | Dummy: value=1 if company is controlled at more than 50% by the parent company |
| Domestic GR | Dummy: value=1 if company is controlled by a domestic group |
| GROUP DEBT | Ratio: Net borrowing from the group/ Total Assets |

**Table 3-10 Correlation matrix**

| | AGE | SIZE | LIQUDITY | LEVERAGE | TRADE PAY | FINANC DEBT | OPER MARGIN | ASSETS SPEC | PROFITABILITY |
|---|---|---|---|---|---|---|---|---|---|
| AGE | 1 | | | | | | | | |
| SIZE | 0.377*** (0.000) | 1 | | | | | | | |
| LIQUIDITY | 0.00506 (0.606) | -0.00638 (0.515) | 1 | | | | | | |
| LEVERAGE | -0.00571 (0.560) | -0.104*** (0.000) | -0.00463 (0.637) | 1 | | | | | |
| TRADE PAY | 0.181*** (0.000) | 0.225*** (0.000) | -0.00543 (0.580) | -0.0300** (0.002) | 1 | | | | |
| FINANC DEBT | 0.0379*** (0.000) | 0.212*** (0.000) | -0.0182 (0.064) | 0.0143 (0.146) | -0.172*** (0.000) | 1 | | | |
| OPER MARGIN | 0.0295** (0.003) | 0.194*** (0.000) | 0.00648 (0.508) | -0.112*** (0.000) | 0.00730 (0.456) | 0.0520*** (0.000) | 1 | | |
| ASSETS SPEC | -0.211*** (0.000) | -0.205*** (0.000) | -0.0225* (0.022) | 0.00398 (0.684) | -0.152*** (0.000) | 0.0553*** (0.000) | -0.0257** (0.009) | 1 | |
| PROFITABILITY | 0.0321** (0.001) | 0.194*** (0.000) | 0.00756 (0.440) | -0.109*** (0.000) | 0.00927 (0.344) | 0.0457*** (0.000) | 0.909*** (0.000) | -0.0665*** (0.000) | 1 |
| *N* | 10423 | | | | | | | | |

*p*-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

# Conclusion générale

La recherche en matière de défaillance s'est développée depuis le début du XIXème siècle. Longtemps abordée d'un point de vue purement juridique, la défaillance fut ensuite étudiée par des chercheurs appartenant à différents domaines de recherche. Précisément, la crise des années 1930 et les premiers travaux d'auteurs comme FitzPatrick (1932) ont considérablement modifié l'approche du sujet. C'est alors que la problématique de la défaillance s'est affranchie de l'emprise du droit pour devenir un objet économique à part entière. Deux grands courants résultent de cette évolution. Le premier cherche à comprendre les causes des défaillances pour mieux les prévenir, tandis que le second s'interroge sur l'efficacité du droit à mettre en œuvre, ainsi que les réformes à entreprendre pour converger vers les dispositifs les plus efficaces. Cette thèse est influencée par les recherches réalisées au sein de ces deux courants. Elle propose une analyse empirique de la défaillance des entreprises en tenant compte de son caractère processuel et du cadre institutionnel dans lequel elle intervient.

Dans sa configuration actuelle, le droit français des défaillances favorise explicitement le sauvetage des entreprises et le maintien des emplois en priorité par rapport au remboursement des créanciers. Souvent critiqué pour sa clémence à l'égard des débiteurs, le droit français de la défaillance n'empêche toutefois pas la liquidation de 70% des entreprises défaillantes chaque année. Depuis le pic historique de 61 595 défaillances atteint en 2009, le nombre annuel de procédures collectives ouvertes en France s'est stabilisé autour de 60 000. A un an de l'ouverture de la procédure, le taux de survie de l'entreprise semble ne pas dépasser 39% (Source : Ellisphere, 2014).

Le principe directeur des procédures collectives en France est le respect de l'autonomie des personnes morales. De ce fait, toute entreprise est traitée comme une entité autonome, indépendamment de son appartenance à un groupe. Une extension de la procédure à l'ensemble du groupe, ou du moins à la société mère, peut être ordonnée conformément à l'article L. 621-2 du Code de commerce si le tribunal apporte la preuve de la fictivité de la filiale ou de l'existence d'une confusion de patrimoine entre les sociétés du groupe. Le développement de contentieux juridiques récents autour de la défaillance d'entreprises filiales des groupes et la mise en cause de la responsabilité des sociétés mères vis-à-vis de leurs filiales ont ravivé le débat sur le cloisonnement juridique des passifs des groupes.

Cette recherche repense l'hypothèse selon laquelle, la défaillance est un évènement à éviter à la lumière de deux constats. Le premier concerne la spécificité du cadre légal français

qui, malgré son orientation formellement favorable au maintien de l'entreprise et au sauvetage des emplois, n'empêche pas la liquidation de 70% des entreprises entrées en procédure collective. Le second concerne la place croissante des groupes au sein du tissu productif et la conciliation du processus de la filialisation avec le principe d'indépendance de l'entité. Trois chapitres empiriques ont été consacrés à cette fin, et sont précédés d'un premier chapitre descriptif.

Le premier chapitre de revue de la littérature met en évidence le caractère pluridisciplinaire de la défaillance qui relève des champs d'analyse de l'économie, de la gestion et du droit. Ce chapitre permet tout particulièrement de souligner l'existence de différentes voies de recherche jusqu'à présent marginalement exploitées. Elles concernent en particulier la prise en compte de la structure de l'actionnariat des entreprises dans les modèles de défaillance et l'analyse du droit sous l'angle de sa mise en œuvre par les acteurs impliqués dans la procédure. Ces deux constats font l'objet des investigations des trois chapitres empiriques qui suivent.

Le deuxième chapitre s'intéresse aux déterminants de la défaillance d'un échantillon composé de 101 363 entreprises « saines » et 20 565 entreprises défaillantes. L'analyse menée vise d'abord à expliquer les défaillances à partir de l'analyse de documents comptables et financiers des entreprises. Elle cherche par ailleurs à vérifier l'existence d'un lien entre la structure de l'actionnariat de l'entreprise (représentée par l'appartenance à un groupe) et le risque de défaillance. A partir de la littérature sur le lien entre structure de capital et performance des entreprises, nous testons une série d'hypothèses qui nous permettent de mettre en évidence l'impact significatif de l'appartenance de l'entreprise à un groupe sur la probabilité de défaillance. Le principal résultat obtenu nous amène à remettre en cause l'idée d'un risque plus faible de défaillance pour les entreprises appartenant à un groupe relativement aux entreprises indépendantes. Ainsi, nous avons montré qu'une entreprise contrôlée par un groupe aurait, toute chose égale par ailleurs, un risque plus élevé de défaillance qu'une entreprise indépendante. La prise en compte des caractéristiques des groupes et de celles des filiales met par ailleurs en évidence des probabilités de défaillantes différentes parmi les entreprises faisant partie de groupe. Ainsi, les plus grandes filiales, celles contrôlées par des têtes de groupes françaises, ou détenant plus de dettes envers leur groupe, auraient moindre une probabilité de défaillance que les autres. A l'inverse, les plus petites entreprises, contrôlées majoritairement par leur société mère, présentent un risque de défaillance accru.

Le troisième chapitre a prolongé notre analyse de la défaillance en traitant des déterminants du choix des tribunaux français entre le redressement et la liquidation de 19 814 entreprises entrées en procédure collective. L'identification des facteurs qui guident le choix des juges vers l'une ou l'autre des branches de l'alternative nous renseigne sur la mise en pratique des objectifs du droit français, tels qu'énoncés par les lois de mars 1984 et janvier 1985 à savoir, le sauvetage des entreprises et le maintien des emplois en priorité par rapport à la liquidation et au remboursement des créanciers. Ils éclairent également la position des juges vis-à-vis des groupes compte tenu du principe de l'autonomie de la personne morale. Les données utilisées contiennent des variables relatives aux caractéristiques économiques et financières des entreprises, aux caractéristiques des groupes et aux caractéristiques de leur environnement local et macroéconomique. Les principaux résultats obtenus mettent en évidence la manière dont les juges français œuvrent pour la préservation de l'emploi et le sauvetage des entreprises en tenant compte de leur performance économique. De surcroît, nos résultats montrent que la probabilité de redressement d'une entreprise au regard de sa liquidation immédiate, est d'autant plus élevée que les conditions macroéconomiques sont favorables, que l'entreprise appartient à un groupe et qu'elle est profitable.

Le quatrième chapitre trouve sa motivation dans le fort taux de sinistralité des entreprises faisant l'objet d'une tentative de redressement judiciaire. A partir de données sur 10 423 entreprises en sauvetage, ce chapitre tente d'identifier les éléments explicatifs de leur survie à différents horizons. Il prend en compte la durée de la procédure, dimension rarement, étudiée par la littérature et pourtant souvent mise en avant par les commentateurs. L'analyse des caractéristiques économiques et financières des entreprises permet de mettre en évidence la capacité des ratios de performance et de structure de la dette à prédire la probabilité de liquidation accélérée après l'entrée en redressement. Ces mêmes indicateurs sont cependant moins importants pour prédire la probabilité de survie après l'adoption d'un plan de redressement. Les principaux résultats obtenus montrent par ailleurs que ni l'appartenance à un groupe, ni les caractéristiques des groupes n'ont d'influence sur la survie de l'entreprise. Néanmoins, nos résultats suggèrent que l'appartenance de l'entreprise à un groupe français accélère sa liquidation après une tentative de redressement par rapport à une entreprise appartenant à un groupe étranger. Le même résultat est observé pour les entreprises de grande taille, dont la probabilité de liquidation rapide à la suite d'une tentative de redressement est plus forte que celles des petites entreprises. Ceci suggère une préférence des juges à l'égard des entreprises de grande dimension et des filiales de groupes français.

Tout au long de ces trois chapitres empiriques qui analysent l'intégralité du déroulement d'une faillite, le phénomène de la défaillance est clairement présenté comme un processus et non comme une succession de deux états. Les caractéristiques mêmes de l'entreprise, celles du groupe auquel elle appartient, son environnement local et la conjoncture macroéconomique se combinent pour expliquer chaque étape de ce processus.

Si l'objet central de cette recherche est la faillite des entreprises, cette thèse contribue également à la littérature sur les groupes d'entreprises. Mettant en évidence le rôle de la structure de l'actionnariat dans la défaillance et l'incapacité des groupes à sauver leurs filiales une fois la cessation des paiements constatée, elle ouvre trois voies de réflexion sur la place des groupes au sein du tissu productif.

La première voie se réfère à la relation entre l'entreprise et le groupe. Le rôle ambigu des groupes vis-à-vis de leurs filiales et l'opacité de telles structures révélés par les contentieux juridiques accompagnant les nombreuses défaillances récentes de filiales de groupes nous poussent à envisager des indicateurs susceptibles d'aider les juges à différencier correctement les entreprises-filiales selon qu'elles sont susceptibles ou non de bénéficier du soutien des sociétés mère et sœurs dans le cadre d'une procédure de redressement. Nous pensons notamment à la prise en compte de la santé financière globale du groupe approximée par un indicateur de santé financière de l'actionnaire direct de l'entreprise et/ou celle de sa société mère. Toutefois, il convient de noter qu'une telle mesure pourrait montrer ses limites dans la mesure où la capacité financière d'un groupe à soutenir une filiale en difficulté ne garantit pas forcément le soutien à la filiale s'il n'en n'a pas la volonté. Une extension possible de notre travail serait donc l'intégration d'un indicateur de la santé financière (ratio de solvabilité, par exemple, ou score de défaillance) de la société mère sur la probabilité de survie de ses filiales dans le cadre d'une procédure de redressement judiciaire.

La deuxième réflexion fait référence à l'objectif de préservation de l'emploi des juges français tel que révélé par les résultats de notre chapitre 2. A cet égard, nous rappelons que l'analyse des déterminants du choix des juges entre le redressement et la liquidation a révélé que les juges semblent moins exigeants vis-à-vis des entreprises de grande taille dont la probabilité de bénéficier d'une tentative de redressement n'est pas conditionnée par une meilleure profitabilité. Toutefois, les résultats du chapitre 3 mettant en évidence la plus forte probabilité de basculement en liquidation judiciaire des entreprises de grande taille nous pousse à douter du bien-fondé d'un sauvetage des emplois au mépris de la prise en compte de la performance économique de l'entreprise. Une analyse plus dynamique de l'évolution de la situation des entreprises durant le processus de redressement serait donc nécessaire afin de

pouvoir apprécier si le sauvetage à tout prix de l'entreprise n'est pas susceptible de porter préjudice à l'entreprise même.

La troisième fait allusion au taux de sinistralité très élevé, à la fois parmi les entreprises qui demandent la protection du tribunal et celles qui font l'objet d'une tentative de redressement. Ce constat nous amène à nous interroger sur la situation des entreprises au moment du déclenchement de la procédure. En général, les entreprises demandent l'ouverture d'une procédure quand leur situation est dégradée, soit parce qu'elles ont tendance à sous-estimer leurs problèmes, ou parce qu'elles craignent l'entrée en procédure collective. A ce moment-là, le caractère irrémédiable de leurs difficultés compromet souvent leur sauvetage. Il serait donc opportun d'inciter les entreprises à demander la protection du tribunal dès les signes avant-coureurs de difficultés. Les statistiques sur la sauvegarde montrent l'intérêt de la détection précoce. En France, les 10 547 procédures ouvertes entre 2006 et 2014 ont abouti dans 47,9% des cas à l'élaboration d'un plan de sauvegarde et dans 10,7% à l'élaboration d'un plan de redressement après conversion de la sauvegarde en redressement judiciaire. Ainsi, même si le nombre de sauvegardes reste encore assez faible, il apparait clairement que cette procédure collective, instituée par la loi du 26 juillet 2005, est efficace, puisque dans près de 6 cas sur 10, elle conduit au maintien de tout ou une partie de l'entité économique. Il est donc nécessaire de fournir les bons conseils aux chefs d'entreprise en vue de les inciter à solliciter l'ouverture de cette procédure, sans attendre une dégradation quasi irrémédiable de leur situation financière.

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