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Sommaire

Introduction générale

La place et le poids économique des petites et moyennes entreprises (PME) est considérable en France, dans la plupart des pays de l'Union Européenne et au sein de l'OCDE. On estime ainsi que 99% des sociétés en France et dans l'Union Européenne sont des PME contre 95% au sein de l'OCDE. Elles pèsent pour près de 60% des emplois et plus de la moitié de la valeur ajoutée dans ces zones économiques[1]. Si l'on exclut les très nombreuses microentreprises[2], qui représentent en France près de 96% du nombre total de sociétés, les PME non-microentreprises représentent 27% des emplois en France et un peu moins du quart de la valeur ajoutée[3].

Les PME forment le poumon économique de nombreux pays. Elles ont toutefois également de nombreuses fragilités du fait même de leur petite taille (Aldrich et Auster, 1986). Ces fragilités se traduisent par une capacité limitée à accéder à des financements externes (Berger et Udell, 1998), des ressources managériales réduites (Birley et Nordurn, 1985) ainsi qu'une notoriété moins établie vis-à-vis des tiers (Stinchcombe, 1965). En raison de ces ressources réduites, beaucoup de PME éprouvent des difficultés importantes dans leur croissance et leur développement, quand ce n'est pas leur survie même qui est menacée (Penrose, 1959 ; Aldrich et Auster, 1986). A titre d'illustration, on estime que l'espérance de vie d'une entreprise créée en France en 2018 est de 81 mois et que 80% des défaillances d'entreprises touchent celles réalisant moins de 250K€ de chiffre d'affaires[4]. C'est la raison pour laquelle le soutien aux PME est au cœur des politiques publiques économiques. En

[1] Source : Le financement des PME et entrepreneurs 2018 : tableau de bord de l'OCDE
[2] Une PME au sens de la Commission Européenne est une entreprise de moins de 250 salariés et dont soit le total de bilan est inférieur à 43M€ soit le chiffre d'affaires est inférieur à 50M€. Une microentreprise est une société de moins de 10 salariés et dont soit le total de bilan est inférieur à 2M€ soit le chiffre d'affaires est inférieur à 2M€.
[3] Source : Insee, https://www.insee.fr/fr/statistiques/3676799?sommaire=3696937
[4] Source : Coface, https://www.coface.fr/Actualites-Publications/Publications/Defaillances-d-entreprises-en-France-bilan-2018-et-perspectives-2019

témoignent les orientations du Small Business Act dans l'Union Européenne : la promotion de l'entrepreneuriat, l'allègement des contraintes réglementaires, l'accès au financement et l'accès aux marchés et à l'internationalisation[5]. En France, la création de la Banque Publique d'Investissement (BPI) en 2012 a visé en particulier le soutien aux PME à travers l'octroi de financements directs mais aussi l'accompagnement à la croissance et à l'export[6]. La création du PEA-PME en 2014 est un autre exemple de la volonté des pouvoirs publics de diriger l'épargne des Français vers le financement des PME, cotées en l'occurrence. Il n'y a eu toutefois que six introductions en bourse de PME sur le marché qui leur est dédié, Euronext Growth, en 2017, et on y dénombre moins de deux cents PME cotées quand il y a plus de 130 000 PME en France[7]. Ces chiffres illustrent le faible accès des PME françaises aux marchés de capitaux et expliquent au moins en partie les orientations des politiques publiques en direction des PME visant à améliorer leurs conditions de financement.

Ainsi, comprendre comment les PME se développent, quelles stratégies elles utilisent pour contourner le manque de ressources mais aussi identifier quels facteurs de fragilités les rendent vulnérables, revêt une importance particulière tant pour la recherche que pour les politiques publiques. S'il existe plusieurs cadres conceptuels pour l'étude de la croissance des entreprises, l'approche dite « Resource-based View » a pris, au cours de ces trente dernières années, une importance considérable. Reposant sur les travaux pionniers de Penrose (1959), elle s'est graduellement enrichie jusqu'à sa formalisation dans les années 1980 et 1990 pour devenir l'un des cadres théoriques dominants aussi bien en stratégie qu'en management ou entrepreneuriat. L'idée centrale de la Resource-Based View est qu'une entreprise dispose d'un ensemble unique de ressources. Partant d'un inventaire des ressources à sa disposition, le

[5] Source : Commission Européenne, https://ec.europa.eu/growth/smes/business-friendly-environment/small-business-act_en

[6] Source : BPI France, https://www.bpifrance.fr/A-la-une/Actualites/Bilan-d-activite-2018-l-annee-de-toutes-les-accelerations-pour-Bpifrance-45478

[7] Source : Observatoire du financement des PME par le marché, http://observatoire-financement-entreprises.com/rapport-annuel-2017-1?context=b5adccb

dirigeant d'entreprise va chercher à exploiter au mieux la combinaison de ces ressources pour créer un avantage concurrentiel. Cela va l'amener à acquérir par la suite de nouvelles ressources, soit en les développant en interne, soit en les achetant, soit encore en faisant l'acquisition d'une autre société (Wernerfelt, 1984 ; Barney, 1991 ; McKelvie et Wiklund, 2010 ; Nason & Wiklund, 2018). Il résulte directement de cette perspective sur les ressources que les entreprises les plus jeunes et les plus petites sont celles qui disposent a priori du plus faible nombre de ressources. Ceci explique, au moins en partie, leur fort taux de faillite : ce sont les « liabilities of newness and smallness » (Stinchcombe, 1965 ; Aldrich et Auster, 1986).

Les contraintes financières qui pèsent sur les PME représentent une expression particulièrement importante de ce difficile accès à des ressources nouvelles. Néanmoins, peu de travaux en finance font explicitement référence au cadre de la Resource-based View en dépit de plusieurs proximités conceptuelles (Barney et al., 2001). Le cycle de vie financier[8] proposé par Berger et Udell (1998 ; 2006) est le principal cadre théorique sur lequel se fonde l'étude du financement des PME. Il s'agit en effet d'un modèle conceptuel permettant d'appréhender les difficultés rencontrées par les PME et leurs dirigeants en matière de financement[9]. Il repose sur l'idée que les entreprises les plus jeunes et les plus petites sont celles qui présentent le plus haut degré d'asymétrie d'information vis-à-vis des financeurs. Ceci explique qu'elles ne parviennent que difficilement à accéder à des financements externes, bancaires ou auprès des marchés des capitaux, les investisseurs refusant de courir le risque de les financer ou exigeant une prime de risque prohibitive (Stiglitz et Weiss, 1981).

[8] L'expression « cycle de vie financier » n'est pas la traduction littérale du titre de l'article de Berger et Udell (1998) mais est utilisé dans la littérature. Nous utiliserons donc également l'expression de « cycle de croissance financière » (financial growth cycle) qui est la traduction exacte du titre l'article de Berger et Udell avec le même sens.

[9] L'idée que l'une des fonctions centrales du dirigeant d'une entreprise en croissance est de parvenir à trouver les ressources financières requises figure explicitement dans l'ouvrage fondateur de Penrose (1959).

Il en résulte que les sociétés jeunes et en forte croissance ont recours à des techniques alternatives de financement comme le recours au financement par les proches et la famille de l'entrepreneur (Kotha et George, 2012). L'utilisation des techniques dites de Bootstrapping, comme l'accélération des encaissements des premières ventes ou la mutualisation de l'usage de certains équipements, montre une créativité et une adaptation forte de la part des entrepreneurs aux contraintes de financement (Winborg et Landström, 2001). Lorsque l'entreprise parvient à surmonter les premières difficultés et que la perspective d'une réussite industrielle se dessine, de nouveaux acteurs peuvent contribuer à son financement. L'explosion du recours au financement participatif, ou crowdfunding, au cours de ces dernières années montre qu'il est possible pour un entrepreneur de lever des fonds auprès d'un grand nombre d'investisseur, en particulier sous forme de dettes et dans une moindre mesure en fonds propres (Belleflamme et al., 2014 ; Boyer et al., 2016). Néanmoins, les montants levés par ces différentes sources restent modestes pour l'immense majorité des entreprises.

La présence dans l'écosystème des PME d'acteurs particuliers du financement, comme les business-angels ou les fonds de « private equity » joue également un rôle crucial. Ceux-ci amènent en effet non seulement les ressources financières mais aussi les conseils et l'accompagnement dont les PME ont besoin (Elitzur et Gavious, 2003 ; Hellmann et Puri, 2000 ; Mahieux, 2016). Si l'entreprise survit aux premières années et qu'elle démontre la viabilité de son modèle d'affaire, l'asymétrie d'information se réduit. Progressivement, un historique d'information comptable se constitue qui permet d'évaluer les performances de l'entreprise. De plus, la présence d'actifs plus faciles à évaluer (stocks, créances), dans le patrimoine de l'entreprise, représente des garanties qui sécurisent la position de prêteur ce qui facilite le financement bancaire, de court terme puis de long terme (Berger et Udell, 1998).

L'importance du financement bancaire pour les PME est considérable dans le monde entier (Beck et Demirguc-Kunt, 2006 ; Beck et al., 2008). En France, le taux d'endettement (endettement financier rapporté aux capitaux propres) des PME est légèrement inférieur à 80% en 2017, en baisse constante depuis 2011 où il atteignait 105% (Banque de France (2019), situation des entreprises en France en 2017). Les PME forment ainsi la seule catégorie d'entreprises pour laquelle il y ait une baisse du taux d'endettement ces dernières années. Il convient toutefois de noter que la part des PME ayant obtenu l'intégralité des crédits demandés auprès des établissements bancaires est en hausse sur la période 2012-2017. Près de 93% de crédits d'investissements et plus de 75% des crédits de trésorerie demandés par les PME ont ainsi été obtenus. Si le financement bancaire des PME en France reste ainsi incontournable, sa baisse indique également qu'au moins certaines catégories de PME ont recours à d'autres sources de financement, par exemple par introduction en bourse.

L'introduction en bourse marque la fin du cycle de croissance financière dans la mesure où elle représente un accès direct au financement par le marché. De plus, la nécessité de communiquer à travers le prospectus d'introduction de très nombreuses informations stratégiques et financières montre que cet accès à des financements nouveaux coïncide avec une forte réduction de l'opacité informationnelle (Chahine et Filatotchev, 2008). Au-delà du financement en capitaux propres qui correspond à l'introduction en bourse à proprement parler, l'entreprise cotée aura également la possibilité d'émettre des emprunts obligataires[10] ainsi que des billets de trésorerie, qui représentent des titres de dettes cotés. C'est sans doute sous la forme de placements privés, cotés ou non, que les PME lèvent le plus de fonds sous forme obligataire, une tendance forte depuis plusieurs années (Observatoire du financement des entreprises par le marché, 2017).

[10] La procédure d'Initial Bond Offering (IBO) proposée par NYSE Euronext permet aux PME-ETI d'émettre un emprunt obligataire sans être nécessairement cotée au préalable. Le faible succès rencontré par la procédure (aucune IBO entre 2014 et 2017) relativise son intérêt (source : rapport annuel de l'Observatoire du financement des entreprises par le marché).

Cette thèse s'inscrit dans le cadre conceptuel du cycle de croissance financière (Berger et Udell, 1998 ; 2006). Nous considérons toutefois qu'il y a une proximité entre la Resource-based View et le cadre conceptuel du cycle de vie financier. En effet, l'une des idées fortes du cycle de vie financier est que la croissance de l'entreprise lui permet d'accéder à des ressources financières nouvelles via la réduction de l'asymétrie d'information. A leur tour, ces ressources financières viendront faciliter la croissance future. Cet argument est central dans les articles fondateurs de la Resource-based View bien que ceux-ci aient une définition plus large des ressources que leur seul volet financier (Penrose, 1959 ; Wernerfelt, 1984 ; Barney, 1991). En effet, la croissance des PME nécessite l'accès à des ressources financières afin de permettre des investissements, tant sous forme d'immobilisations que de besoin en fonds de roulement. Néanmoins, la gestion de ces investissements de haut et de bas de bilan nécessite des ressources managériales et organisationnelles souvent rares dans les PME. C'est la qualité de cette gestion, et donc le niveau de ressources managériales et organisationnelles, en plus des ressources financières, qui vont se répercuter sur la performance et nourrir, à terme, la croissance des PME.

Problématique et questions de recherche

Cette thèse explore empiriquement l'articulation entre stratégie de croissance et gestion financière des PME dans le cadre conceptuel du cycle de croissance financière. L'étude de la croissance des entreprises tend à privilégier la question de la vitesse de croissance au détriment de l'étude des stratégies de croissance (McKelvie et Wiklund, 2010). Ces stratégies de croissance sont plus souvent opposées qu'étudiées conjointement et leurs conséquences organisationnelles sont largement ignorées (Wright et Stigliani, 2012 ;

Shepherd et al., 2018). Se pose dès lors la question de savoir quelles sont les stratégies de croissance mises en œuvre par les PME et quelles sont les conséquences organisationnelles de cette croissance. Par ailleurs, si l'étude de la croissance fait l'objet de nombreux travaux, plus rares sont ceux ayant examiné la gestion financière du bas de bilan, en particulier sur les PME. Or, la gestion financière, en particulier celle du besoin en fonds de roulement, est étroitement liée à la croissance d'une entreprise. Par exemple, le besoin en fonds de roulement d'une entreprise augmente mécaniquement lorsque le chiffre d'affaires d'augmente en raison de l'accroissement du montant des créances clients[11]. Il en résulte un besoin de financement additionnel dont l'origine est fréquemment bancaire (Kieschnick et al., 2013). En d'autres termes, une hausse du chiffre d'affaires a pour conséquence directe une hausse des besoins en financement. Dès lors, comprendre quelles solutions et stratégies les PME, contraintes financièrement, mettent en œuvre pour faire face aux conséquences de la croissance sur la gestion financière, revêt une importance particulière.

La thèse est structurée en deux parties développant respectivement l'étude des stratégies de croissance d'une part, et l'analyse du financement et de la gestion du besoin en fonds de roulement d'autre part. Chacune de ces parties comporte trois chapitres dont les contributions sont empiriques. Le premier chapitre développe une typologie d'articulation entre introduction en bourse et stratégie de croissance externe. Il souligne la fréquence des opérations de croissance externe chez les PME nouvellement cotées et documente les caractéristiques principales de ces opérations. Le second chapitre mesure l'impact d'une opération de croissance externe sur les performances économiques d'une PME et montre l'intérêt de ce mode de croissance pour les PME. Le troisième chapitre explore la constitution

[11] Si les dettes fournisseurs augmentent également lorsque le chiffre d'affaires croit, leur hausse est, toute chose égale par ailleurs, plus faible que celles des créances clients car le prix de vente d'une unité est supérieur au prix d'achat des éléments requis pour produire cette unité.

de groupes de sociétés par les PME en observant les motivations et les modalités de ce phénomène.

La seconde partie étudie la gestion financière et plus particulièrement la gestion et le financement du besoin en fonds de roulement. Le quatrième chapitre développe le lien entre gestion du besoin en fonds de roulement et performances économiques. Le cinquième chapitre analyse l'impact d'une introduction en bourse sur les éléments constitutifs du besoin en fonds de roulement. Enfin, le sixième chapitre compare la gestion du besoin en fonds de roulement entre des sociétés indépendantes et des sociétés membres d'un groupe. Les résultats soulignent le rôle de support du groupe pour la gestion du besoin en fonds de roulement des filiales.

Organisation de la thèse

Première partie

La fin du cycle de croissance financière de Berger et Udell (1998) est, nous l'avons vu, l'introduction en bourse. Elle permet aux entreprises, et en particulier aux PME, de s'affranchir des contraintes de financement restreignant leurs options stratégiques en leur offrant un accès direct aux marchés de capitaux. En particulier, les PME peuvent plus facilement adopter une politique de croissance externe une fois cotées dans la mesure où une telle stratégie requiert d'importants capitaux. La première partie de cette thèse est ainsi consacrée à l'étude des stratégies de croissance externe menées par les PME qui viennent de s'introduire en bourse. Cette partie se compose de trois chapitres, le premier visant à étudier

l'articulation entre stratégie de croissance externe et introduction en bourse et le second à observer l'effet d'une telle stratégie sur la performance de l'entreprise qui réalise l'acquisition. Quant au troisième chapitre, il observe le phénomène de création de groupes de sociétés avant et après l'introduction en bourse de la société-mère, ainsi que les motivations sous-jacentes.

Depuis l'ouvrage pionnier de Penrose (1959), l'étude des opérations de croissance externe, l'acquisition d'une autre société, a fait l'objet de recherches pléthoriques. La littérature en stratégie et en finance a particulièrement étudié l'impact des opérations de croissance externe sur la performance en se fondant sur les apports théoriques de la Resource-based View (Wernefelt, 1984 ; Barney, 1991) et de la théorie de l'Agence (Meckling et Jensen, 1976 ; Jensen, 1986). A ce jour, il n'existe pas de consensus quant au caractère bénéfique ou négatif des opérations de fusions-acquisitions sur la performance (King et al., 2004).

Plus récemment, c'est sur l'articulation entre stratégie de financement et stratégie de croissance externe que se sont concentrés certains travaux majeurs dans ce domaine. Les nombreuses sociétés des nouvelles technologies s'étant introduites en bourse à la fin des années 1990, ont ainsi été particulièrement actives sur le marché des fusions et acquisitions (Schultz et Zaman, 2001). L'introduction en bourse permet en effet de trouver des ressources financières nouvelles pour financer la croissance externe, soit en numéraire soit en permettant le paiement en titres. Cette dernière option est même la principale raison motivant l'introduction en bourse chez les sociétés américaines (Brau et Fawcett, 2006). Ce lien entre introduction en bourse et croissance externe est en revanche moins marqué chez les sociétés européennes, qui cherchent davantage à rééquilibrer leur structure financière en intégrant la cote (Pagano et al., 1998 ; Bancel et Mittoo, 2009). Il ressort néanmoins de la majorité des travaux empiriques sur le sujet que les entreprises nouvellement cotées ont fréquemment

recours à la croissance externe (Celikyurt et al., 2010 ; Hovakimian et Hutton, 2010 ; Arikan et Stulz, 2016). Toutefois, peu de travaux se sont intéressés aux opérations de croissance externe menées spécifiquement par les PME dans le contexte de l'introduction en bourse. La majorité des études empiriques portent en effet sur des sociétés cotées de grande taille (Weitzel et McCarthy, 2011). Cela semble surprenant dans la mesure où les travaux fondateurs de la Resource-based View mettent en avant la nécessité pour les entreprises en croissance, de petite taille et encore peu établies, d'acquérir des ressources nouvelles par des opérations de croissance externe (Penrose, 1959 ; Wernerfelt, 1984).

Premier chapitre

Le premier chapitre propose une typologie de l'articulation existant entre introduction en bourse et stratégie de croissance externe ainsi qu'une étude descriptive des principales caractéristiques des opérations d'acquisitions observées. Si l'introduction en bourse peut être motivée par la volonté de mettre en œuvre une stratégie de croissance externe, il est tout à fait possible que cette stratégie préexiste à l'introduction. Dans ce cas, l'introduction en bourse a pour objectif principal de donner à l'entreprise les moyens financiers de sa stratégie. Mais il est également possible que l'introduction en bourse corresponde à un changement de cap stratégique, dans le cadre duquel se met en place une stratégie de croissance externe. D'autre part, l'introduction en bourse peut également être rendue nécessaire par des acquisitions préalable financées par de la dette et ayant conduit à un déséquilibre de la structure financière. Dans ce cas, l'introduction en bourse vise à rééquilibrer une structure financière trop endettée (Pagano et al., 1998). Enfin, il est également possible que l'introduction en bourse ne soit pas liée à une stratégie de croissance externe mais à d'autres modes de croissance, organique par

exemple ou à la volonté de développer la notoriété de la société (Certo et al., 2009 ; Bancel et Mittoo, 2009).

Cette typologie est appliquée sur un échantillon regroupant toutes les PME françaises ayant réalisé leur introduction en bourse entre 2006 et 2014. Les données en ont été collectées manuellement à partir des rapports annuels et prospectus d'introduction en bourse. Les résultats montrent qu'un tiers des sociétés de l'échantillon sont déjà des acquéreurs actifs avant l'introduction en bourse et que plus de quatre sociétés sur dix réalisent au moins une acquisition dans les trois ans qui suivent l'introduction en bourse. Pour un cinquième des sociétés étudiées environ, l'introduction en bourse marque un changement de cap stratégique avec le début des opérations de croissance externe. Pour la même proportion des sociétés de l'échantillon, la croissance externe préexiste à l'introduction en bourse et le nombre d'acquisitions post introduction est deux fois plus élevé que pour les sociétés n'ayant pas d'expérience préalable. Ces éléments soulignent que l'introduction en bourse joue bien un rôle important dans la stratégie de croissance externe des PME, soit en permettant l'accélération de la stratégie, soit en favorisant sa mise en place initiale.

Deuxième chapitre

Le deuxième chapitre vise à étudier l'impact d'une stratégie de croissance externe sur la performance des acquéreurs, lorsque ceux-ci sont des PME nouvellement cotées. L'étude des performances post-acquisition est fondée sur l'opposition théorique entre la théorie de l'Agence et la Resource-based View (Wernefelt, 1984). La théorie de l'Agence indique que les opérations d'acquisitions sont destructrices de valeur pour les actionnaires car elles correspondent à un usage abusif des flux de trésorerie disponible de la part des dirigeants

(Jensen, 1986). Motivés par l'hubris (Roll, 1986) ou exagérément optimistes quant aux bénéfices d'une telle opération (Malmendier et Tate, 2008), les dirigeants d'entreprises se lancent trop facilement dans des opérations de croissance externe peu opportunes. A l'opposé, l'approche de la Resource-Based View souligne qu'il est indispensable pour la croissance d'une société de réaliser des acquisitions. Cela permet d'obtenir des ressources nouvelles qui ne peuvent être développées en interne (Penrose, 1959 ; Wernefelt, 1984). Ces ressources nouvelles et la capacité de l'entreprise à les combiner avec celles dont elle dispose déjà doit donner un avantage concurrentiel à la société, qui doit se traduire par des performances plus élevées (Barney, 1991). Sur le plan empirique, les résultats sont des plus contrastés quant aux bénéfices observés suite aux opérations d'acquisitions (King et al., 2004).

Le cas des PME est donc intéressant car les conflits d'agence entre dirigeants et actionnaires y sont réduits dans la mesure où le dirigeant est fréquemment également l'actionnaire principal dans une PME (Weitzel et McCarthy, 2011). Il en résulte que l'impact attendu des opérations d'acquisitions sur la performance d'une PME acquéreur est positif. Nos résultats, observés sur le même échantillon de sociétés que dans le chapitre précédent, valident cette hypothèse lorsque la mesure de performance est la rentabilité économique de l'entreprise, définie par son return-on-assets ou ROA d'exploitation[12]. En revanche, aucun effet des opérations d'acquisitions n'est observé sur la croissance du chiffre d'affaires. Il en résulte que les opérations d'acquisitions menées par des PME nouvellement cotées sont des opérations bénéfiques permettant d'améliorer la profitabilité mais pas de grandir plus vite. Ces éléments soulignent l'importance de l'attractivité du marché financier pour permettre le développement des PME et la rentabilité des PME. Ils contribuent également au débat empirique sur l'impact des opérations d'acquisitions en montrant le rôle du choix de la variable mesurant la performance.

[12] Le ROA d'exploitation ou Operating Return-on-Assets est égal au rapport entre le résultat d'exploitation et le total du bilan.

Troisième chapitre

Une conséquence directe d'une stratégie de croissance externe est la création d'un groupe de sociétés regroupant l'acquéreur et la cible[13]. Toutefois, la formation de groupes ne résulte pas uniquement d'opérations d'acquisitions mais aussi de la création de filiales, avec ou sans la collaboration d'une société. Le troisième chapitre propose ainsi une étude exploratoire de la formation des groupes de sociétés en étudiant l'évolution de groupes de sociétés fondés par un échantillon PME depuis leur constitution. Si l'étude des groupes de sociétés et du rôle de l'affiliation à un groupe sur les performances de l'affilié fait l'objet d'une littérature pléthorique, très peu de travaux se sont en revanche intéressés à la formation de groupes de sociétés et à leur développement dans les premières années.

Deux raisons théoriques permettent d'expliquer les raisons et les modalités selon lesquelles les groupes de sociétés se forment. Tout d'abord, afin de maintenir un contrôle important sur l'entité créée, le dirigeant cherchera à maintenir un haut niveau de détention dans l'actionnariat des filiales créées ou acquises (Almeida et Wolfenzon, 2006 ; Iacobucci et Rosa, 2010). Cela devrait se traduire par un nombre de filiales créées et détenues plus important que d'opérations de joint-ventures ou d'acquisitions. Ensuite, le développement d'un groupe devrait se faire selon un schéma de diversification progressive des activités. Ainsi, la diversification devrait-elle prendre la forme d'une extension géographique, d'opérations d'intégration verticale et de différentiation horizontale avant d'aller vers une diversification des produits et services proposés *stricto sensu* (Iacobucci et Rosa, 2005 ; Lechner et Leyronas, 2009).

[13] Sur un plan juridique, l'acquisition peut donner lieu à une fusion-absorption auquel cas il n'y a pas nécessairement constitution d'un groupe de sociétés.

L'échantillon étudié est basé sur le travail de collecte de données déjà mené dans les deux premiers chapitres. Les résultats montrent la prépondérance de la structure de groupes au sein des PME et la place centrale et précoce de la création de filiales à l'étranger et d'opérations de diversification des activités. La croissance des groupes est rapide et montre que croissance interne (création de filiales) et externe (acquisitions) sont associées et non exclusives l'une de l'autre alors que les opérations de joint-ventures sont marginales. Ce chapitre souligne donc que des modes de croissances ne sont pas à opposer mais bien à considérer simultanément.

Seconde partie

Si les contraintes de financement qui pèsent sur les PME représentent un obstacle au déploiement de leur stratégie de croissance, elles pèsent également sur leur gestion financière. Le recours aux techniques de bootstrapping déjà évoqué a ainsi des conséquences directes sur les délais de paiements accordés aux clients et sollicités auprès des fournisseurs (Winborg et Landström, 2001 ; Ebben et Johnson, 2006). Concrètement, les PME tendent à limiter la durée des crédits accordés à leurs clients et à retarder au maximum les paiements à leurs fournisseurs, au risque de dégrader les relations commerciales et de perdre des clients (Baños-Caballero et al., 2010, 2012). Cela leur permet de dégager des liquidités plus vite. Plus globalement, c'est toute la gestion du besoin en fonds de roulement des PME qui est contrainte par les difficultés de financement.

Si de très nombreux travaux ont étudié la stratégie d'investissement et de croissance des entreprises (le haut de bilan) et tout particulièrement le rôle de la croissance externe, beaucoup plus rares sont ceux qui ont étudié la gestion du cycle d'exploitation (le bas de

bilan). Celui-ci correspond au décalage temporel entre le constat comptable des opérations d'exploitation (achat et stockage de matières premières, délais de paiements accordés aux clients, délais de paiement octroyés par les fournisseurs) et les flux de trésorerie associés. Pour la majorité des entreprises, le cumul des montants stockés et des créances auprès des clients est supérieur aux crédits accordés par les fournisseurs. En effet, la valeur des produits finis vendus est supérieure au coût d'achat des matières premières achetées. Ce décalage temporel correspond donc à un besoin de ressources[14] financières car il sera nécessaire de payer les fournisseurs avant de recevoir le paiement des clients. La principale mesure de ce besoin est le besoin en fonds de roulement (BFR).

Le BFR correspond formellement à l'écart entre les actifs circulants et les passifs circulants d'une entreprise, définis au sens du bilan fonctionnel. On distingue toutefois le BFR d'exploitation, lié au cycle d'exploitation à proprement parler et calculé comme la différence entre les actifs circulants d'exploitation (stocks, créances clients, …) et les passifs circulants d'exploitation (dettes fournisseurs, dettes fiscales et sociales,…) et le BFR hors exploitation[15]. Ce dernier regroupe par exemple les dettes envers les fournisseurs d'immobilisations ou les valeurs mobilières de placement peu liquides.

Depuis Gitman (1974) et Richards et Laughlin (1980), la littérature académique mesure la durée du cycle d'exploitation comme la différence entre le niveau des stocks et des créances clients d'une part et les dettes fournisseurs d'autre part, ramenée à un nombre de

[14] Dans certains secteurs d'activité, comme les services ou la distribution, le faible niveau, voire l'absence de stocks, ainsi qu'un modèle d'affaires basé sur des ventes directes à des particuliers, conduit à un dégagement de ressources et non à un besoin. On parle alors de dégagement de fonds de roulement.
[15] Cette distinction est faite en particulier dans le Plan Comptable Général français : http://www.anc.gouv.fr/cms/sites/anc/accueil/normes-francaises/reglementation-sectorielle.html

jours de chiffre d'affaires[16]. Cette durée est donc proche d'un besoin en fonds de roulement d'exploitation exprimé en nombre de jours de chiffre d'affaires.

La gestion du BFR et du cycle d'exploitation est un enjeu de gestion financière car elle conditionne la vitesse à laquelle la trésorerie issue des ventes est disponible. Ainsi, un cycle d'exploitation court (un faible besoin en fonds de roulement) indique que la trésorerie est disponible rapidement et réciproquement pour un cycle d'exploitation long. Hill et al. (2010) qualifient d'agressive une gestion du BFR qui aboutit à un cycle d'exploitation court et de conservatrice celle qui conduit à un cycle long. Cette terminologie renvoie indirectement au financement du BFR, qui est principalement réalisé par emprunts bancaires (Kieschnick et al., 2013 ; Chen et Kieschnick, 2018). En effet, une gestion agressive du besoin en fonds de roulement nécessitera moins de financements bancaires car elle repose davantage sur un financement par les fournisseurs. A l'inverse, une gestion conservatrice signifie un BFR plus élevé, avec, toutes choses égales par ailleurs, moins de dettes fournisseurs, et donc un besoin de financement externe plus important.

La deuxième partie de cette thèse a pour objet d'étudier la relation entre sources de financement et gestion du BFR, c'est-à-dire la gestion financière du bas de bilan. Le premier chapitre examine ainsi l'impact de l'introduction en bourse sur la gestion du BFR pour les PME. L'introduction en bourse permettant un afflux de liquidités, il est raisonnable d'imaginer que pour une PME, préalablement contrainte financièrement, l'introduction en bourse amène des modifications de la gestion financière, en permettant un assouplissement de la gestion du BFR (Kutsuna et al., 2016). Le second chapitre étudie le rôle de l'appartenance à un groupe de sociétés sur la gestion du besoin en fonds de roulement. En effet, l'appartenance à un groupe de sociétés implique un accès au marché de capitaux interne au groupe (Stein,

[16]Certains auteurs considèrent une définition légèrement différente de la durée du cycle d'exploitation comme étant la somme des ratios stocks rapportés au coût des ventes, créances clients rapportées au chiffre d'affaires et dettes fournisseurs rapportées aux achats de matières premières et marchandises (Deloof, 2003).

1997) qui peut faciliter le financement du BFR. L'appartenance à un groupe de sociétés est une caractéristique commune à de très nombreuses entreprises, tant en Europe continentale que dans les pays émergents (Khanna et Yafeh, 2007). En France, on estime ainsi qu'une PME de vingt salariés sur deux fait partie d'un groupe contre 80% des PME de cinquante salariés[17]. Malgré l'omniprésence des groupes de sociétés, peu de travaux ont étudié dans quelle mesure l'appartenance à un groupe de sociétés facilitait la gestion financière et, plus particulièrement, celle du BFR.

Quatrième chapitre

Le quatrième chapitre vise à étudier la relation entre performance de l'entreprise et gestion du BFR. Une série de travaux récents montre en effet qu'il y a une relation concave entre le niveau du besoin en fonds de roulement et la performance de l'entreprise (Baños-Caballero et al., 2012 ; Aktas et al., 2015 ; Du Jardin et Séverin, 2015 ; Ben Nasr, 2016). Cette relation découle de la nécessité de trouver un point d'équilibre entre les coûts financiers et de stockage associés à un niveau de BFR élevé d'une part, et le risque de manquer des ventes en ayant des stocks trop faibles ou en pratiquant des délais de paiements trop courts auprès des clients d'autre part (Corsten et Gruen, 2004). A notre connaissance, aucun article n'a exploré l'effet modérateur de la taille sur la relation besoin en fonds de roulement-performance. Or, les travaux ciblant les PME montrent que celles-ci ont une mauvaise gestion du besoin en fonds de roulement, car leurs dirigeants manquent de compétences en gestion financière, mais aussi de temps à consacrer à la gestion du besoin en fonds de roulement (Peel et Wilson, 1996 ; Peel et al., 2001). D'autre part, les PME s'appuient davantage sur

[17] Source : Insee Références, édition 2016, « Les PME organisées en groupe, un phénomène important dès les unités de petite taille ».

l'autofinancement pour leur politique d'investissement, précisément car elles n'ont qu'un accès limité aux marchés de capitaux (Berger et Udell, 1998 ; Cassar, 2004). Cette contrainte pèse sur leurs performances d'au moins deux manières. Tout d'abord, elle implique que les PME vont chercher à réduire au maximum leur besoin en fonds de roulement pour rendre disponible le produit des ventes en réduisant le niveau des stocks et les délais de paiement des clients. Il en résulte qu'elles s'exposent à un coût d'opportunité élevé qui réduit leur performance. Ensuite, le coût d'un financement externe est plus élevé pour une PME que pour une entreprise plus grande, ce qui signifie que le financement d'un BFR élevé est plus coûteux. En conséquence la performance s'en trouve amoindrie.

Notre hypothèse est donc que la sensibilité de la performance à la gestion du BFR est d'autant plus importante que l'entreprise considérée est petite. Pour tester cette hypothèse, nous avons utilité le même échantillon que dans le chapitre 2 de la deuxième partie. L'hypothèse est testée à l'aide d'un modèle non linéaire dans lequel la variable indépendante est l'écart au besoin en fonds de roulement médian dans une industrie donnée et pour une année donnée et la variable dépendante est le return-on-assets[18] (ROA). Cela permet de séparer les cas des entreprises ayant un surinvestissement en besoin en fonds de roulement de celles ayant un sous-investissement en BFR. Nos résultats montrent que la performance des PME est plus sensible à un sous-investissement en besoin en fonds de roulement que celle des grandes entreprises. En revanche, nous n'observons pas clairement que les PME soient plus sensibles que les entreprises plus grandes à un surinvestissement dans les composants du besoin en fonds de roulement. Ces résultats s'interprètent au regard de l'approche du Bootstrapping qui met en avant le recours important des entreprises jeunes et en croissance à des financements alternatifs pour contourner les difficultés d'accès aux financements externes

[18] Le ROA est calculé comme le rapport entre le résultat d'exploitation après charges financières et le total du bilan. Il est en effet nécessaire de raisonner après charges financières pour intégrer le coût du financement bancaire du BFR sur la performance.

(Winborg et Landström, 2001). L'un des techniques les plus courantes de Bootstrapping est d'accélérer les encaissements des créances clients de retarder le paiement aux fournisseurs, c'est-à-dire précisément à réduire drastiquement le besoin en fonds de roulement. La conséquence de ce financement « par le bas du bilan » est que les entreprises qui y recourent ont un coût d'opportunité important car elles ratent des ventes. Nos résultats viennent donc souligner l'importance d'une meilleure gestion du besoin en fonds de roulement chez les PME car celle-ci impacte fortement la performance. Plus précisément, nous mettons en avant la nécessité de ne pas trop contraindre le besoin en fonds de roulement au sein des PME et qu'il est de bonne gestion de chercher à financer celui-ci par des ressources financières durables. En termes de politiques publiques, il convient de noter qu'outre la facilitation de l'accès des PME à des financements du BFR, le conseil financier quant à la gestion du BFR apparait également comme un facteur important de l'accompagnement des PME. En effet, les coûts d'opportunité évoqués, cause de l'impact sur la performance plus élevé d'un sous-investissement en BFR, ne sont pas directement observables pour les dirigeants de PME.

Cinquième chapitre

Fondé sur le cadre du cycle de croissance financière déjà évoqué, le cinquième chapitre étudie dans quelle mesure l'introduction en bourse conduit à une modification de la gestion du BFR. Sur un plan théorique, l'introduction en bourse correspond à une réduction forte de l'asymétrie d'information qui doit permettre à une entreprise, et plus particulièrement une PME, de se financer plus facilement (Berger et Udell, 1998). Cet accès nouveau à un financement par le marché peut conduire à des modifications de la gestion du BFR, la rendant plus conservatrice. Les travaux sur le bootstrapping ont établi que les entreprises jeunes et en

croissance recouraient massivement au crédit interentreprises pour se financer (Winborg et Landström, 2001 ; Ebben et Johnson, 2006). Plus spécifiquement, ces entreprises cherchent à obtenir des paiements rapides de leurs clients et à retarder autant que possible les paiements à leur fournisseur pour dégager des liquidités. Il en résulte que la gestion du BFR est particulièrement agressive pour de telles entreprises. Mais dès lors que le financement par le marché est possible, il n'est plus nécessaire de contraindre l'investissement en BFR et, à l'inverse, adopter une gestion plus conservatrice peut être judicieux pour gagner de nouveaux clients et éviter les pénuries (Corsten et Gruen, 2004). Kustuna et al. (2016) ont ainsi mis en évidence que l'introduction en bourse d'une entreprise provoquait un choc de liquidités pour ses partenaires commerciaux, clients et fournisseurs.

Notre hypothèse est donc qu'une PME nouvellement introduite va modifier la gestion de son BFR en allongeant la durée du crédit offert à ses clients, en augmentant ses stocks et en accélérant les paiements aux fournisseurs. Il en résulte que le niveau de BFR, exprimé en jours de chiffre d'affaires, doit augmenter consécutivement à l'introduction en bourse. Pour tester cette hypothèse, nous avons utilisé le même échantillon d'entreprises et la même méthodologie que dans le second chapitre de la première partie. Les résultats montrent qu'il y a bien une augmentation de la durée du crédit client suite à l'introduction, mais pas d'effets significatifs sur le niveau des stocks ni le paiement des fournisseurs. Le niveau global du BFR n'augmente pas significativement non plus. Ces résultats indiquent donc qu'une PME nouvellement cotée offre des délais de paiement plus longs, vraisemblablement pour conquérir de nouvelles parts de marché, mais que les autres aspects de la gestion du BFR ne sont pas modifiés. Une grande partie des sociétés de l'échantillon sont des entreprises de services pour lesquelles la gestion des stocks n'est donc pas nécessairement un enjeu de gestion de taille. Cela peut expliquer, en partie, l'absence de résultat significatif. Bien que partiels, les résultats montrent que l'introduction en bourse induit bien un changement de

gestion financière chez les PME nouvellement cotées, susceptible de favoriser la croissance de leur chiffre d'affaires. Outre que cet argument renforce encore la nécessité d'un accès aux marchés de capitaux pour les PME, il montre de plus que les partenaires commerciaux des PME nouvellement cotées bénéficient de la cotation. Ceux-ci se voient accorder des délais de paiement plus longs, ce qui peut favoriser leur propre gestion financière. Cet effet de « cascade de liquidités », déjà évoqué par Kutsuna et al. (2016), montre l'importance de l'étude du financement du BFR.

Sixième chapitre

Si le chapitre précédent étudiait le rôle d'un financement externe par le marché du BFR, le sixième chapitre vise à préciser le rôle de l'appartenance à un groupe de sociétés dans la gestion du BFR. L'idée que les groupes de sociétés centralisent des éléments de gestion financière pour les sociétés membres n'est pas nouvelle. Appartenir à un groupe de sociétés permet aux membres du groupe de bénéficier du marché interne des capitaux, et donc de disposer de financements inaccessibles aux sociétés indépendantes (Williamson, 1975 ; Stein, 1997 ; Buchuk et al., 2014). La société tête de groupe est ainsi en charge de l'allocation de financements aux filiales et projets les plus prometteurs, mais elle se charge également de la supervision des filiales en question. En conséquence, l'asymétrie d'information est plus faible entre une société tête de groupe et l'une de ses filiales qu'entre cette même filiale et une banque par exemple. Au-delà de la fonction d'allocation de ressources financières, l'appartenance à un groupe offre également un support à la gestion pour les filiales (Khanna et Yafeh, 2007). Deloof et Jegers (1996, 1999) mettent ainsi en évidence qu'au sein d'un groupe de sociétés, les délais de paiement relatifs aux transactions entre membres d'un groupe

dépendent des besoins de liquidités de ces membres. Leurs résultats suggèrent que la gestion du crédit client est, au moins partiellement, centralisée au sein d'un groupe de sociétés afin de soutenir les membres du groupe ayant besoin de trésorerie. Toutefois, la question se pose de savoir si la gestion du BFR elle-même est centralisée par le groupe et, si oui, dans quelle mesure.

Afin de répondre à cette question, nous avons examiné l'effet modérateur de l'appartenance à un groupe de sociétés sur le BFR pour un échantillon de plus de cinquante mille entreprises allemandes, françaises et italiennes via la base de données Amadeus. En nous fondant sur les travaux empiriques de Hill et al. (2010) et Baños-Caballero et al. (2010), notre approche a été d'étudier dans quelle mesure l'appartenance à un groupe réduisait la sensibilité du BFR à l'opacité informationnelle et à la croissance. En effet, une entreprise fortement opaque ou en forte croissance verra son BFR davantage contraint en raison de sa difficulté à le financer. Cette contrainte devrait être moins forte pour une société membre d'un groupe que pour une entreprise indépendante car la première bénéficie des ressources financières du groupe. Si le groupe, ou du moins sa société faîtière, supervise activement la gestion financière de ses filiales, elle est en mesure d'identifier celles qui nécessitent un apport supplémentaire pour financer le BFR lié à la croissance de l'activité.

Les résultats obtenus montrent que les contraintes liées à la croissance du chiffre d'affaires ou aux investissements en immobilisations (variables de croissance) sont effectivement plus faibles pour les entreprises affiliées à un groupe que pour celles qui sont indépendantes. En d'autres termes, la sensibilité du BFR aux variables de croissance est plus faible pour des entreprises membres d'un groupe. En revanche, il n'y a pas d'effet observé sur les variables d'opacité financière (taille et âge). En raffinant l'analyse par taille de groupe et taille d'entreprise, nous avons observé que la réduction des contraintes liées à la croissance sur le niveau de BFR est d'autant plus importante que le groupe est grand et l'entreprise

affiliée petite. Ces résultats ne sont pas surprenants. En effet, plus un groupe est grand, plus sa capacité à allouer des ressources financières est importante, tout comme l'est sa capacité de supervision de ses filiales. D'autre part, ce sont assez naturellement les filiales les plus petites qui ont le plus besoin des ressources du groupe pour se développer, précisément car il est difficile de les obtenir à l'extérieur du groupe. Enfin, nous avons examiné quelles sont les caractéristiques du groupe qui influencent le niveau de BFR des filiales. Il apparait que le BFR des filiales est d'autant plus élevé que le groupe dispose de réserves de liquidités importantes. Une fois encore, ce résultat n'est pas surprenant et suggère que c'est bien parce que le groupe dispose de liquidités qu'il peut en allouer à ceux de ses membres qui en ont besoin pour financer leur BFR.

Ce chapitre contribue donc à la littérature sur les groupes de sociétés en montrant l'importante de l'appartenance à un groupe pour faciliter le financement du BFR. Les résultats vont dans le sens de l'existence d'une gestion financière centralisée dans les groupes de sociétés, en particulier les plus grands et au bénéfice des petites filiales. Il contribue également à la littérature sur le besoin en fonds de roulement, peu développée, en corroborant très largement les résultats obtenus par Hill et al. (2010) et Baños-Caballero et al. (2010) sur les déterminants empiriques du BFR. Il les étend en étudiant un large échantillon de sociétés non cotées.

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Chapitre 1

Introduction en bourse et croissance externe des PME françaises[19]

L'introduction en bourse est une étape majeure du développement des entreprises. Cependant, peu de travaux se sont intéressés à l'articulation entre politique d'acquisition et introduction en bourse. Dans ce chapitre, nos résultats soulignent que les PME françaises sont nombreuses à mener des acquisitions après l'introduction en bourse, même lorsqu'elles n'ont pas d'expérience préalable en la matière. La stratégie de croissance externe se fait ainsi en deux étapes, d'abord une introduction en bourse pour obtenir des ressources financières supplémentaires, puis acquisitions d'autres sociétés. Ainsi, nous montrons qu'il existe une imbrication étroite entre décisions financière et stratégique dans le cadre de l'introduction en bourse.

Mots clés: Introduction en bourse, Croissance externe, Acquisitions, Petites et moyennes entreprises

[19] This chapter has been written with Anaïs Hamelin.

1. Introduction

En 2018, sur les 17 introductions réalisées à la bourse de Paris, 11 l'ont été sur le marché Euronext Growth, réservé aux plus petites entreprises. Pour beaucoup d'observateurs, ces faits signalent la bonne santé du secteur des petites et moyennes entreprises (PME) et leur dynamisme. En effet, l'accès au marché est une condition importante de la capacité à croître des PME. Ces préoccupations se retrouvent d'ailleurs au niveau des politiques publiques qui visent à créer un écosystème favorable au financement des PME afin de soutenir la croissance, à l'instar de la création du PEA-PME et celle d'Enternext (Mahieux, 2016). Si tant d'efforts et d'attention sont consacrés au secteur des petites et moyennes entreprises (PME), c'est parce qu'elles représentent l'essentiel des entreprises et qu'elles contribuent pour une grande part à l'emploi et à la création de valeur. On estime ainsi que les PME représentent 99% des entreprises dans l'Union européenne et qu'elles contribuent à la moitié des créations d'emplois et de valeur ajoutée. Ainsi, la question du financement adéquat des PME est-elle une condition nécessaire pour accompagner la croissance (Dufourcq, 2014)

Les PME ne représentent toutefois pas un ensemble homogène. Une large part des PME est ainsi constituée de microentreprises pour lesquelles les besoins et l'accès à des financements ne se pose pas de la même manière que pour des sociétés embauchant plusieurs dizaines de salariés. Dès lors, comprendre les mécanismes par lesquels les PME se développent et grandissent revêt une importance centrale. Ces enjeux sont particulièrement poignants pour les PME « à très grande vitesse » (Betbèze, 2014), souvent issues de la nouvelle économie et dont la croissance est rapide et sur lesquelles cet article se concentre.

Une étape clef du cycle de vie financière des PME est l'accès à la cote. En effet, l'introduction en bourse marque l'aboutissement du cycle de croissance financière selon la

théorie de Berger et Udell (1998), car elle fournit un accès direct au financement par le marché. Au-delà de cet effet direct sur les possibilités de financement, l'introduction en bourse réduit le coût du capital de l'entreprise, ce qui lui permet ultérieurement de se procurer de nouvelles ressources financières plus facilement (Brav, 2009). Si l'introduction en bourse a clairement une influence sur le financement de la croissance des entreprises (Boutron et al. 2014), peu de travaux se sont interrogés sur l'articulation entre introduction en bourse et croissance externe des PME. Or, le fait que des vagues d'acquisitions soient observées après des phases intensives d'introductions en bourse suggère qu'il existe un lien étroit entre admission à la côte et opérations de croissance externe (Maksimovic et al., 2013). En effet, les opérations d'acquisition sont gourmandes en financement (Schultz et Zaman, 2001) et l'introduction en Bourse offre des ressources financières nouvelles pour les réaliser (Mahieux, 2016).

Une littérature émergente étudie les comportements d'acquisitions après l'introduction en bourse et souligne l'accélération consécutive des opérations de croissance externe (Brau et Fawcett, 2006 ; Celikyurt et al., 2010 ; Hovakimian et Hutton, 2010 ; Schimdt et al., 2006 ; Signori et Vismara, 2017). Néanmoins, ces résultats empiriques portent principalement sur des entreprises américaines. Or, celles-ci présentent d'importantes différences dans leur structure financière avec les entreprises d'Europe continentale, avec en particulier un recours plus rapide et plus marqué au financement par le marché (Pagano et al., 1998). Ces différences concernent également les motivations à l'introduction en bourse, plus orientées vers la croissance interne en Europe (Bancel et Mittoo, 2009). De plus, ces travaux se concentrent sur de grandes entreprises et des secteurs d'activité spécifiques. Plusieurs raisons justifient de se pencher sur le cas particulier des PME. Tout d'abord, et par opposition aux grandes entreprises, les PME ne recourent pas systématiquement à la croissance externe. D'autre part, les PME qui s'engagent dans une stratégie de croissance externe le font en

réalisant comparativement plus d'acquisitions que les grandes entreprises (Weitzel et McCarthy, 2011). Ces acquisitions sont de plus davantage financées par des paiements en titres que dans le cas des grandes entreprises (Weitzel et McCarthy, 2011). A notre connaissance, il n'existe pas d'étude empirique sur l'articulation entre stratégie de croissance externe et introduction en bourse dans le cas des PME de croissance. Or, le poids économique et les contraintes particulières qui pèsent sur les PME du fait de leur taille justifient que l'on s'intéresse à la manière dont elles réalisent des opérations de croissance externe.

Cet article vise à combler cette lacune en explorant l'articulation entre introduction en bourse et croissance externe des PME. Pour cela, nous étudions l'ensemble des PME françaises, 107 au total, introduites en Bourse sur Euronext Growth ainsi que sur les compartiments B et C d'Euronext entre 2006 et 2014. Dans un premier temps, nous présentons les principales caractéristiques de ces opérations. Notre principal résultat est que de nombreuses PME françaises nouvellement cotées réalisent des acquisitions. En effet, 43% des sociétés de notre échantillon réalisent au moins une opération d'acquisition dans les trois années qui suivent l'introduction. Dans un deuxième temps, nous proposons une typologie des entreprises en fonction de leur stratégie de croissance externe avant et après l'introduction en bourse. Cela nous permet d'apporter un éclairage nouveau sur le lien entre introduction en bourse et stratégie de croissance externe chez les PME en montrant l'imbrication de ces deux décisions. En effet, nos résultats montrent qu'un nombre important de PME de croissance a recours à une introduction en bourse pour financer des acquisitions. Enfin, nous étudions les caractéristiques des opérations d'acquisitions au regard de cette typologie. Il en ressort que les PME ayant une expérience préalable des acquisitions réalisent beaucoup plus d'opérations de croissance externe que celles qui n'ont jamais réalisé d'acquisitions avant l'introduction en bourse.

Dans un premier temps, nous passons en revue la littérature sur le lien entre croissance et introduction en bourse, en développant le cas particulier de la croissance externe. Ensuite, nous développons notre méthodologie et nos résultats. Enfin, nous présentons les implications de notre travail et nos conclusions.

2. Croissance, introduction en bourse et acquisition dans les PME

2.1. Stratégie de croissance des PME

La croissance des entreprises nécessite l'acquisition et le développement de nouvelles ressources dont la combinaison permet le développement de nouveaux savoir-faire (Penrose, 1959). Cette croissance prend deux formes principales, soit le développement en interne de la société à travers la création de nouveaux points de ventes ou de nouveaux produits et services, soit l'acquisition d'une autre société. La réalisation d'acquisitions, ou croissance externe, permet à l'acquéreur d'obtenir un ensemble de ressources, la cible. La combinaison des ressources de la cible avec celles dont il dispose déjà peut lui permettre d'établir un avantage concurrentiel (Wernerfelt, 1984 ; Barney, 1991).

Dans le cas des PME, la mise en œuvre d'une stratégie de croissance externe comporte plusieurs difficultés. Tout d'abord, les opérations d'acquisitions représentent des investissements importants, précisément car il faut acquérir la totalité d'une autre entreprise. Les PME, du fait d'un niveau élevé d'asymétrie d'information, ont une capacité à accéder à des financements externes limitée (Berger et Udell, 1998). Ensuite, la réalisation effective d'une opération d'acquisition mobilise l'attention des dirigeants pendant une longue période.

De ce fait, les dirigeants disposent de moins de temps à consacrer aux opérations courantes et à la croissance interne de la société. Enfin, réussir l'intégration de deux sociétés nécessite des efforts constants d'adaptation afin de réaliser des synergies, ce qui est rarement accompli en pratique (Sheperd et Wiklund, 2009). Ainsi, la réalisation d'acquisitions ne concerne pas toutes les PME, mais seulement celles pour qui la croissance est un enjeu majeur en raison de la nécessité d'atteindre une taille critique (Schultz et Zaman, 2001). Ces PME de croissance disposent avec l'introduction en bourse d'un levier puissant pour financer leur stratégie de croissance, externe en particulier.

2.2. Introduction en bourse des PME

Le financement des PME de croissance s'analyse classiquement dans le modèle du cycle de croissance financière proposé par Berger et Udell (1998). Cette approche suggère que la structure financière des PME évolue au fil du temps et à mesure que les entreprises grandissent, du fait de la réduction des asymétries d'information. Ainsi, la constitution d'un historique de données, de relations avec ses partenaires et la présence de garanties facilitent l'évaluation de la société par des financeurs potentiels lorsque celle-ci grandit et murit. Du fait de cette diminution de l'asymétrie d'information, les PME accèdent progressivement à de nouvelles sources de financement. Ce cycle de croissance financière culmine avec l'introduction en bourse qui permet à l'entreprise de se financer directement sur le marché financier. L'introduction en bourse permet donc aux PME de financer plus facilement leur croissance future et en particulier de réaliser des acquisitions d'autres sociétés.

L'introduction en bourse améliore la capacité de financement de l'entreprise de différentes manières. Tout d'abord, l'entreprise nouvellement cotée lève des fonds sous forme de tranche

primaire et dispose donc d'une manne de liquidités disponible (Certo et al., 2009). Ensuite, son coût du capital est réduit suite à l'introduction en bourse, ce qui lui permet ultérieurement de se procurer de nouvelles ressources financières plus facilement (Brav, 2009). Cette réduction passe tout d'abord par une réduction du coût des fonds propres. En effet, la nouvelle visibilité de l'entreprise, suite à l'introduction en bourse, réduit les asymétries d'information et donc le coût du financement par émission d'action. De plus, on observe aussi une réduction du coût de financement par dette suite à l'introduction en bourse. Cela s'explique, d'une part, par le rééquilibrage de la structure financière. Dans la mesure où une introduction correspond généralement à une augmentation de capital, le levier financier est mécaniquement réduit suite à l'opération. Cela a pour conséquence de réduire le risque pour le banquier prêteur, permettant à l'entreprise d'emprunter à un coût plus faible. D'autre part, les entreprises cotées ont recours à un plus grand nombre de partenaires bancaires qui sont donc mis en concurrence les uns avec les autres (Pagano et al., 1998). Il en résulte une baisse du coût de l'endettement bancaire. De façon générale, une société nouvellement cotée voit donc son coût du capital se réduire ce qui lui permet de procurer de nouvelles ressources financières plus facilement et donc peut faciliter le financement des acquisitions.

2.3. L'articulation entre modes de croissance et introduction en bourse

Si l'introduction en bourse améliore la capacité de financement de l'entreprise, elle peut aussi jouer un rôle clef pour le financement de la croissance externe de l'entreprise. Ainsi, les fonds levés lors d'une introduction en bourse peuvent permettre de financer directement des opérations d'acquisitions. Toutefois, Hsieh et al. (2011) observent que les sociétés les plus actives sur le marché des acquisitions lèvent généralement de faibles montants lors de leur

introduction. Cela interroge les modalités de financement des acquisitions et le lien entre ce financement et l'introduction en bourse. Par ailleurs, une société cotée peut directement payer une acquisition avec ses propres titres. Dans la mesure où l'introduction en bourse conduit à une réduction de l'asymétrie d'information, le cours de bourse donne un prix de marché pour les titres de l'acquéreur potentiel. Ce prix représente une évaluation fiable de cette nouvelle devise que sont les titres de l'acquéreur. Par conséquent, le paiement en titres est potentiellement plus acceptable pour le vendeur d'une entreprise (Brau et al., 2003). Brau et Fawcett (2006) soulignent que c'est l'opportunité créée par ce nouveau mode de financement des acquisitions qui est recherchée à travers l'introduction en bourse, devant la levée de fonds.

A la suite de l'article de Brau et Fawcett (2006), plusieurs études se sont penchées sur les comportements d'acquisitions après l'introduction en bourse. Elles relèvent ainsi une véritable boulimie d'acquisitions de la part des sociétés nouvellement cotées. Celikyurt et al. (2010) ont observé que près de 77% des sociétés américaines ayant réalisé leur introduction en bourse entre 1985 et 2004 ont réalisé au moins une acquisition dans les cinq ans qui ont suivi. Tandis, qu'elles n'étaient que 19% à en faire dans les cinq années ayant précédé leur introduction. La rapidité avec laquelle une partie de ces acquisitions s'est faite est frappante : 31% des sociétés étudiées ont fait une acquisition dans l'année qui a suivi l'introduction en bourse. Hovakimian et Hutton (2010) observent quant à eux une proportion de 19% de sociétés cotées américaines ayant réalisé une acquisition dans l'année qui suit l'introduction, contre 36% dans les trois ans sur la période 1980-2006. Ces auteurs soulignent que ce sont autant les fonds levés directement que la possibilité de payer en titres qui expliquent la fréquence importante des acquisitions. Ces études vont dans le sens de l'existence d'une articulation entre introduction en bourse et croissance externe.

Dans le cas d'entreprises jeunes et en forte croissance, l'introduction en bourse devient un levier très puissant pour conduire une stratégie de croissance externe. En effet, en raison du

fort engouement suscité par l'introduction, leurs titres sont fortement valorisés par le marché. Payer en titres permet alors de réaliser des acquisitions de grandes cibles qu'il aurait été impossible de réaliser autrement (Schultz et Zaman, 2001). Or, de nombreuses PME réalisent des opérations de croissance externe, lesquelles sont principalement financées par des augmentations de capital (Weitzel et McCarthy, 2011). Il se pose dès lors la question de savoir quelle est l'articulation entre stratégie de croissance externe et introduction en bourse pour des PME de croissance.

En effet, si l'on considère que l'introduction en bourse a pour seul objectif de fournir des ressources financières supplémentaires, elle ne devrait pas correspondre à un changement dans la stratégie de croissance de l'entreprise. En d'autres termes, les sociétés qui ont recours à la croissance externe devraient continuer à réaliser des acquisitions après l'introduction en bourse. Or, les résultats de Celikyurt et al. (2010) confirment que beaucoup de sociétés nouvellement cotées poursuivent et même intensifient le recours aux acquisitions. De même, les sociétés qui ne se développent que par croissance interne devraient conserver ce mode de croissance. Il est toutefois également possible que l'introduction en bourse coïncide avec un changement stratégique et qu'elle soit même motivée par ce changement stratégique. Ainsi, une PME peut viser une acquisition, mais ne pas avoir les ressources financières pour la mener à bien sans recourir à un financement par le marché. L'introduction en bourse lui permet alors de trouver les ressources financières nécessaires. Enfin, l'introduction en bourse peut correspondre à une pause dans la croissance de l'entreprise rendue nécessaire par un développement rapide et un endettement bancaire important. Les nouvelles ressources en fonds propres issues de l'introduction permettent un rééquilibrage de la structure financière (Pagano et al., 1999) et les investissements se réduisent dans les années qui suivent (Carpenter et Rondi, 2006).

3. Caractéristiques des acquisitions des PME françaises cotées

Nous avons sélectionné les PME françaises ayant réalisé une introduction en bourse entre 2006 et 2014, que celle-ci ait eu lieu sur Euronext Growth ou sur les compartiments B et C d'Euronext. Le choix de PME françaises est guidé par le fait que les motivations à l'introduction en bourse ne sont pas les mêmes en Europe et aux Etats-Unis. Bancel et Mittoo (2009) indiquent ainsi que pour les entreprises européennes, la réalisation d'acquisitions n'est pas la principale raison de l'introduction en bourse. Nous avons éliminé toutes les sociétés qui n'étaient pas des PME au sens de la Commission Européenne, tous les cas de transferts d'un compartiment du marché et les entreprises appartenant aux secteurs financiers et de l'immobilier. Nous obtenons un échantillon de 107 entreprises. Nous avons aussi collecté des informations relatives aux caractéristiques des opérations d'acquisition (King et al., 2004) : le mode de paiement des acquisitions, la proximité entre les activités de l'acquéreur et celle de la cible, et l'expérience antérieure en matière d'acquisitions de l'acquéreur, la nationalité de la cible et le fait qu'elle soit une société individuelle ou un groupe. Lorsque l'information est disponible, nous relevons également le prix de l'acquisition. Nous avons utilisé les prospectus d'introduction en bourse et les rapports annuels des entreprises étudiées comme source d'information et nous avons collecté manuellement les données.

Le tableau 1.1 montre la proportion d'entreprises de l'échantillon ayant réalisé une acquisition dans les trois années qui suivent l'introduction en bourse. A titre de comparaison, les résultats des études de Celikyurt et al. (2010) et Hovakimian et Hutton (2010) sont indiqués. Il en ressort que près de 28% des sociétés de notre échantillon ont réalisé une acquisition dans l'année qui a suivi leur introduction. Pour ces entreprises, l'introduction en bourse semble être motivée, au moins en partie, par la nécessité de financer l'opération. Cette proportion passe à 40% environ dans les deux ans qui suivent l'introduction et à près de 43%

au bout de trois ans. Au regard des résultats des études comparables, il apparait que les sociétés de notre échantillon se sont montrées très actives en termes d'acquisitions.

Tableau 1.1: Délai jusqu'à la première acquisition après l'introduction en bourse

(en % de l'échantillon total)

	Moins d'un an après l'IPO	Moins de deux ans après l'IPO	Moins de trois ans après l'IPO
PME en France entre 2006 et 2014	27.78%	39.81%	42.59%
Celikyurt et al. (2010)*	54.70%	65.10%	71.50%
Hovakimian et Hutton (2010)**	19.23%	29.56%	35.68%

* IPO entre 1985 et 2004 d'un montant levé supérieur à 100M$

** IPO entre 1980 et 2003, acquisitions d'un montant de 1M$ minimum

Source : prospectus d'introduction, offerings circular et rapports annuels

Passons, à présent, aux principales caractéristiques des opérations d'acquisitions. Les deux tiers (66,36%) des acquisitions concernent des cibles françaises, ce qui montre que les PME privilégient la proximité géographique lorsqu'elles font des acquisitions. Dans une très large majorité (83,64%), les cibles sont des sociétés individuelles et non des groupes. Cela s'explique par la complexité qu'il peut y avoir à intégrer un groupe complet par rapport à une société individuelle pour l'acquéreur. La quasi-totalité (90%) des cibles appartiennent au même secteur d'activité que l'acquéreur. Par ailleurs, 70% des acquisitions sont payées en numéraire, contre 4,55% en titres et 17,27% sont des opérations mixtes. Le prix moyen des acquisitions est de 4,85M€, et le prix médian de 2,66M€. Enfin, trois secteurs concentrent

près de 70% des opérations d'acquisitions. Il s'agit des éditeurs de logiciel, des prestataires de services numériques et des sociétés de conseil en marketing. Les sociétés du secteur des technologies de l'information et de la communication sont donc très largement représentées.

En synthèse, un profil type d'acquisition se dégage de ces résultats. Il s'agit de l'acquisition d'une PME française, société individuelle, et payée en numéraire. Ces résultats sont cohérents avec les travaux ayant étudié les caractéristiques des acquisitions menées par des PME (Iacobucci et Rosa, 2005 ; Wiklund et Shepherd, 2009). En effet, il est difficile pour les dirigeants de PME d'intégrer rapidement et efficacement des sociétés étrangères ou œuvrant dans des secteurs d'activité différents. Nos résultats suggèrent que la proximité, géographique et sectorielle, est un facteur important dans le choix des cibles.

3.1. Typologie des stratégies de croissance observées

Afin, d'explorer dans quelle mesure les PME françaises qui s'introduisent en bourse réalisent des opérations d'acquisitions, nous présentons une typologie des entreprises nouvellement introduites en bourse en fonction d'une approche dynamique de leur stratégie de croissance.

Le tableau 1.2 présente la répartition des entreprises de notre échantillon en fonction de leur stratégie de croissance avant et après leur introduction en bourse. Nous observons qu'environ un tiers des sociétés de l'échantillon a déjà réalisé des acquisitions avant l'introduction, ce qui est supérieur au niveau de 19% observé par Celikyurt et al. (2010). Un tel niveau peut sembler surprenant pour des PME. Toutefois, l'âge moyen des sociétés de notre échantillon, 12 ans, est plus élevé que celui de l'étude de Celikyurt et al. (2010). Il est

donc possible que ce niveau soit expliqué par le temps supplémentaire dont elles ont disposé pour réaliser des acquisitions. Comme nous l'avons déjà souligné, environ 43% des entreprises étudiées réalisent au moins une opération de croissance externe dans les trois ans qui suivent l'introduction en bourse. Cela montre l'ampleur du recours à la croissance externe parmi les PME de croissance.

Tableau 1.2: Typologie de croissance

		Avant l'introduction en bourse		
		A réalisé au moins une acquisition	N'a pas réalisé d'acquisition	Total
Dans les trois ans après l'introduction en bourse	A réalisé au moins une acquisition	A 21.50%	C 21.50%	42.99%
	N'a pas réalisé d'acquisition dans les trois ans	D 13.08%	B 43.93%	57.01%
	Total	34.58%	65.42%	100%

Source : prospectus d'introduction, offerings circular et rapports annuels

Le croisement de ces deux critères, stratégie de croissance avant et après introduction en bourse, nous permet de définir quatre catégories d'entreprises correspondant à quatre articulations spécifiques entre stratégie de croissance et introduction en bourse.

- Catégorie A (Croissance externe) : 21.50% des sociétés de l'échantillon ont déjà une expérience de la croissance externe préalablement à l'introduction en bourse et réalisent des

acquisitions après l'introduction. Pour celles-ci, l'introduction en bourse vise à amener des ressources financières nouvelles pour poursuivre une stratégie de croissance externe déjà en place. Pour cette catégorie d'entreprises, l'introduction en bourse joue un rôle de facilitateur de la croissance externe en donnant à des sociétés ayant déjà l'expérience des acquisitions des ressources financières nouvelles. Cela concerne environ la moitié des sociétés réalisant une croissance externe.

- Catégorie B (Autres modes de croissance) : 44% des sociétés de notre échantillon n'ont eu recours à la croissance externe ni avant ni après l'introduction en bourse. Ceci suggère le recours à d'autres modes de croissance, interne ou hybrides comme les alliances stratégiques, le développement en réseau de franchise ou le développement sous forme de licences. Les sociétés de biotechnologies, dont la croissance repose avant tout sur la recherche et développement, sont tout particulièrement représentées dans cette dernière catégorie. Leur objectif principal est en effet le développement et la commercialisation de nouvelles technologies ce qui mobilise l'attention des équipes dirigeantes. Il est également possible que ces sociétés se soient introduites en bourse non seulement pour trouver les ressources financières utiles à leur développement, mais aussi pour permettre leur rachat futur. En effet, l'argument de réduction de l'asymétrie d'information consécutive à l'introduction en bourse signifie qu'un acquéreur potentiel dispose avec le cours de bourse d'un prix de marché (Signori et Vismara, 2017).

- Catégorie C (Changement de cap stratégique) : 21.50% des sociétés de notre échantillon réalisent la première opération d'acquisition de leur histoire après l'introduction en bourse, un niveau équivalent à celui de 21% rapporté par Celikyurt et al. (2010). Pour ces entreprises, l'introduction en bourse correspond à un changement de mode de croissance, interne vers externe. Ce résultat rejoint l'analyse de Brau et Fawcett (2006) qui montraient que la réalisation d'acquisitions est la principale motivation rapportée par les dirigeants pour

expliquer la volonté de s'introduire en bourse. Il est cependant remarquable de noter que notre résultat porte sur des PME alors que les études précédemment citées intègrent des sociétés de toutes tailles. Ainsi, nos résultats indiquent que l'introduction en bourse n'est pas seulement un facilitateur de la croissance externe, mais qu'elle correspond bien à un changement de cap stratégique pour certaines sociétés. L'on peut en déduire une stratégie de croissance à deux temps. Il est ainsi possible qu'une société, bloquée dans sa croissance interne, s'introduise en bourse précisément pour pouvoir réaliser une opération de croissance externe qu'il est difficile de financer sans le recours au marché. Mais il est également possible que l'introduction en bourse amène un opportunisme dans le comportement d'acquisition. Ainsi, il se peut que la disponibilité des fonds consécutive à l'introduction conduise l'entreprise à opter pour une croissance externe. Cependant, cette seconde explication nous semble moins probable dans la mesure où la proximité temporelle entre l'introduction et les acquisitions (moins de 3 ans) suggère que la décision d'acquisition est antérieure à l'introduction en bourse.

- Catégorie D (Consolidation de la structure financière) : Enfin, 13% des sociétés de l'échantillon avaient déjà réalisé des opérations d'acquisitions avant l'introduction en bourse, mais n'en ont pas conduit après. Il est possible que les sociétés concernées utilisent l'introduction en bourse pour rééquilibrer leur structure financière si les acquisitions réalisées ont été financées par de la dette. Pagano et al. (1998) indiquent ainsi que l'introduction en bourse coïncide avec une diminution de l'endettement financier et des investissements qui avaient fortement augmenté dans la période précédant l'introduction. Dans ce cas, il convient de s'interroger sur les coûts relatifs de ces modes de financement, car il est possible qu'une introduction en bourse préalable à la réalisation d'acquisitions soit moins coûteuse. En effet, rééquilibrer la structure financière par une introduction en bourse sous-entend que les coûts financiers sont élevés avant l'introduction en bourse.

3.2. Comparaison des opérations d'acquisitions entre les stratégies A et C

Après avoir identifié les articulations possibles entre introduction en bourse et croissance externe, le tableau 1.3 présente les caractéristiques des opérations d'acquisitions menées post introduction (soit les catégories A et C). Il ressort que les sociétés ayant déjà une expérience des opérations de croissance externe (groupe A) réalisent deux fois plus d'opérations d'acquisition que les entreprises qui n'avaient pas d'expérience d'acquisition préalablement à leur introduction en bourse (groupe C). Ainsi, l'expérience en matière d'acquisition permet une stratégie de croissance externe particulièrement dynamique. A l'inverse, les sociétés n'ayant pas d'expérience préalable en acquisitions semblent déployer leur stratégie de croissance externe à un rythme plus lent. Le mode de paiement des opérations d'acquisition est principalement le numéraire. A noter toutefois que les sociétés n'ayant pas d'expérience préalable (C) ont davantage recours à des paiements mixtes, tandis que les sociétés ayant une expérience préalable (A) sont plus enclines à des paiements exclusivement en titres. Le faible nombre de paiement en titres et de façon mixte conduit toutefois à relativiser la portée de cette observation. Les cibles acquises sont, pour les deux catégories, majoritairement françaises et opèrent dans le même secteur que l'acquéreur. La proportion d'acquisitions faites à l'étranger est légèrement plus élevée dans le groupe C, ce qui est étonnant. En effet, l'on s'attendrait à ce que les sociétés n'ayant pas d'expérience en matière d'acquisition privilégient la proximité géographique pour limiter les difficultés d'intégration de la cible résultant de différences culturelles (Wiklund et Shepherd, 2009). Les sociétés du groupe C réalisent un peu plus d'acquisition dans des secteurs différents du leur, ce qui indique une stratégie de diversification des activités (Iacobucci et Rosa, 2005).

4. Conclusion

Cet article s'est intéressé à l'articulation entre l'introduction en bourse et la croissance externe des PME. Nos résultats indiquent, sur un échantillon de sociétés françaises, que le recours à la croissance externe après l'introduction en bourse est très courant. 43% des sociétés de notre échantillon réalisent ainsi au moins une opération d'acquisition dans les trois années qui suivent l'introduction. Ces résultats sont à considérer à la lumière d'études menées auprès des grandes sociétés cotées et montrent que les PME cotées sont tout aussi actives que les sociétés plus grandes en matière de croissance externe. Les caractéristiques des opérations d'acquisition que nous avons relevées montrent un schéma récurrent. La majorité des acquisitions sont payées en numéraire, et non en titres comme on pourrait s'y attendre, concernent des cibles françaises, elles-mêmes des PME, et œuvrant dans le même secteur que l'acquéreur. Les caractéristiques des cibles montrent bien une préférence pour des sociétés qu'il sera plus facile d'intégrer grâce à la proximité géographique et sectorielle. Nos résultats apportent ainsi un éclairage nouveau sur le lien entre introduction en bourse et stratégie de croissance externe chez les PME en montrant l'imbrication de ces deux décisions. Un nombre important de PME de croissance a recours à une introduction en bourse pour financer des acquisitions. Cela dénote d'une réflexion stratégique qui vise à anticiper le financement d'un investissement à venir, l'acquisition d'une autre société, en réalisant une introduction en bourse.

Tableau 1.3: Comparaison des comportements et caractéristiques des opérations d'acquisitions

				Lieu de l'acquisition		Mode de paiement			Secteur de la cible	
	Effectif	Nombre moyen d'acquisitions par société	Montant moyen des acquisitions en K€	Acquisition domestique	Acquisition à l'étranger	Acquisitions payées en numéraire	Acquisitions payées en titres	Acquisitions payées de façon mixte	Identique à l'acquéreur	Différent de l'acquéreur
Groupe A	23	3.17	4627.64	68.49%	31.51%	69.86%	2.74%	20.51%	86.49%	13.51%
Groupe C	23	1.61	5647.64	62.16%	37.84%	72.97%	8.11%	10.81%	91.78%	8.22%

Source : prospectus d'introduction, offerings circular et rapports annuels

Les résultats de cet article ont des implications managériales et en termes de politiques publiques. Premièrement, nos travaux contribuent à alimenter la réflexion sur la question du "milieu manquant", la sous-représentation d'entreprises de taille moyenne, particulièrement marquante en France, en montrant l'interaction étroite entre accès aux marchés financiers et dynamisme des PME. Plus précisément, nos résultats soulignent la pertinence des mesures ayant pour objectif de développer un écosystème favorable au financement des PME, pour soutenir leur croissance. Deuxièmement, nos résultats peuvent avoir des implications managériales tant pour les dirigeants de PME que les acteurs du conseil aux PME. En effet, ils soulignent la nécessité d'articuler stratégie de croissance et modes de financement. Ainsi, l'introduction en bourse apparait comme un moyen privilégié de financer la croissance externe de l'entreprise. Cela peut s'avérer essentiel pour franchir une étape supplémentaire de développement pour les PME de croissance tout en évitant d'être soi-même la cible d'une acquisition. Particulièrement, nos résultats indiquent qu'une option est une stratégie de croissance en deux étapes, introduction en Bourse puis acquisition.

Par ailleurs, nos résultats s'inscrivent dans le prolongement des travaux de Berger et Udell (1998) sur le cycle de croissance financière. En montrant que les PME nouvellement cotées réalisent des acquisitions financées presque exclusivement en numéraire, nos résultats suggèrent que la réduction d'asymétrie d'information liée à l'introduction en bourse n'est pas totale. En effet, il est moins coûteux de financer une acquisition en titres qu'en numéraire pour une société nouvellement cotée. Nous interprétons nos résultats comme une preuve indirecte que ce paiement en titres n'est pas possible, car il subsiste encore une certaine asymétrie d'information vis-à-vis de la société nouvellement cotée. En quelque sorte, malgré son nouveau statut, celle-ci doit

encore faire ses preuves et démontrer sa solidité pour que ses titres soient acceptés comme moyen de paiement. Ce n'est qu'alors que le cycle de croissance financière sera complet.

Comme tout article, notre travail a plusieurs limites. En premier lieu, nos résultats portent sur un échantillon spécifique et il est donc délicat de généraliser nos conclusions. Il serait intéressant de comparer nos observations, qui portent sur le cas de la France, à celui d'autres pays européens. D'autre part, nous n'avons pu recueillir qu'indirectement des informations sur les cibles des acquisitions à travers les rapports annuels et les prospectus d'introduction des acquéreurs. D'autres travaux pourraient ainsi s'intéresser aux caractéristiques propres des cibles des opérations de croissance externe menées par les sociétés cotées. Enfin, nous n'avons pas étudié dans quelle mesure ces opérations de croissance externe s'avéraient ou non réussies. La croissance externe permet-elle d'obtenir de meilleures performances et de grandir plus vite ou relève-t-elle davantage d'une décision managériale peu opportune?

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Chapitre 2

External Growth Strategy and Performances: An Empirical Study of French SMEs[20]

In this chapter, we examine the impact of small firm external growth strategy on their performance using unique data on all French small firms that went public between 2006 and 2014. Using a difference-in-differences approach, we find that small firms conducting acquisitions experience higher profitability than small firms relying on other growth modes. However, we observe no effect of acquisitions on sales growth. The results are robust to different robustness checks, including propensity-score matching. Our findings bring indirect evidence on the fact that small firms may not seek to increase sales but rather to improve profitability when they launch an external growth strategy. Furthermore, we provide empirical insights on the importance of external growth strategy for small firms and discuss potential implications for policy makers.

Keywords: Small business, Growth, Mergers and acquisitions, Performance

[20] This chapter has been written with Anaïs Hamelin.

1. Introduction

Research on mergers and acquisitions (M&A) is plentiful in strategy, management, finance, and entrepreneurship. With respect to the financial entrepreneurship literature on M&A, two research streams can be identified. The first one considers M&A as an exit strategy for entrepreneurs. Several papers investigate how entrepreneur's characteristics and business organization influence this exit strategy (Shen and Reuer 2005; Lehman and Schwerdtfeger 2016; Cotei and Farhat 2018) and the role of M&A in the technology transfer process (Meoli et al. 2013). The second focuses on the determinants of post-acquisition performance, a question that is widely discussed for large firms as well. Yet, this literature has reached neither a theoretical nor an empirical consensus on the performance effect of external growth strategy.

From a theoretical perspective, the resource-based view (RBV) suggests that acquisitions provide new resources to the acquirer that fuel growth (Penrose 1959). It might be easier and less costly to integrate an entire bundle of resources through M&A than to purchase individual resources (Wernerfelt 1984). As a result, resource combinations between the target and the acquirer result in synergies that enhance firm performance (Ficery et al. 2007). On the contrary, agency theory stresses the fact that acquisitions are value-destroying operations as they result from inadequate managerial decisions that destroy shareholder's value (Jensen 1986).

From an empirical perspective, the extensive empirical literature testing the performance effect of acquisitions remains inconclusive (King et al. 2004; Maksimovic and Phillips 2013). However, most of these studies focus on large deals and on listed acquirers (Moeller et al. 2004; Arikan and Stulz 2016), probably because of data availability and use of stock-price based measures. Research examining whether the performance of an external

growth strategy is higher than an internal growth strategy in small businesses remains scarce and inconclusive (Weitzel and McCarthy 2011). While several studies do not identify significant benefits of M&A for small firms' performance (Ooghe et al. 2006, Wiklund and Shepherd 2009), other papers find gains in terms of increased sales and profitability (Duhautois and Petit 2013, Arvanitis and Stucki 2014, 2015; Mawson and Brown, 2016). These mitigated results call for additional empirical research on the performance effect of external growth strategy in small businesses.

One major caveat with this literature is that it does not explicitly investigate the performance impact of acquisitions with respect to the performance of non-acquiring firms. Arvanitis and Stucki (2014) acknowledge that the inclusion of non-acquiring firms is important in M&A studies because of the mechanical increase in sales that follow an acquisition. In other words, the simple addition of sales revenue of the acquiring firm and the target does not prove that there are synergy gains. Thus, it is difficult to identify the impact of an acquisition on firm performance because we cannot observe what this performance would have been without the acquisition. This suggests that more insights on the true benefits of an acquisition, if any, can be gained by comparing non-acquiring with acquiring firms. It is exactly what we attempt to do, as our unique sample allow us to explore the impact of acquisitions on small firms' performance that is based on the comparison of growth modes, external versus internal growth.

To explore the effect of an external growth strategy on firm performance, we rely on a unique data set. Our sample comprises 411 firm-year observations on small and medium French firms that went public during the 2006-2014 period on the organized French market. To collect financial data, we used the Amadeus database. We complemented the collection by manually gathering information from the firm's annual reports about acquisition activities. This provides us with information that incorporates pre-acquisition accounting and financial

data. We rely on a difference-in-differences approach using several performance measures to test our hypothesis. This provides a methodological contribution as this approach is a robust methodology to explore a performance effect of acquisition (Arvanitis and Stucki 2015). Further, we check the robustness of our findings through propensity-score matching (PSM). Our results show that small businesses relying on external growth have a significantly higher profitability than those that grow internally, but not a higher growth in sales.

Overall, our results extend previous empirical research on the profitability effect of acquisitions in the case of small firms (Arvanitis and Stucki 2014, 2015; Mawson and Brown 2016). We contribute to this literature by exploring the profitability effect of this strategy, which also allows to capture the effect of acquisitions in terms of synergies, and not only an increase in firm size. Our findings suggest that the motivation behind an external growth strategy is rather to acquire assets and technologies that enhance profitability than to grow faster.

The remainder of the paper proceeds as follows. To start, we review the literature on post-acquisition performances and develop our hypothesis. Then, we present the research methodology and the data. Further, we expose our results. In the last section, we discuss the results and present some of this work's limitations as well as our conclusions.

2. Theoretical background and related literature

There is a broad debate between the RBV and the agency theory regarding the impact of external growth strategy on firm performance. While the former, based on Penrose's theory of growth (1959), considers acquisition as valuable operations that provide synergies, the latter stresses the detrimental effect of the M&A process (Jensen 1986).

Through acquisitions, companies acquire new resources that fuel growth and it is likely that, at some point in their lifecycle, they will not have any other choice than to buy out another company to keep growing (Penrose 1959). If the market for acquisitions is imperfect, a firm can buy a rare bundle of resources at a cheap price and earn benefits (Wernerfelt 1984). The combination of the newly acquired resources with the acquiring firm's existing ones results in unique assets that cannot be imitated, providing strategic advantages (Salter and Weinhold 1979; Barney 1991). The nature of these benefits typically depends on the firm's strategy. For example, diversifying acquisitions may create value through the creation of synergies (Ficery et al. 2007). The acquisition of a competing firm might also be value-enhancing, as the acquirer will gain market power (Weitzel and McCarthy 2011). However, agency theory suggests that external growth is value-destroying, especially when acquiring firms are mature. These firms make acquisitions because their cash-flow levels are high and managers cannot identify new internal growth opportunities (Jensen 1986). Instead of returning cash-flows to shareholders, managers launch acquisitions as a growth at all costs strategy because it promotes their own interests (Wright et al. 2002). It also increases the firm dependency to their skills and facilitates managerial entrenchment (Shleifer and Vishny 1989).

Overall, the effect of acquisition on firm performance is theoretically undetermined. Dozens of papers have empirically investigated the existence of this performance effect and most results remain inconclusive (Andrade et al. 2001; King et al. 2004). This might come from the fact that many different methodological designs are used to capture the acquisition performance effect. The use of a market-based measure or an accounting-based measure is for example a key distinction between M&A studies (King et al. 2004). Additionally, the impact of several factors related to either the deal or the acquirer's characteristics might moderate or mediate the relationship between external growth and firm performance (King et al. 2004,

Maksimovic et al. 2013). For example, several papers compare acquisitions conducted by small versus large firms and suggest a size-effect as smaller acquirers experience greater stock-price returns than larger ones (Moeller et al. 2004). The proximity between the activities of the target and the acquiring firm enhances post-acquisition operating cash-flows (Healy et al. 1992). Ghosh (2001) and Linn and Switzer (2001) find that cash-financed acquisitions are followed by greater performances than stock-financed ones, suggesting that the mode of payment has some influence. In the UK, Powell and Stark (2005) find no improvement in post-acquisition performance and no impact from the payment method but observe that industry relatedness and change in the target's top management team have a significant impact. These results underline the variety of approaches and conclusions in this domain.

Among the relatively few papers that specifically focus on acquisitions conducted by small businesses, several works stress the fact that small firms exhibit specific characteristics when it comes to external growth strategy. First, they are less likely to be affected by agency conflicts in conducting acquisitions, because managers and owners tend to be the same person. Indeed, management entrenchment is less likely to affect small firms because owners-managers don't need to increase the firm dependence to their skills. One consequence is that small firms are more likely to withdraw from a deal than large firms if the price becomes excessive during the negotiations (Weitzel and McCarthy 2011). This provides more flexibility in the M&A process because it means that small firms managers will more easily give up an acquisition. As a result, small firms are more selective in the target choice, which in turn increases the probability that they conduct more profitable acquisitions when compared to large firms.

Second, acquisitions are value-creating only if synergies are created (Schultz and Zaman 2001; Weitzel and McCarthy 2011) and specific know-how is transferred from one activity to another (Iacobucci 2002). This know-how is a managerial talent, and its use can

only be relevant in original business-related acquisitions. Therefore, firms conducting unrelated acquisitions should perform worse than firms conducting original business-related ones. In small firms, managers lack the time and, sometimes, the skills required to drive activities in diversified business (Robson et al. 1993). Thus, small firms conducting acquisitions are expected to make acquisitions more closely related to their core activities, and such acquisitions should be followed by better performance (Iacobucci and Rosa 2005).

Last, external growth allows for small firms to reach a critical size faster than internal growth does (Weitzel and McCarthy 2011). The very survival of a small business can be at stake if its market power does not increase fast enough, and this creates a strong incentive to acquire other companies when the firm is young. Empirical works bring evidence of such phenomena, especially in highly competitive industries (Schultz and Zaman 2001). These empirical papers are in line with the RBV and show that small firms need to acquire to grow and survive.

A few empirical papers have explored the extent to which acquisitions by small firms are followed by higher performances. Ooghe et al. (2006) study a sample of Belgian acquisitions conducted by small privately held firms and report a decline in the acquirer's profitability. Wiklund and Shepherd (2009) show that small Swedish acquirers only experience higher performance, measured as growth in sales, if specific integration efforts are made. Arvanitis and Stucki (2015) identify a higher productivity and innovation performance on a sample of Swizz M&A. Mawson and Brown (2016) use a case-study approach on eight UK-based acquiring start-ups and indicate that higher growth and profitability were experienced after acquisitions.

Overall, theoretical predictions by the RBV indicate that an external growth strategy should result in higher performances. Empirical evidence on this topic is rather mixed but

largely depends on the performance measure used to assess performances. There are several reasons specific to small business that might undermine the agency issue and magnify the RBV, thus we hypothesize that the performances of small firms that use an external growth strategy are higher than those of internally growing firms.

3. Methodology

3.1. Econometric framework

Obtaining data on the pre-acquisition period, especially in the case of small firms, is generally a challenge for the M&A literature (Arvanitis and Stucki 2015). Therefore, most papers face causality problems when studying the performance impact of acquisitions as, for example, already better performing firms could decide to rely on an external growth strategy. As a result, direct observation of the M&A's outcome would not provide any reliable insights on the extent to which the acquisition is responsible for a change in profitability.

This motivates our choice to consider a sample of IPO firms, which gives us access to information about all the acquisitions made before and after the listing in the annual reports and prospectus. This sample allows us to use a difference-in-differences (Did) approach, in which we look at the difference in performances before and after the IPO and distinguish between firms that conduct acquisitions and those that do not (see Lechner (2010) for additional information about this procedure). Doing so allows us to control for omitted variable bias, and particularly for any unobserved effects that may be related to the firm or the period.

3.2. Sample and data sources

To collect the data, we used several sources of information. To determine the firms to include in the sample, we used the information provided by the official website of Euronext[21], which lists all the IPOs that occur on the French market. Then, we obtain financial data on the firms from the BVD Amadeus database. We manually gather information about firms' acquisition activities through the annual reports and the offering circular or prospectus[22] as this information is not available in Amadeus for small acquisitions. This allows us to cross-check the quality of the data and to obtain data that is not readily available.

During the period from 2006 through 2014, 275 firms conducted an IPO on Euronext. First, we excluded from the sample 63 firms that transferred from another financial market. Second, we only retained firms that met the criteria for small firm according to the definition set by the European Commission[23]. At this point, there were 117 eligible firms. We also eliminated firms operating in the financial and real estate industries. Finally, we excluded delisted firms and firms for which we were unable to gather sufficient data. The final number of eligible firms is 105. We then collected annual financial and accounting data for the year previous to the IPO as well as for each of the three years following the IPO. This allows us to include lagged effects of the acquisitions on profitability as post-acquisition benefits are likely to be not immediate. Indeed, the Penrosean view on firm growth stresses the integration challenge that managers face after an acquisition. For small firms' managers, who are often wearing several hats, it is difficult to dedicate time both to the integration process and to the daily operations of the acquiring firm (Penrose 1959). Therefore, integration efforts are required to achieve gains in synergies (Wiklund and Shepherd 2009) and this justifies why we

[21] https://www.euronext.com/en
[22] These documents were available on the companies' websites.
[23] Available at http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_fr.

use a three-year event window. For example, if a company made an acquisition in the year that follows its IPO, we have three firm-year observations for its profitability, which allows observing one-year and two-year lagged effects of acquisition.

3.3. Variables

M&A are multidimensional operations and complex by nature which means that different performance indicators are required to measure an acquisition's performance impact (Arvanitis and Stucki 2014). Consistent with previous research, we measure firm performance both through growth in sales, calculated as the change in sales between two consecutive years and expressed in percentage and through profitability. However, there is a mechanical increase in sales after an acquisition as the acquirer's income statement is merged with the target's, and this size effect might influence firm growth outside any acquisition effect. Indeed, the effect of firm size on firm growth is a controversial issue. The Gibrat (1931) law states that growth is proportional to size and that the factor of relationship is random. Gibrat's law has generated substantial research. Some studies find that growth rates are independent of size, others that Gibrat's law is applicable only to large organizations, and finally some studies observe that growth rates diminish with increasing size (Evans 1987; Wagner 1992; Sutton 1997). This suggests that more insights on the true benefits of an acquisition, if any, can be gained by focusing on a profitability indicator.

Profitability is captured by operational return on assets (OROA) defined as firm's EBIT (Earnings before interests and taxes) divided by the firm's total asset. This measure has been commonly used in empirical research to assess firm profitability, both in M&A and IPO studies (Mikkelson et al. 1997; King et al. 2004).

To implement our Did methodology, we first created a dummy variable "Acquirer" that is equal to "1" for the treated firms, namely those that made at least one acquisition during the three-year event window. Then, we created a dummy variable "Post" that is equal to "1" if the observation takes place after the acquisition and "0" if it is not. Last, we computed the interaction term "Acquirer*Post" between the variables "Acquirer" and "Post".

We also include a number of control variables. Several authors find that age matters regarding the post-acquisition performance of a firm (Arikan and Stulz 2016). Thus, we controlled for the firm's age, which is defined as the number of years since firm creation. Like age, firm size is likely to play a role in both acquisition activity and firm performance (Weitzel and McCarthy 2011). Thus, we also controlled for firm size, which is defined as the firm's natural logarithm of total asset. Furthermore, we controlled for firm financial structure using its leverage, which is computed as a firm's total debt divided by total assets. The availability of cash also conditions a firm's acquisition behavior, so we use cash ratio, defined as cash and equivalents over total assets, as a control variable. Regarding investment variables, we include investment in fixed assets, calculated as the percentage change in fixed assets between two consecutive years as well as net operating working capital. Net operating working capital is calculated as inventories plus accounts receivable minus accounts payable over sales (Aktas et al. 2015).

4. Results

4.1. The performance of external growth strategy in small firms

We observed 110 acquisitions over the three-year event window. Regarding the timing of acquisition, 28 percent of the sample firms conducted at least one acquisition in the year following the IPO, 39 percent within two years and 42 percent within three years. Half of the acquiring firms were new acquirers that had never conducted an acquisition before the IPO. This shows that the post-IPO context is relevant to study the performance effect of acquisitions performed by small businesses as many deals occur.

Table 2.1 presents the mean and standard deviation of the variables included in the study. The median OROA, is -0.1 percent and the mean is -11.0 percent as some of our sample firms, especially biotechnology firms, experience very low and negative EBIT. These numbers need to be considered within the context of the average standard of 7 percent OROA for French small firms[24], and they show a strong decline in post-IPO performances regarding the pre-IPO OROA. This phenomenon has already been documented in previous research (see Mikkelson et al. 1997). It confirms that a Did framework is suited for our data because it controls for such changes in profitability that are not related to the growth strategy. Table 2.2 shows a correlation matrix between our variables. As significant correlations might exist among some of our variables, we estimate the variance inflation factor (VIF) using STATA 15. None of the VIF values exceed 3.05, which is far below the level of 10, where multicollinearity may be an issue.

[24] Available at https://publications.banque-france.fr/sites/default/files/medias/documents/bulletin-de-la-banque-de-france_203_2016-01-02.pdf

Table 2.1: Descriptive statistics

Variables	N	Mean	Standard Deviation	25th percentile	Median	75th percentile
OROA	533	-0.110	0.351	-0.242	-0.007	0.090
Acquirer	533	0.131	0.338	0.000	0.000	1.000
Fixed assets investment	427	0.757	3.020	-0.035	0.115	0.437
Net operating working capital	509	-0.418	7.557	0.031	0.202	0.346
Cash ratio	533	0.293	0.227	0.123	0.244	0.421
Age	533	12.146	9.506	7.000	10.000	14.000
Size	533	9.672	1.028	8.980	9.663	10.384
Leverage	533	2.109	8.481	0.519	1.040	2.161

Table 2.2: Correlation matrix

Variables	1	2	3	4	5	6	7
OROA							
Acquirer	**0.3538**						
Fixed assets investment	**0.1003**	**0.1333**					
Net operating working capital	0.0145	-0.0124	-0.0578				
Cash ratio	**-0.1568**	-0.2321	-0.0214	-0.0458			
Age	**0.1524**	**0.1628**	-0.0248	0.0724	**-0.1643**		
Size	**0.2308**	**0.142**	0.0241	-0.0082	0.0307	**0.2899**	
Leverage	-0.0425	-0.0251	-0.0071	-0.0252	-0.0176	0.0098	0.0085

N=411, correlation coefficients > to 0.10 are significant at $p < 0.05$ level and shown in bold.

A Breusch and Pagan (1980) Lagrange multiplier test rejects the use of pooled ordinary least squares so we should rely either on fixed-effects model or a random-effects model. As we use a Did estimator, the "Acquirer" variable would be collinear with firm fixed-effects dummies so we use a random-effects model. Table 2.3 presents the results of the impact of the firm's growth strategy on its performance using our Did approach.

The acquirer dummy is negative for sales growth and the interaction term is positive but not statistically significant. Thus, we observe no statistically significant effect of external growth strategy on sales growth. The acquirer dummy coefficient is positive for the profitability measure and highly significant. The Did interaction (Acquirer * Post) term is negative for the profitability variables and significant. This has two implications. First, there is a general decline in economic performance after the IPO. Indeed, the sum of the Post and interaction terms is negative and equal to -0.105. Second, this decline is less pronounced in the case of acquiring firms as the sum of the interaction term and the acquisition dummy coefficient is positive and equals 0.147. The results show that firms that adopt an external growth strategy over-perform compared to non-external growth strategy-oriented firms. This partially supports our hypothesis as small businesses that realize an external growth strategy experience higher performances, however we do not observe that they experience higher sales growth.

4.2. Robustness tests

While OROA is a common measure in M&A studies (King et al. 2004), one could argue that differences in the growth mode would result in different investment levels in property, plant and equipment (PPE). Firms relying on internal growth typically need to

maintain high investment in PPE. To some extent, firms relying on external growth do not need such investments because they acquire new resources through the M&A process. As a result, it is possible that depreciation and amortization are significantly higher for internal growth firms than for acquiring firms, thus biasing a performance measure like EBIT. Therefore, we also considered an alternative measure of profitability defined as EBITDA (Earnings before interest, taxes, depreciation and amortization) divided by the firm's total assets (Mikkelson et al. 1997). We refer to this variable as OROA2.

We then re-ran our regressions with the same specification. The results, provided in column 2 of table 2.3, also hold for OROA2, and our independent variable is equally significant. This shows that our results are not affected by considerations on depreciation and amortization.

We also decided to use an alternative econometric framework to check the validity of our results. Following Arvanitis and Stucki (2015), we relied on a matching technique. In situations where there are many observable characteristics for the units, a propensity score-matching technique is an appropriate answer to alleviate concerns regarding self-selection into treatment (Dehejia and Wahba 2002). To do this, we used the psmatch2 procedure available for Stata 15. First, we computed a propensity score using a logit regression on the probability of conducting an acquisition after the IPO using all our control variables and the firm's acquisition experience[25]. Although our sample is rather small, we make sure that we have more observations in the control group than in the treated group, so that the matching should be correct. Then, we calculate the difference in the mean performance of matched firms using the nearest neighbor in terms of propensity score as a match.

[25] We also include two sets of dummy variables to account for firm's location and industry. The number of variables used to calculate the propensity score (23) satisfies the conditional independence assumption.

Table 2.3: Difference-in-Differences (DiD) estimations of post-acquisition performances

Dependent variables	OROA	OROA2	Sales growth
Independent variables			
Acquirer	0.253 ***	0.237 ***	-2.316
	0.048	0.047	1.558
Post	0.001	0.000	-2.653
	0.030	0.029	1.904
Acquirer*Post	-0.106 **	-0.083 **	2.882
	0.044	0.038	2.285
Control variables			
Fixed asset investment	0.004 *	0.002	-0.031
	0.002	0.001	0.066
Net operating working capital	-0.003 ***	-0.002 **	-1.270
	0.001	0.001	1.579
Cash ratio	0.102	-0.005	-8.184
	0.074	0.071	8.403
Age	0.001	0.000	-0.088
	0.002	0.002	0.055
Size	0.048 *	0.034	-0.474
	0.026	0.024	0.972
Leverage	0.000	0.000	0.099 **
	0.001	0.001	0.046
Constant	-0.704 ***	-0.473	10.675
	0.268	0.247	12.973
N	411	411	406
R^2	0.146	0.147	0.060

Robust standard errors are under the coefficients. ***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively.

The difference in OROA between the treated group, those companies that made an acquisition, and the non-treated group is positive and highly significant as shown in table 2.4. The results are satisfactorily balanced for all our variables when including second order terms for age and leverage as indicated in table 2.5 (Caliendo and Kopeinig 2008). We also ran this procedure on OROA2, with similar results. This confirms our results about the positive impact of an external growth strategy on firm profitability.

Table 2.4: Results of the PSM (Average treatment effect for the treated, ATT)

Target variable	OROA	OROA2	Salesgrowth
ATT	0.224***	0.194***	-5.939
t-stat	4.65	4.00	-1.14
N treated	163	163	162
N untreated	223	223	219
N off support	21	21	21

***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 2.5: Test balancing property and common support of PSM (OROA)

Variable	Sample	Treated	Control	t	p>|t|
Fixed asset investment	Unmatched	1.223	0.385	2.750	0.006
	Matched	0.693	0.581	0.510	0.608
Net operating working capital	Unmatched	-0.636	-0.440	-0.230	0.815
	Matched	-0.742	-0.095	-0.660	0.509
Cash ratio	Unmatched	0.238	0.344	-4.870	0.000
	Matched	0.244	0.270	-1.150	0.250
Acquisition experience	Unmatched	0.500	0.238	5.700	0.000
	Matched	0.479	0.521	-0.770	0.440
Age	Unmatched	14.641	11.363	3.490	0.001
	Matched	11.982	12.258	-0.350	0.728
Age*Age	Unmatched	359.400	171.100	4.040	0.000
	Matched	193.650	201.890	-0.290	0.768
Leverage	Unmatched	1.937	2.346	-0.500	0.619
	Matched	1.826	2.025	-0.740	0.462
Leverage*Leverage	Unmatched	9.628	124.290	-1.370	0.170
	Matched	9.226	10.113	-0.230	0.820
Size	Unmatched	10.029	9.766	2.850	0.005
	Matched	9.965	9.747	2.130	0.034
Summary of the distribution of the abs(bias):					
Mean abs(bias)	Unmatched	28.3			
	Matched	7.0			
LR chi²	Unmatched	79.45***			
	Matched	13.2			

***, **, * denote statistical significance at the 1%, 5% and 10% levels, respectively.

5. Discussion and conclusions

5.1. Discussion and implications

The main objective of this article was to observe if an external growth strategy brings higher performances than an internal one in the case of small firms. We based our work on a sample of French companies that went public between 2006 and 2014 and used sales growth and OROA as performance measures. To alleviate causality issues, we used a difference-in-differences approach and checked the robustness of our results through propensity score-matching. Results show a positive and highly statistically significant relationship between acquisitions and firm profitability, while we do not observe a significant relationship with firm sales growth. This result contrasts with those in Arvanitis and Stucki (2015) and Mawson and Brown (2016) who identified an increase in sales growth following acquisitions. Wiklund and Shepherd (2009) found limited benefits of an external growth strategy on sales growth for firms that did not engage in resource-combination efforts to integrate the target. Thus, one explanation to our result is that our sample firms did not implement such integration efforts. However, another explanation is that the motivation to launch an external growth strategy was not to increase sales, but to increase profitability, as suggested by our next finding.

Indeed, we find a positive and statistically significant effect of acquisitions on firms' profitability, which shows that an external growth strategy brings higher profitability to the acquirer than internal growth. In other words, externally growing firms seem to build a competitive advantage over internally growing firms. This result is in line with the resource-based view (Wernerfelt 1984) as the benefits from the acquisitions reflect an efficient resource combination. New capabilities arise from this process as synergies are achieved after the acquisition. Meoli et al. (2013) and Xiao (2015) indicate that technology-based firms are

targets for larger firms which seek innovation[26]. But such targets face huge constraints to grow as they are limited by lack of managerial structure and access to external finance (Xiao 2015). Being acquired by a larger company is therefore a way to complete the technology-transfer process to a larger entity that provides managerial and financial support (Meoli et al. 2013). The resulting firm benefits both from managerial skills from the buyer and from unique technology and innovation capabilities from the target. The resource-combination process brings thus higher performances, an idea our results support, but only for profitability. This suggests that the main goal for acquiring firms is not to develop new products or services, but to improve the quality of existing products and services or the efficiency of production systems thanks to new technologies provided by the targets (Ferchichi and Souam 2015). Indeed, such an approach is likely to increase profitability indicators, like EBIT and EBITDA, because it improves the cost-margin, but it brings only limited benefits on the volume of sales.

Finally, our results imply that policy makers should consider measures that facilitate external growth strategy for small firms. Indeed, our results highlight that small firms with an external growth strategy are more profitable, which is beneficial for regional development. A direct impact of a small firm external growth strategy on regional development comes from the fact that after an acquisition, the resulting entity is more profitable, which increases its survival chances and ability to grow further. In other words, an external growth strategy is a way to overcome the liability of smallness (Aldrich and Auster 1986). But, there is also an indirect consequence on regional development as local small firms takeover activity might limit the detrimental effect at regional level, of foreign takeover. Indeed, Foreman-Peck and Nicholls (2013) indicate that takeovers initiated by large and foreign companies often result in

[26] Due to the limitation of our data, we cannot report characteristics of the targets. However, most of the acquiring firms are technology-based firms in the software, internet and biotechnology industries. Thus, the technology-transfer argument seems relevant for our sample firms.

activity transfers in another country. As it is unlikely that small firms acquirers transfer activities in a foreign country, fostering their ability to become potential acquirers is a way to strengthen regional development. However, it is difficult for small firms to become acquirers unless new financial resources are found. This is likely achieved thanks to a better access to capital markets for small firms, because capital markets provide both direct financing for acquisitions and allow for the use of stocks as a new currency (Signori and Vismara 2017). Therefore, our results underline that mechanisms, such as the ease with which small firms can access capital markets, facilitating small firms external growth, can be beneficial for regional development.

5.2. Limitations and directions for future research

This work has several limitations. First, while our results are consistent with a synergy effect of external growth strategy, we have not identified the nature of the synergies explaining the higher profitability for acquiring firms. For example, it is possible that acquirers benefit from a market power effect. If the acquired firm is a competing firm, acquiring it removes one player from the field and allows for better control of the market, thus bringing cost/margin benefits. The same argument is valid if the acquired firm is a supplier or a distributor as more flexibility in the supply-chain is gained. Therefore, the target degree of relatedness to the acquirer's core business is likely to play a role in explaining the external growth strategy performance effect. Further, as suggested by Penrose (1959), the performance effect of external growth strategy also depends on the firm's integration efforts (Wiklund and Shepherd 2009). As we have not captured the extent of integration efforts, we can only report that the benefits of the acquisitions in terms of synergies outweigh potential costs related to these integration efforts. Finally, several papers argue that acquisitions create some form of

"enthusiasm" for the acquirer (Arvanitis and Stucki 2015; Mawson and Brown 2016). These papers, suggest that enhanced motivation is a way to overcome the managerial challenge created by acquisition as managers must deal with additional tasks during the integration process. As a result, strengthened motivation to capitalize on the opportunities provided by the acquisition may also explain this synergy effect.

Second, the focus of our study, firms that have recently become public, might to some extent drive this analysis. Indeed, managers' financial skills are improved through the listing process as managers have to adapt to the requirements of new players such as regulatory bodies or financial investors (Certo et al. 2009). These new skills are likely to be helpful in conducting a successful external growth strategy, especially to overcome potential integration problems. This could explain the difference we observe with other comparable studies like the one by Ooghe et al. (2006) who observed a general decline in post-acquisition performances in their sample of Belgian privately held acquirers.

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Chapitre 3

Multiple growth modes at the same time? A look on growth modes in the formation and expansion of business groups

This chapter explores the growth modes small firms use when they form and expand business groups. We use a quantitative inductive approach based on the observations of the growth trajectories of 113 small and medium-sized French firms. Results indicate that while some firms create business groups as a result of organic growth (creation of subsidiaries) and others as a result of external growth (acquisitions), a large fraction of business groups is the outcome of the simultaneous combination of both growth modes. Additionally, we observe that the growth modes firms chose are related to their strategy as organic growth is more frequent when firms pursue an internationalization strategy and external growth is more common when firms develop a related diversification strategy. Propositions are developed following the presentation of the observations and a conceptual model is presented.

Keywords: Growth, Business groups, Organic growth, External growth, Corporate entrepreneurship

1. Introduction

Understanding how firms grow and why they grow in a particular way is a fundamental question in management and entrepreneurship. The influence of Penrose's work (1959) has been considerable in the study of firm's growth over the last decades (McKelvie and Wiklund 2010). One of the key contributions of her work is the view that growth depends on both the nature of resources held by a firm and the strategy used to develop new ones that can be either created internally (organic growth) or acquired externally (external growth). Subsequent developments of firm growth research include the importance of managing resources and not only acquiring and holding them (Sirmon and Hitt 2003) and the need to consider hybrid growth modes that go beyond the distinction between external and organic growth (McCann 1991; McKelvie and Wiklund 2010). For example, resources required to fuel growth can been found outside the boundaries of a firm through alliances (Gulati, Levie, and Singh 2009), joint ventures (Zahra, Ireland, and Hitt 2000) or licensing (Fosfuri 2006). There is a consensus among entrepreneurship researchers about the central role of growth mode in understanding the complexity of the growth phenomenon (McKelvie and Wiklund 2010; Wright and Stigliani 2012; Nason and Wiklund 2018; Shepherd et al. 2018). In fact, we are yet to propose a comprehensive conceptual framework of firm growth and it is likely that a lack of focus on the role of growth mode explain this absence of progress (Nason and Wiklund 2018).

The literature on growth makes a strong, although sometimes implicit assumption about the fact that firms chose one growth mode, excluding the possibility that firms grow in multiple modes simultaneously. For example, Lockett et al. (2011, p.48) state that 'organic growth and acquisitive growth constitute two distinct strategic options facing the firm, which have a differential impact on the future organic growth of the firm'. However, the decision to conduct an acquisition (acquisitive growth) does not necessarily mean that organic growth is

paused (Delmar et al. 2003). Examining the 'parallel combination of growth modes' (McKelvie and Wiklund 2010, p.277) appears therefore as a promising field of research.

Intuitively, the simultaneous consideration of several growth modes for a single firm implies that either external growth operations or hybrid growth strategies (franchising, licensing, joint ventures, and strategic alliances) are conducted in addition to organic growth that is considered as 'baseline' growth mode. Organic growth is defined as the use of resources and mechanisms internal to the firm to achieve 'innovative product development or marketing practices to identify and develop products to capture prospective audience' (Gilbert, McDougall, and Audretsch 2006, p.938). This definition makes the identification of organic growth actions difficult because it is based on longitudinal processes. For example, the development of an innovative product or molecule can take years in the pharmaceutical industry. Conversely, external growth operations are more easily identified because they correspond to point-in-time decisions that can be captured in event-studies (King et al. 2004). Because organic growth is more constant over time but also slower than external growth (Penrose, 1959; Gilbert et al. 2006), organic growth is often assumed in growth studies but rarely explicitly studied (McKelvie and Wiklund 2010). It follows that studies on growth typically capture organic growth through changes in sales, number of employees, and total assets which are the three most commonly used measures of growth (Delmar, Davidsson, and Gartner 2003). This approach has a major shortcoming in the sense that it does not take into account the efforts and actions that are implemented as an organic growth strategy. Therefore, a study that aims at identifying the extent to which firms grow in multiple modes simultaneously should first ensure the comparability of organic growth operations vis-à-vis other growth mode operations. In other words, we need comparable milestones between organic growth and external growth or hybrid growth modes to assess the extent to which organic growth takes place while other modes are simultaneously on the run. Such milestones

are more easily identified, we suggest, by looking at organizational aspects of firms and changes in these aspects.

In this chapter, we propose to look at a particular form of business organization to gain insights on the growth modes of entrepreneurial firms, namely business groups (BG). Business groups are sets of legally independent firms bound together by controlling interests that vary from equity ties to trade relations and family ties (Khanna and Yafeh 2005). The ubiquitous nature of BG in many countries, with the notable exception of North America, has generated a substantial amount of research (see for example the literature review by Carney et al. 2011 and Holmes et al. 2016). However, in the field of entrepreneurship, research on BG is rather scarce[27]. What we know is that BG formation is the outcome of a related diversification strategy (Rosa and Scott 1999; Iacobucci and Rosa 2005), represents a strong willingness to grow from the mother-firm (Iacobucci 2002), act as a resource-allocation device that enhance future growth (Lechner and Leyronas 2009), facilitates the involvement and development of entrepreneurial teams (Iacobucci and Rosa 2010), and improve innovation and entrepreneurship in transition economies (Yiu et al. 2014). To put it short, existent works on BG point out that the creation and expansion of BG represent a growth mode per se. What is less clear is the extent to which the creation and expansion of BG is related to organic, external, hybrid growth modes or a combination of them. Whenever a firm creates a subsidiary, acquires another firm or engages in a joint venture, it becomes a BG or expands its existing BG. This makes the formation and expansion of BG a highly interesting field of research to explore how firms can simultaneously adopt multiple growth modes. In particular, it is possible to monitor the evolution of organic growth in BG through the creation of and,

[27] Of course, the field of corporate entrepreneurship has brought many important contributions to our understanding on how established firms create new ventures. We discuss the differences between business group research and corporate entrepreneurship in the next section.

sometimes, the closing down of subsidiaries[28]. Additionally, we know little about the imbrication between the strategic motivations underlying the creation and expansion of BG and their growth activities (acquisitions, creation of subsidiaries). For example, while we know that diversification drives the formation of BG, we don't know if diversification is conducted through organic growth or external growth (or both). This is a matter of concern as these growth modes have fully different implications in terms of resource mobilization, external growth operations being costly. Last, observing the formation of BG allows a qualitative understanding of organic growth operations, a topic that has been rather overlooked so far.

To address these questions, this study adopts a quantitative inductive approach based on the observations of BG formation and expansion trajectories on a sample of 113 French small and medium-sized IPO firms. An inductive approach seems relevant in due to the low number of empirical studies on BG in the entrepreneurship context and the quasi-absence of a theoretical framework on this topic. Thus, our work is mainly exploratory in its goals. The rest of the chapter is organized as follows. First, we discuss the articulation between corporate entrepreneurship and BG literature to situate the topic and clarify some definition issues. Next, we explain our methodology and research design. Then, we analyze our observations and develop several propositions related to the formation and expansion of BG as well as a theoretical framework and we discuss the main results. In the last section, we draw our conclusions and make some suggestions for future research.

[28] We do not suggest that organic growth occurs only through the establishment of subsidiaries but that establishing a subsidiary is a factual, observable proof of organic growth that can be studied in BG.

2. Corporate entrepreneurship and BG

Research on corporate entrepreneurship (CE) builds on the view that firms cannot maintain competitive advantages without innovation and renewal (Corbett et al. 2013). Organizations should therefore engage in entrepreneurial efforts to continuously develop new competitive advantages. The study of the nature of these efforts is at the core of CE research. Strikingly, the field has struggled to offer a clear definition of CE. Sharma and Chrisman (1999) indicate that a widely accepted definition of CE is based on Guth and Gisbert (1991) proposal that 'corporate entrepreneurship encompasses the birth of new businesses within existing businesses and their transformation of organizations through a renewal of their key ideas'. Phan et al. (2009) divide therefore CE in two main streams, namely corporate venturing (the creation of new business entities) and strategic entrepreneurship (activities that rejuvenate a firm's ability to take risk and compete). However, there is an overlap between corporate venturing and strategic entrepreneurship as strategic entrepreneurship includes the formation of new businesses and their addition to the firm[29] (Phan et al. 2009). Corbett et al. (2013, p. 813) highlight the fact CE is the study of 'how established organizations might best respond to the entrepreneurial imperatives they face and opportunities confronting them'.

It is almost tautological to say that the formation of BG by small and medium-sized firms is a form of corporate entrepreneurship because the formation of a BG is the direct consequence of the creation (or the acquisition) of new legally independent subsidiaries within an existing firm. While BG formation is the outcome of growth, it is also its antecedent. Lechner and Leyronas (2009) show that the creation and formation of a BG in

[29] Interestingly, Sharma and Chrisman (1999) exclude the creation of new business entities from the concept of strategic renewal which otherwise largely corresponds to what Phan et al. (2009) call strategic entrepreneurship. In this study, we follow Phan et al. (2009) and consider that the creation of new businesses within an organization can be considered as strategic entrepreneurship.

entrepreneurial firms is an answer to the need to structure growth activities and enable the exploitation of future opportunities by attracting complementary resources. The Lechner and Leyronas paper is a major contribution to both the BG and the corporate entrepreneurship literature because it provides the only conceptual framework of the formation and expansion of BG. Surprisingly, this work fails to strongly posit the study of BG formation in the CE literature. In fact, Lechner and Leyronas (2009) never mention the words 'corporate entrepreneurship', 'corporate venturing', 'strategic renewal' or 'strategic entrepreneurship'[30] despite the explicit bridge between the literature on BG and on CE they create.

The main feature of BG is the existence of an internal market that allows the affiliates to share resources, especially financial ones (Khanna and Palepu 1998). The size and reputation of the BG largely benefit to the affiliates, reducing the liability of newness (Stinchcombe 1965; Lechner and Leyronas 2009). BG affiliation also facilitates the detection and exploitation of opportunities because of the subsequent access to a large pool of resources, knowledge and skills (Manichandan and Ramachadran 2015). The combination of these benefits inherent to the BG affiliation represent the growth enabling function of BG and explain why some firms decide to grow as BG (Lechner and Leyronas 2009; Manikandan and Ramachandran, 2015). Whether the theoretical benefits of BG affiliation concretely materialize into superior performances and growth is however still a matter of debate among BG scholars (see, for example the literature reviews by Carney et al. (2011) and Holmes et al. (2016)). Overall, research on BG is mostly conducted in the fields of finance (Khanna and Palepu 2000; Gopalan, Nanda, and Serut 2007; Belenzon, Berkovitz, and Rios 2013; Byun et al. 2013) and strategy (Chang and Hong 2002; Manichandan and Ramachandran 2015; Mahmood, Zhu, and Zaheer 2017). As a result, the literature is abundant on the view of BG as

[30] The papers that studies BG as an entrepreneurial phenomenon typically suffer from this lack of anchoring in the field of CE. The paper by Iacobucci and Rosa (2010) which is another important contribution on the entrepreneurial aspects of BG only mentions once the CE literature (p. 354).

an antecedent of growth (the benefits BG provide to their affiliates) but our understanding on the formation and expansion of BG in the early stages is very limited (the entrepreneurial phenomenon of BG emergence).

3. Portfolio entrepreneurship and BG

Still, we know that the process of diversification of activities drives the formation of BG. Rosa and Scott (1999) report that small firms founders commonly establish more than one business and pursue entrepreneurial diversification. Crucially, Rosa and Scott do not speak of 'business groups' but of 'business clusters'. Business clusters are sets of firms 'tied together by common ownership or management by an entrepreneur or an entrepreneurial team' (Rosa and Scott 1999, p.530). Rosa and Scott's level of analysis is explicitly the entrepreneur rather than the organization. This is a matter of importance as a difference between a business cluster and a BG lies in the existence of a holding firm that centralizes control and governance through equity ties (Rosa and Scott 1999; Mahmood et al. 2017). Subsequent studies of the phenomenon of multiple business creation adopt the same level of analysis (the entrepreneur) in the field of portfolio entrepreneurship. The portfolio entrepreneurship literature focuses on the distinctions in terms of founder's characteristics and business performance between novice founders (entrepreneurs who have no previous experience of business creation), serial founders (entrepreneurs who create multiple businesses), and portfolio entrepreneurs (entrepreneurs who create and retain control over multiple businesses) (Westhead and Wright 1998; Wiklund and Shepherd 2008). A fundamental question in portfolio entrepreneurship is therefore what mode of organization multiple business founders adopt (Wiklund and

Shepherd 2008; Lechner and Leyronas 2009) and what the processes of resource orchestration are (Baert et al. 2016).

Because of its level of analysis (the entrepreneur and differences between entrepreneurs), most of the portfolio entrepreneurship literature fails to explain the growth process of BG by neglecting the relationships between already established entities and newly created ones (Iacobucci and Rosa 2005). The few papers that deliberately adopt an organization-level approach or bridge entrepreneur-level and organization-level approaches to the formation of BG represent the (modest) core of BG research in entrepreneurship (Iacobucci and Rosa 2005; Lechner and Leyronas 2009; Iacobucci and Rosa 2010; Yiu et al. 2014). The main finding in this field is that the creation of BG is the outcome of a related diversification strategy[31]. Small and medium-sized firms owners react to the detection of opportunities by creating new businesses within the boundaries of their firms (Iacobucci and Rosa 2005). The newly created businesses are still related to the mother firm core activity because it is highly challenging for the mother firm managers to transfer their competencies to entirely new unrelated activities (Iacobucci 2002; Iacobucci and Rosa 2010). However, little attention has been paid to the growth mode through which BG are formed at the entrepreneurial stage and to the reasons that explain the choice of a particular growth mode and the possible evolution of these modes over time. This is precisely what this article aims to investigate by adopting an organization-level (BG as a unit of study) approach.

[31] Iacobucci and Rosa (2005) adopt a broad definition of related diversification that include the internationalization of activities, horizontal and vertical differentiation as well as horizontal and vertical integration.

4. Methodology

4.1. Motivation to the research design

The methodological approach of studies on BG formation and expansion is mostly based on qualitative and inductive designs and builds on case-studies and interviews of BG owners as it is difficult to gain access to information on the formation of BG otherwise[32] (Lechner and Leyronas 2009; Iacobucci and Rosa 2010). As a result, these papers adopt a backward-looking approach: BG owners are identified, interviewed about the formation of their BG that occurred several years ago, and conclusions and propositions are drawn upon the analyses of the interviews and meetings.

In this chapter, we decide to observe the growth trajectories of BG created by entrepreneurial SMEs by looking at the BG composition at four distinct points in times: (1) when a single firm becomes a BG, (2) when a second entity is added to a BG, (3) when the mother firm goes public, and (4) three years after going public. Thanks to this approach, we have both subjective (1 and 2) and objective (3 and 4) points of observation of the BG formation and expansion. Thus, it becomes possible to observe both the composition of the BG but also some of the dynamics of BG expansion. For this reason, we consider a sample of French small and medium-sized IPO firms to gain access to the data provided in the annual reports and prospectuses disclosed by the firms. The disclosure of IPO prospectuses and annual reports follows strict rules regarding the content of the documents and the nature of the reported information which is approved by the French national regulatory authority. This

[32] Notable exception is the paper by Iacobucci and Rosa (2005) which uses a longitudinal dataset of 60 BG in the Italian manufacturing industry. However, this dataset considers rather old BG (established after World War II and still operating in 1999).

strengthens the comparability of the firms and ensures the quality of the data. As listed firms have to report the key steps of their development since their creation, we can identify when and why subsidiaries were first set up or acquired, where they are located and what the purpose of their creation (or acquisition) was. Moreover, we know the entire list of subsidiaries[33] and we have information about the dismantling or selling of subsidiaries if any. We can also identify if a subsidiary was put to sleep because of insufficient results. All these observations represent precious insights on the expansion of BG and the dynamics of this phenomenon.

The choice of France as our research field is motivated by the ubiquitous nature of BG in France (Hamelin 2011). Estimations by the French national statistics and economic studies office indicate that more than 70 percent of French small firms with 50 employees are affiliated to a BG. This proportion goes up to 90 percent for firms with 100 employees (Deroyon 2016). The relative low development of public equity markets in Western Europe likely explains why so many small firms are affiliated to a BG (Belenzon et al. 2013).

4.2. Sample constitution and description

Our sample is made of all the French SMEs that went public between 2006 and 2015 on Euronext, the French stock market. We exclude financial institutions and real estate firms as well as firms that transferred from one segment of the financial markets to another. Indeed, such firms are classified as IPO firms on the segment on which they transfer even they have been listed for several years on the previous segment. We use the definition of an SME

[33] At the IPO date. We cannot exclude that for some of our sample firms subsidiaries were created and closed before the IPO and, therefore, are not reported in the prospectuses. In that sense, all our observations about BG formation and expansion

provided by the European Commission and consider that a firm is an SME if its number of employees is lower than 250 and either its total asset is lower than 43M€ or its sales turnover is lower than 50M€. However, this definition is made for single firms. Following Hamelin (2011), we extend this definition to small BG and consider a BG as small if its total number of employees is lower than 250 and either its consolidated total asset is lower than 43M€ or its sales turnover is lower than 50M€. We should mention that French small BG don't have to provide consolidated financial statements if they meet at least two of the following criteria: total asset is lower than 24M€, sales turnover is lower than 48M€, average number of employees is lower than 250. Overall, our sample is made of 113 SMEs.

We present an industry breakdown of our sample in table 3.1. Approximately 80 percent of our sample firms operate in the manufacturing and service industries and a large fraction of them are biotechnology and healthcare firms. Table 3.2 displays descriptive statistics at the IPO date. The average (median) firm has 66.9 (56) employees, holds 23.7M€ (17M€) total assets, earns 11.15M€ (7.60M€) sales turnover, and is 10.32 (8) years old at the IPO date. We also observe the presence of habitual entrepreneurs and family firms among our sample firms and identify that 5.31 percent of them are family firms while 6.19 percent are hold by habitual or portfolio entrepreneurs. Overall, most of our sample firms have been founded by novice entrepreneurs[34]. This shows the originality of our data when compared to previous studies (Iacobucci and Rosa 2005; Wiklund and Shepherd 2008; Lechner and Leyronas 2009; Iacobucci and Rosa 2010).

[34] 31% of our sample firms were created by a single entrepreneur and the rest by an entrepreneurial team of at least two persons.

Table 3.1: Sample firms industry breakdown

Industry	Number of firms	As a percentage
Agriculture, forestry and fishing	4	3.54%
Mining	1	0.88%
Manufacturing	37	32.74%
Transportation and public utilities	12	10.62%
Retail trade	3	2.65%
Wholesale trade	1	0.88%
Services	55	48.67%
Total	113	100.00%

4.3. Variables

Our variables of interest are mostly of two kinds. First, we seek to identify what growth mode firms use to form and expand BG. This can be achieved by creating new subsidiaries, by acquiring other already established firms, or by launching joint ventures with another firm. We identify the creation of new subsidiaries in the annual reports which provides a list of all the subsidiaries in which the firm holds at least 10 percent of total ownership. Newly created subsidiaries are not necessarily fully owned by the mother firm as employees can be promoted from the mother firm to the new subsidiary and receive a minority share to enhance their motivation (Iacobucci and Rosa 2010). Acquisitions (external growth operations) are explicitly reported as such in the annual reports and reported in the subsidiaries list. Of course, the percentage of ownership varies greatly from one situation to

another. Some firms acquire 100 percent of a target at one, while others acquire smaller fractions of the target and take several years to gain control. Some others take a minority share and do not try to control the target. We monitor the acquisitions efforts over our period of interest whenever possible and consider each of the previously mentioned situations as 'acquisitions'. Last, we do not distinguish between joint ventures that correspond to a fifty-fifty repartition of shares between the business partners and joint ventures in which a firm holds more or less than fifty percent of shares. What distinguish a joint venture from a subsidiary creation is the presence of another firm in the creation of the entity and its presence as an shareholder.

Second, we want to cross observations on the mode of growth with the motivation to create a new entity. The formation of a BG is expected to follow a diversification pattern as the distance between new activities of new entities and the original activities of the mother firm gradually increases (Iacobucci 2002). The first entities added to the mother firm should therefore be closely related to the mother firm's core business (Iacobucci and Rosa 2005). However, the meaning of "diversification" in the context of entrepreneurship research and BG formation deserves some clarification to operationalize the variables. Diversification is a strategy "to derive the particular benefits offered by having a broader product-market base" (Reed and Luffman 1986, p. 30). Diversification in large firms leads to the formation of vast conglomerates that encompass largely unrelated activities. Entrepreneurial diversification is more about identifying and exploiting business niches that are too small to be occupied by larger firms but remain related to the firm's core business (Rosa and Scott 1999). Thus, understanding diversification in small and venturing firms requires a higher degree of precision about the nature of the diversifying activities.

Table 3.2: Descriptive statistics at IPO date

Characteristics	N	Mean	Standard deviation	Minimum	25th percentile	Median	75th percentile	Maximum
Number of employees (full-time equivalent)	113	66.90	48.69	6	35	56	80	233
Total assets (in K€)	113	23,709.59	18,886.89	3,893	11,435	16,995	32,360	132,930
Sales (in K€)	113	11,154.76	12,952.58	0	2,498	7,601	14,659	81,316
Age	113	10.32	7.88	2	6	8	11	53

Observations are based on consolidated financial statements whenever they are available. Otherwise, individual financial statements are used.

Iacobucci and Rosa (2005) point out a shortcoming in the way different activities in a single BG can be classified. They indicate the limitations of the use of international industrial classification codes, like the Standard Industrial Classification (SIC) as these codes do not allow a satisfying degree of precision. As an alternative approach, they suggest the use of categories that more explicitly consider the distance between the mother firm activities and those of the BG affiliates. They suggest that one distinguishes between (1) the original activities of the firm, (2) horizontal and vertical differentiation[35], (3) vertical integration, (4) related diversification, and (5) unrelated diversification (Iacobucci and Rosa 2005). A firm affiliated to a BG can be classified in one of these categories and this observation indicates what diversification trajectory lead to the formation of a BG. Lechner and Leyronas (2009) extend the classification of Iacobucci and Rosa (2005) as they include "the separation of activities previously performed within one unit" (p.650) as a distinct motivation to form a BG. When their firm grows, entrepreneurs are expected to structure them through the setting of subsidiaries to separate activities that were initially performed within the mother company into different entities. For example, the production of a good and the selling process of this good can be attributed to two different, legally independent subsidiaries. Other examples of structuring activities include the creation of holding structures that facilitates the management of control and result in pyramidal structures (Almeida and Wolfenzon 2006). As highlighted by Lechner and Leyronas (2009), structuring activities are an important aspect of BG formation that occurs rather early on because they represent foundations over which other entities can be added. With respect to the classification of Iacobucci and Rosa (2005), such structuring subsidiaries are closer to the original activities of the firm than differentiation subsidiaries. Another important reason to create a subsidiary is the internationalization of activities. One aspect of BG formation that has received less attention in previous studies is

[35] Differentiation is the extension of activities in different segments within the same product category (Iacobucci and Rosa, 2005).

the role of internationalization. A common entry strategy to expand into a foreign country is based on the formation of subsidiary in the target country or the creation of a joint-venture (Oehme and Bort 2015).

For each subsidiary reported in the list of the annual report, we classify them in one of these categories (structuring, internationalization, horizontal and vertical differentiation, horizontal and vertical integration, related diversification, unrelated diversification) according to the description of activities made by the reporting firm. In case of ambiguity[36], for example if a subsidiary is created in a foreign country to sell the mother firm products (internationalization) but has an activity in research and development (structuring efforts), we classify it according to the dominant activity (the activity that generates the highest fraction of sales turnover). The collection of information through prospectuses and annual reports clearly involves the risk of errors and mistakes. Moreover, we acknowledge that there is a certain degree of subjectivity when it comes to classifying subsidiaries into 'differentiation subsidiaries' or 'related diversification subsidiaries' as already highlighted by Iacobucci and Rosa (2005). To alleviate these issues, the author and a research assistant separately collected data in the prospectuses and annual reports. Then, we crossed our observations and examine one by one all the differences.

[36] In collecting data, we face the problem of acquisitions that were conducted in foreign countries but motivated by a related diversification strategy. Such operations were considered as related diversification and not as internationalization. We acknowledge the arbitrary nature of this choice. However, the low number of acquisitions in foreign countries was very low.

5. Results

5.1. When does small BG formation start?

Firms that grow as BG tend to do so rather quickly after the foundation as they detect opportunities and react to them, adopting a holding structure within a few years in the process (Lechner and Leyronas 2009). As empirical evidence on the emergence of BG is limited, we first observe when small BG are chronologically formed and the mode (organic, external or joint-ventures) that correspond to it. 74.34 percent of our sample firms are part of a group at the IPO date and 70.80 percent have subsidiaries as some firms have been created as subsidiaries of pre-existing BG (spin-offs). Thus, some of them are part of a BG without holding any subsidiary. On average, our sample firms hold 2.1 subsidiaries (median is 1) at the IPO date. Three years after the IPO, 90.27 percent of our sample firms are part of a group and 87.61 percent of them have subsidiaries. The average (median) firm has 3.6 (2) subsidiaries three years after its IPO. These results indicate that: (1) BG formation largely occurs before the IPO and concerns the vast majority of our observations, (2) the size of the BG measured as the number of entities almost doubles three years after the IPO indicating that our period of observation corresponds to an expansion phase of BG.

In table 3.3, we present information about the age at which firms become a BG either by creating a subsidiary or by acquiring another firm. We do not observe that BG formation initially occurs through the establishment of a joint-venture. The average (median) firm is 6.34 (6) years old at the time it becomes a BG. Firms that become BG by establishing a new subsidiary are 5.83 (5) years old while firms that become a BG by the acquisition of another company are 8 (7). The acquisition of another company requires financial resources, especially for privately held firms, as well as integration efforts and combination activities

(Wiklund and Shepherd 2009). Thus, it is not surprising that firms become BG through acquisition later than those that create subsidiaries.

Table 3.3: Age at which firms become a BG

Industry	Age	N	Mean	Standard deviation	Min	25th percentile	Median	75th percentile	Max
Manufacturing	Age when became a BG	34	7.35	5.56	0	2	6	11	24
	Age when created a subsidiary	29	7.17	4.90	0	5	6	11	17
	Age when became an acquirer	5	8.40	9.24	1	2	7	8	24
Services	Age when became a BG	47	6.26	4.80	0	3	6	9	25
	Age when created a subsidiary	30	5.23	3.56	0	2	5	7	13
	Age when became an acquirer	17	8.06	6.16	0	3	8	10	25
All firms	Age when became a BG	103	6.34	5.05	0	2	6	9	25
	Age when created a subsidiary	78*	5.83	4.50	0	2	5	9	20
	Age when became an acquirer	24	8	6.44	0	3	7	9.5	25

* We could not identify when the first subsidiary has been created for one our sample firms.

5.2. How and why does small BG formation occur?

We now turn our attention to the core of the BG formation phenomenon: how and why do SMEs become BG? To investigate this question, we use the classification presented in the previous section. First, we present our observations about the number of subsidiaries created, acquired, or co-created (joint-venture) and cross these motivations with the mode of BG formation. The results are presented in table 3.4.

More than 75 percent of the BG formations take place through the creation of a first subsidiary and the rest is formed through an acquisition. The main reported motivation to become a BG is the internationalization of activities as it represents nearly half (46.60 percent) of the cases. Related diversification corresponds to the main motivation to become a BG for 28.16 percent of our observations. The need to create or acquire a new subsidiary to better structure the activities represents approximately 16.50 percent of the cases. Differentiation accounts for 4.85 percent and vertical integration for 3.88 percent of our observations.

The results show a strong distinction between the motivations related to the first acquisition and the creation of the first subsidiary. The dominant model corresponds to the creation of a subsidiary to pursue an internationalization strategy (46.60 percent of all the cases). The second configuration through which BG are formed is the acquisition of another firm to develop a related diversification strategy[37] that represents 19.42 percent of our observations. The third one is the need to better structure the business through the creation of a new subsidiary to host specific aspects of the activities (production, distribution) and accounts for more than 16.50 percent of the cases. The creation of the first subsidiary is

[37] We observe no example of unrelated diversification.

motivated by the will to develop related activities in 8 percent of the observations. Strikingly and unlike Iacobucci and Rosa (2005), we observe little evidence that SMEs form BG as a result of differentiation strategies or vertical integrations. However, it should be noted that related diversification occurs both through the establishment of subsidiaries (8.74 percent) and through acquisition (19.42 percent).

Table 3.4: Motivation and way of becoming a BG

		Reported motivation to become a BG					
		Business structure	Internationalisation	Differentiation	Vertical integration	Related diversification	Total
BG formation mode	Subsidiary creation	16.50%	46.60%	2.91%	1.94%	8.74%	76.70%
	Acquisition	0.00%	0.00%	1.94%	1.94%	19.42%	23.30%
	Total	16.50%	46.60%	4.85%	3.88%	28.16%	100.00%

N=103, firms created as a subsidiary of or acquired by another BG are excluded

Table 3.5: Evolution of the first subsidiary

		Status of the first subsidiary three years after the IPO				
		Still active	Put into sleep	Dismantled	Sold	Total
BG formation mode	Subsidiary created	61.17%	7.77%	3.88%	0.97%	73.79%
	Subsidiary acquired	17.48%	0.00%	3.88%	0.97%	22.33%
	Total	82.52%	7.77%	7.77%	1.94%	100.00%

N=103

5.3. Evolution of the first subsidiary

Because organizing activities in ventures are a continuous process and not a state (Delmar and Shane 2004), we monitor the situation of the first subsidiary that has been created or acquired and observe whether this subsidiary was still active or not at the IPO date. Our observations show that 7.77 percent of the BG put the activities of their first subsidiaries into sleep after a period of activity during our observation window. By that we mean, that the mother firm explicitly reported that the activities of a subsidiary were paused[38]. We also observe that the same proportion was dismantled[39], mostly because of poor performances. Last, approximately 2 percent of the BG sold their first subsidiary. Overall, more than 17 percent of the small BG stopped the activities of their first subsidiary one way or another. This observation is of importance as it shows that the development of a BG is nonlinear. It should be noticed that our observations only correspond to those subsidiaries for which information was available at the IPO date. Thus, if a subsidiary has been created and dismantled before the IPO, we cannot identify it. All our results therefore represent a minimum of the fraction of dismantled and sold subsidiaries. Table 3.5 summarizes our observations about the status of the first subsidiary three years after the IPO.

Only created subsidiaries have been put into sleep by the BG. However, it is interesting to notice that half of the subsidiaries that have been dismantled had been acquired and not created. This indicates that these acquisitions were unsuccessful. Selling a subsidiary that has been previously created or acquired appears to be marginal. Interestingly, BG that put their first subsidiary into sleep are also those that create the largest number of international subsidiaries over our observation period. On average, these BG create 3.85 international

[38] Some firms report that the activities of newly created subsidiaries do not start immediately. We do not consider this as a pause.
[39] We do not count as « dismantled » those subsidiaries that were merged with their mother-firm.

subsidiaries on average while the average BG holds 1.59 internationalization subsidiaries. This observation goes in the sense of internationalization learning as it suggests that firms learn from the failure of an international subsidiary to improve their strategy (Zahra et al. 2001).

5.4. The second subsidiary

Next, we examine the motivations and modes of adding a third entity to the BG[40]. 66.97 percent of our sample firms have created or acquired a second subsidiary within our observation period. This shows that a vast majority of the BG we observe does not remain at the one subsidiary-stage very long. We observe that the average firm is 8.38 years old (median is 8) when the second subsidiary is created or acquired so the time between the creation or acquisition of the first subsidiary and the creation or acquisition of the second subsidiary is close to two years. In most cases, this second step of the BG formation takes place before the IPO.

We provide in table 3.6 the repartition of firms according to the way the second subsidiary is added to the BG and the motivation to add it. This time, we identify a few joint-ventures operations that we report on a distinct row of the table. We observe that the proportion of subsidiaries created is lower than in table 4 while the proportions of joint-ventures and acquisitions increase. About 14 percent of the subsidiaries are created to strengthen the BG structure, 48 percent of them are directed toward the internationalization of sales and one third target related diversification. There is a slight decrease in the number of

[40] By third entity, we mean the mother firm and two subsidiaries.

structuring subsidiaries while related diversification becomes more prominent than for the first subsidiary.

To observe the nature of the growth strategy (organic, external, or hybrid), we now report whether the way of adding a new entity to the BG is the same or not for the first and second acquisition. The results are tabulated in table 3.7. More than half of our observations correspond to BG that create successively two subsidiaries and correspond to an organic growth strategy. BG that are composed of two successively acquired firms account for 15.07 percent of our observations and correspond to an external growth strategy. This indicates that a significant fraction of our sample BG use an external growth strategy early, confirming previous results on acquisition activities by SMEs (Iacobucci and Rosa 2005; Weitzel and McCarthy 2011). We also observe that more than a third of the BG use an hybrid growth mode, mixing the creation of subsidiary, acquisitions, and the establishment of joint ventures. At this stage, it should be noted that our results do not show a strict distinction between organic and external growth as a large fraction of BG expand simultaneously internally and externally. Approximately 30 percent of the observations correspond to a BG growth that involves multiple growth mode (organic and external, or organic and joint-ventures).

Table 3.6: Motivation and way of expanding the BG through a third entity

		Reported motivation to add a third entity					
		Business structure	Internationalisation	Differentiation	Vertical integration	Related diversification	Total
BG	Subsidiary creation	13.70%	45.21%	0.00%	0.00%	6.85%	65.75%
expansion	Joint-venture	0.00%	2.74%	0.00%	1.37%	1.37%	5.48%
mode	Acquisition	0.00%	0.00%	2.74%	1.37%	24.66%	28.77%
	Total	13.70%	47.95%	2.74%	2.74%	32.88%	100.00%

N=73

The variety of growth trajectories in the BG expansion is also illustrated by the evolution of the distance to the mother firm core activities. We report that 27.40 percent of our BG create a second internationalization subsidiary, highlighting the importance of internationalization. 15.07 percent of the cases correspond to a related diversification strategy with two entities dedicated to different products. Three patterns emerge. The first one corresponds to BG that grow organically as a result of an internationalization strategy (two consecutive internationalization subsidiaries). The second one corresponds to a related diversification strategy by external growth (two consecutive related diversification acquisitions). The third one is a mixed involving both internationalization and related diversification.

Table 3.7: Growth direction and BG expansion

		First subsidiary		
		Created	Acquired	Total
Second subsidiary	Created	56.16%	9.59%	65.75%
	Held in a joint venture	5.48%	0.00%	5.48%
	Acquired	13.70%	15.07%	28.77%
	Total	75.34%	24.66%	100.00%

N=73

Next, we observe in table 3.8 the extent to which these second subsidiaries were put into sleep, dismantled or sold. Interestingly, only 5.7 percent (respectively 1.4 percent) of our

sample BG put their second subsidiary into sleep (dismantled them) and none of them were sold. This result goes in the sense of better operating performances for the second subsidiary than for the first one and suggests some learning by the BG[41]. It is indeed likely that BG learn from the experience and sometimes failures of their first internationalization step or their first acquisition because it increases their alertness to business opportunities (Zahra et al. 2001; Boso et al. 2019). It is also important to notice that entrepreneurs can use the BG structure as an experimental setting to explore internationalization strategies without engaging large resources. Creating a subsidiary in a foreign country is indeed a way of learning how to maintain entrepreneurial activities when operations are expanded on an international perspective (Zahra et al, 2001). At the same time, the creation of a subsidiary in a foreign country does not require a significant amount of financial resources as long as the operations are not successful. In that sense, we observe 53 percent of our BG use intra-group loan conventions that allows their subsidiaries to borrow money from the BG mother company if they need it. This proportion is 66 percent when we consider BG that create international subsidiaries. Such conventions offer great flexibility in the sense that money is raised only if truly needed by the subsidiary to start activities. As long as the subsidiary remains passive and operations do not start, no financial resources are locked in the subsidiary. Thus, even if the subsidiary has to be dismantled, for example because the internationalization process is unsuccessful, the cost of this failure is limited.

[41] One could argue that we observe the second subsidiary over a shorter period of time than the first one and that this result could be due to the shorter observation period and not to any learning from the entrepreneurs. While we acknowledge this argument, qualitative observations about the subsidiaries put into sleep or dismantled show that these actions take place rather fast after the subsidiary creation or acquisition and alleviate the previous issue.

Table 3.8: First and second subsidiaries role in the BG strategy

		First subsidiary					
		Business structure	Internationalisation	Differentiation	Vertical integration	Related diversification	Total
Second subsidiary	Business structure	4.11%	4.11%	0.00%	2.74%	2.74%	13.70%
	Internationalisation	4.11%	27.40%	2.74%	0.00%	13.70%	47.95%
	Differentiation	1.37%	0.00%	1.37%	0.00%	0.00%	2.74%
	Vertical integration	0.00%	2.74%	0.00%	0.00%	0.00%	2.74%
	Related diversification	5.48%	10.96%	1.37%	0.00%	15.07%	32.88%
	Total	15.07%	45.21%	5.48%	2.74%	31.51%	100.00%

N=73

5.5. BG composition at the IPO stage

The entrepreneurship literature often considers that going public corresponds to the stage at which a venture ceased to be purely "entrepreneurial". Additionally, going public likely changes the BG strategy as it facilitates external growth strategies both through the initial cash infusion and through the opportunity to pay acquisitions with stocks (Schultz and Zaman 2001; Brau and Fawcett 2006). Thus, it is interesting to observe the composition of BG when the mother firm goes public. We present in table 3.9 a similar breakdown as those provided in tables 3.4 and 3.6 to describe the way subsidiaries were created or acquired and their role in the BG.

Most BG are made of subsidiaries created by the mother firm as these represent more than 70 percent of the total number of subsidiaries. Acquisitions account for less than a quarter of the total number of subsidiaries. Approximately 6 percent of the subsidiaries are held through joint-ventures indicating that this hybrid growth is, at the IPO stage, rather rare. With respect to the role of these subsidiaries, we report that structuring activities, internationalization, and related diversification are the main drivers of BG formation. Differentiation, vertical integration, and unrelated diversification are marginal activities. These observations contrast with those observed by Iacobucci and Rosa (2005) who report a higher fraction of differentiation activities. However, as these authors consider only manufacturing firms, it is possible that differentiation activities are more common in manufacturing firms than in other industries. Untabulated results of the manufacturing and services subsamples, which are by far the largest industry subsamples for our data, do not show significant. Thus, we do not find that industry-characteristics affect our observations. Another possible explanation is likely found in the fact that Iacobucci and Rosa (2005) consider old and rather large BG that are still under the control of their founder whereas our sample BG are smaller and younger. We also

notice that related diversification through the creation of subsidiaries represent more than 8 percent of our observations.

5.6. BG composition three years after the IPO

We decide to observe the BG composition three years after the IPO[42] to observe the speed at which BG expand. Table 3.10 summarizes our findings. The first result is that the total number of entities in the BG increases from 218 reported subsidiaries to 381 subsidiaries, a growth of 74.77 percent. Obviously, BG expand fast after the IPO and the number of subsidiaries nearly doubled in the three-year period. IPO proceeds fuel BG ability to create subsidiaries and acquire other firms. Second, we do not observe significant changes in the nature of the entities (subsidiaries, acquisition, or joint-ventures), indicating that the expansion of BG follows a constant trajectory. Third, the proportion of structuring subsidiaries decreases while the proportions of internationalization and differentiation subsidiaries slightly increase. This observation is consistent with the view that while BG expand, they progressively include more subsidiaries which activities are further from the mother firm's core activities. Overall, the subsidiary breakdown three years after the IPO is pretty much the same as the one at the IPO date.

[42] The literature on the relationship between IPO and acquisitions commonly considers the time-horizon, which seems relevant for our purpose (see, e.g. Celikyurt et al. (2010)).

Table 3.9: Number of subsidiaries at the IPO date by role and mode of creation or acquisition

		Role of the subsidiaries						
		Business structure	Internationalization	Differentiation	Vertical integration	Related diversification	Unrelated diversification	Total
BG expansion mode	Subsidiary creation	20.18%	38.53%	2.75%	0.46%	8.26%	0.00%	70.18%
	Acquisition	0.00%	0.00%	0.00%	1.38%	22.02%	0.46%	23.85%
	Joint-ventures	0.00%	3.67%	0.46%	0.46%	1.38%	0.00%	5.96%
	Total	20.18%	42.20%	3.21%	2.29%	31.65%	0.46%	100.00%

N=218, we could not identify the subsidiaries breakdown for one of the BG.

Table 3.10: Number of subsidiaries three years after the IPO by role and mode of creation or acquisition

		Role of the subsidiaries						
		Business structure	Internationalization	Differentiation	Vertical integration	Related diversification	Unrelated diversification	Total
BG expansion mode	Subsidiary creation	13.39%	45.41%	4.99%	0.79%	4.20%	0.26%	69.03%
	Acquisition	0.00%	0.00%	1.57%	1.05%	24.41%	0.26%	27.30%
	Joint-ventures	0.00%	1.57%	0.00%	0.52%	1.57%	0.00%	3.67%
	Total	13.39%	46.98%	6.56%	2.36%	30.18%	0.52%	100.00%

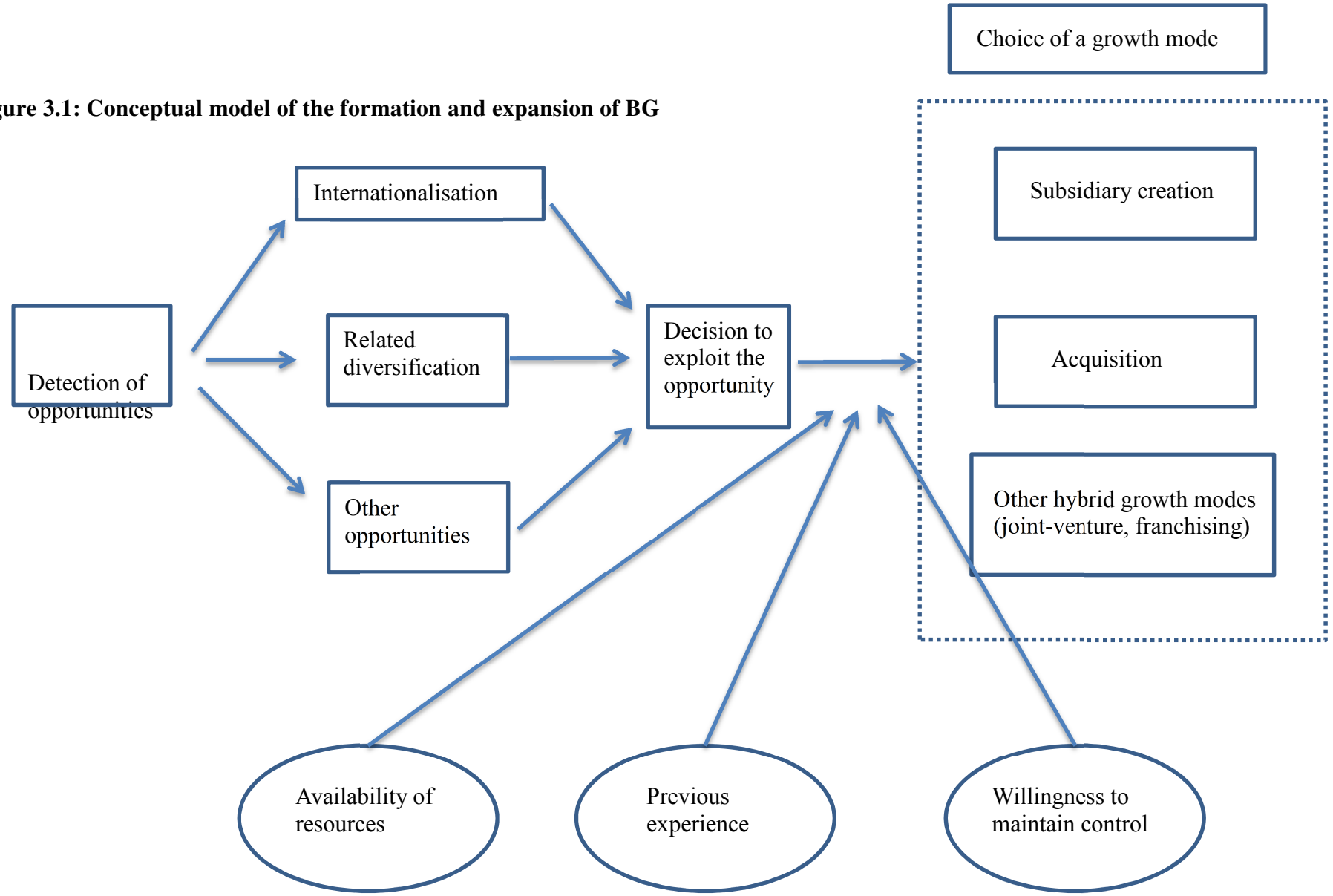
N=381, we could not identify the subsidiaries breakdown for one of the BG.

6. Discussion of the results

The analysis of the present study is based on the observation of the growth trajectories of BG formed by French IPO SMEs. Several aspects of the formation and expansion of BG have been stressed such as the important fraction of external acquisitions launched by SMEs (before and after the IPO), the role of internationalization activities through the establishment of subsidiaries, and the coexistence of organic growth and external growth (subsidiary creation and acquisitions conducted by the same BG over a short period of time).

Figure 3.1 represents the main results of our observations and stresses the role of the growth modes on which BG rely to expand depending on the nature of the identified opportunity. If the detection of new business opportunities by a firm (or a small BG) leads to the decision to exploit this opportunity, several growth modes are available to pursue the entrepreneurial diversification strategy. Empirical analysis indicate that internationalization activities mostly takes place through the establishment of new subsidiaries in foreign countries (organic growth) while related diversification activities involve the acquisition of another firm (external growth). However, several moderating factors likely influence the choice of a particular growth mode and the willingness to grow as a group and not by forming new internal divisions. We identify three possible moderating factors.

Figure 3.1: Conceptual model of the formation and expansion of BG



First, the availability (or constraints) of resources conditions a BG ability to launch an external growth operation. Acquisitions are costly both in terms of financial resources (Brau and Fawcett 2006; Celikyurt, Sevilir, and Shivdasani 2010; Weitzel and McCarthy 2011) and managerial efforts, time and skills (Wiklund and Shepherd 2009). Small firms and small BG are financially constrained meaning that their ability to raise external finance is limited by their degree of informational opacity (Berger and Udell 1998; Cassar 2004). Moreover, because of limited managerial attention (Gifford 1998), small firms and small BG managers cannot simultaneously dedicate time to organic growth efforts and the integration of a newly acquired firm. As an answer to resource constraints, one would expect that small firms and small BG expand mostly through organic growth in the early stages. Then, expansion of BG through hybrid growth modes, like the formation of joint ventures represent an interesting choice as such modes are less resource-consuming than external growth (McKelvie and Wiklund 2010). Only when firms have reached a certain size or age and accumulated enough resources would these firms consider external growth strategies (Levie 1997; McKelvie and Wiklund 2008). This perspective on the role of resources for the choice of a growth mode is consistent with classical arguments of the Resource-based View (Penrose 1959; Wernerfelt 1984) according to which firms grow organically as long as internal combinations of resources provide enough new opportunities and resources. Only when these internal combinations are depleted should firms engage in external growth. Our observations somehow challenge this view. Of course, we acknowledge that resource-availability plays a great role in the growth mode BG chose to expand. The higher intensity of external growth operations after the IPO clearly shows that small firms and small BG make use of IPO proceeds and access to public equity markets to fuel growth. However, we observe a modest number of joint ventures when compared to number of opportunities that generate formation of subsidiaries and acquisitions. In other words, our firms detect opportunities and decide to

exploit some of them but they don't rely on hybrid growth modes to do so, running against the resource-sparing benefit of hybrid growth modes. Moreover, small firms that grow BG engage in related diversification early on, especially through acquisitions. This challenges previous observations on small firms diversification (Robson et al. 1993; Silvermann 1999).

It seems therefore that another factor explains the growth mode small firms and small BG chose. Following Almeida and Wolfenzon (2006), family BG structure themselves as pyramids in which a holding company is at the top of the pyramid and directly controls several firms which in turn control other firms and so forth. Pyramidal BG concentrate control at the holding level and leverages the controlling power of the family with minimum equity investment. In addition to the controlling motivation that explains the formation of family BG, Masulis, Pham, and Zein (2011) indicate that in countries with low developed financial markets, family pyramidal BG emerge to facilitate the financing of opportunities at the affiliates level. We infer that in the emergence phase of BG, there is a strong incentive to maintain control over the entities that are added to the BG to develop such pyramidal structures. Thus, the choice of a growth mode also depends on the resulting controlling interest in the resulting entity. Obviously, the creation of a subsidiary represents the highest possible level of control for the holding company, even if an employee is promoted to manage this subsidiary and earns a fraction of capital (Iacobucci and Rosa 2010). Acquisitions, even if they do not involve the purchase of the entire capital of the target (Burkart, Gromb, and Panunzi 1998), give a majority ownership share to the acquirer and ensure control. However, joint ventures correspond to a growth mode in which control and decisions are shared between the two firms that launch the operation. Small firms and BG may be reluctant to these operations because they imply sharing control.

Last, organizations like BG learn and tend to imitate their industry peers and previous experience of the establishment of subsidiaries or acquisitions likely explains future decisions

(Barkema and Vermeulen 1998; Lu 2002; King et al. 2004). Young ventures are known to expand their business into foreign countries early on and adopt various modes of entry (Zahra et al. 2000). However, these entry modes largely imitate the internationalization strategy of other firms in the same industry, especially regarding the creation of subsidiaries or the establishment of joint-ventures (Oehme and Bort 2015). In this study, BG formation and expansion is found to be a common outcome of an internationalization strategy that encompasses the creation of international subsidiaries. These subsidiaries represent front runners that facilitate the growth of the BG through the acquisition of knowledge, especially about country-specific characteristics as new, local managers are hired (Zahra et al. 2001; Iacobucci and Rosa 2010). Some of our BG dismantled subsidiaries or put their activities into sleep because of insufficient results. This shows that the BG structure provide flexibility in the management of multiple businesses but also that entrepreneurs can use the BG structure as a device for a trial-and-error approach, and learn from unsuccessful attempts, especially in their early internationalization strategy (Oviatt and McDougall 2005).

This discussion leads to the following propositions on the formation and expansion of BG and the role of growth modes in the process:

Proposition 1: The detection of business opportunities and the willingness to exploit those opportunities leads to the formation and expansion of BG through organic, external, and hybrid growth mode. BG commonly rely on multiple growth modes at the same time.

Proposition 2: Internationalization opportunities are conducted through the establishment of foreign subsidiaries (organic growth) because of the low amount of resources this growth mode requires and the resulting high level of control over the subsidiary. The flexibility provided by this choice means that in case of insufficient results, the subsidiary can be easily closed, sold, or put into sleep.

Proposition 3: Firms that develop BG adopt related diversification strategies early on and rely on acquisitions to do so (external growth strategies). BG are active acquirers and the decision to go public fuels their ability to conduct an external growth strategy by leveraging the financing resources.

Proposition 4: In the early stages, BG do not rely on hybrid growth modes because maintaining control over the subsidiaries is more important to them than sparing resources.

7. Conclusions and implications

The goal of this study was to enhance our understanding of the growth modes firms chose and the reasons that motivate these choices. Considering the formation and expansion of BG give us insights about the fact that small and young firms commonly rely on multiple growth modes at the same time. At the same time, we report that strategic decisions are closely related to a particular growth mode. Internationalization is mostly achieved through organic growth while related diversification is achieved through external growth but both strategies coexist. The willingness to maintain control over the BG entities appears to be an important factor in explaining how firms select a specific growth to exploit an opportunity, an aspect that has already been documented by previous research (Almeida and Wolfenzon 2006; Iacobucci and Rosa 2010). It follows that BG expansion is mostly the outcome of organic growth in early stage as the establishment of subsidiaries allows BG to maintain control at a higher level than in the case of acquisitions and joint ventures. Later, and especially because financial resources become available, external growth operations are more easily performed. Last, the establishment of joint ventures, marginal in the beginnings, becomes more frequent when the BG is larger in terms number of subsidiary because the pyramidal structure takes

shape and control is well established over the core activities. Overall, the formation and expansion and BG is a singular process of growth that can be considered as a growth mode of firms that is fully distinct from the distinction between organic, external, and hybrid growth mode (Lechner and Leyronas 2009; McKelvie and Wiklund 2010).

The view of growth as a process is both a promising but somehow neglected topic among entrepreneurship scholars when it comes to understanding what growth mode firms chose, why they chose these modes and how these choices evolve over time (McKelvie and Wiklund 2010; Wright and Stigliani 2012; Nason and Wiklund 2018). A possible explanation is found in a biased interpretation of Penrose's (1959) seminal work. According to Penrose, organic growth increases a firm's set of resources and the potential combination of these resources. Firms detect opportunities and act upon them thanks to the resources available to them. Organic growth has, however, its limits because of tendencies to adopt routines that limit innovation and learning (McKelvie and Wiklund 2010). To foster growth, firms turn their attention to external growth when internal opportunities appear limited to gain access to complementary resources (Wernerfelt 1984; Harrison et al. 2001). We do not question this view. However, the Penrosean approach of growth only suggests that the likelihood of an external growth mode increases as firms grow organically and not that external growth occurs only when internal resources cannot further foster growth. Of course, limited managerial attention constrains a small firm's ability to rely on multiple growth modes at the same time. But does this argument hold for entrepreneurial, fast growing firms? Iacobucci and Rosa (2010) show that the formation of BG is motivated by a willingness to enlarge the entrepreneurial team, an aspect that reduces the constraints of limited managerial attention. BG represent a form of business organization that is especially suited to facilitate growth and resource orchestration (Lechner and Leyronas 2009). Given these arguments, the coexistence of multiple growth modes in BG is not only possible but represents an entrepreneurial strategy

built on the active detection of opportunities and their exploitation through adequate modes that preserve the BG controlling interests.

We try to position more clearly research on the formation and expansion of BG in the entrepreneurship literature at the frontier of CE, portfolio entrepreneurship, and classic BG literature in strategy. Adopting an organization-level of analysis, we move from the view of 'business clusters' (Rosa and Scott 1999) that is centered on portfolio entrepreneurs to the analysis of a particular growth mode of organizations. By doing so, we extend the literature on the mode of organizing in entrepreneurship (Iacobucci and Rosa 2005; Wiklund and Shepherd 2008; Yiu et al. 2014; Burton et al. 2019) and anchor the study of BG in the field of CE. More specifically, BG formation and expansion appear to be a subset of strategic entrepreneurship and not of corporate venturing as BG grow both organically and externally as a response to the detection of opportunities (Corbett et al. 2013).

This research also has some practical implications for entrepreneurs and small BG owners. Entrepreneurs can successfully coordinate multiple strategies and multiple venture creations as long as they use a proper structure to organize their firm. The BG structure appears to be a flexible tool that fits this role. In later stages, going public can be a complementary growth strategy to the expansion of a BG to fuel the BG internal capital market and facilitate the exploitation of new opportunities not only by the BG but by its affiliates. In countries with relatively low developed public equity markets, this is a matter of importance. Conversely, BG can be considered by entrepreneurs as potential 'incubators' that provide financial resources, reputation and managerial skills among other resources (Sieger et al. 2011).

Of course, this study has limitations. There are other hybrid growth modes that deserve more attention and that the limitations of our dataset prevent us from analyzing.

Future research could investigate what role strategic alliances play for growing BG when compared to other forms of business organization. As strategic alliances are not based on ownership relations, the controlling argument that explains the formation of BG finds intuitively less support. Does this lead to more alliances than joint ventures between BG or between BG and independent firms? If so, what are the benefits of these alliances and the resource-combination activities the alliance members use? Additionally, the growing literature on family BG (Gedajlovic, Carney, and Chrisman 2012; Zellweger and Kamerlander 2015; Akhter, Sieger, and Chirico 2016) highlights that the motivations to grow, the performances, and the governance of family BG is different from those of non-family firms. Thus, it would be interesting to explore if family BG differ from non-family BG in terms of growth modes and combination of growth modes and what reasons explain these possible differences. Last, because research on the organizational aspects of BG in entrepreneurship is limited, our current knowledge is limited to the contexts of France (Lechner and Leyronas 2009), Italy (Iacobucci and Rosa 2005, 2010), and China (Yiu et al. 2014). We can only call for additional studies on the formation and expansion of BG both in other countries to consolidate our knowledge of this phenomenon and on a cross-country level to account for difference in institutional contexts. We hope that this study, despite its limitations, will stimulate entrepreneurial research on BG.

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Appendix

Tableau 3.11: List of sample firms

Company name	Industry	Creation year	IPO Year
Oceasoft	Manufacturing	1999	2015
Poxel	Services	2009	2015
Safe Orthopaedics	Manufacturing	2010	2015
Tronics Microsystems	Manufacturing	1997	2015
Ecoslops	Transportation and public utilities	2009	2015
Ose Pharma	Services	2004	2015
Sensorion	Services	2010	2015
Electro Power group	Transportation and public utilities	2005	2015
Wallix Group	Services	2003	2015
Amoéba Biocide	Transportation and public utilities	2010	2015
Biocorp	Services	2004	2015
Biophytis	Manufacturing	2006	2015
CellNovo	Manufacturing	2002	2015
Miliboo	Retail trade	2005	2015
DBT	Transportation and public utilities	1990	2015
Anevia	Services	2003	2014
Ateme	Services	1991	2014
Awox	Retail trade	2003	2014
Crossject	Manufacturing	2001	2014
Fermentalg	Services	2009	2014
Genomic Vision	Manufacturing	2004	2014
Iceram	Manufacturing	2006	2014
Lucibel	Wholesale trade	2008	2014
McPhyEnergy	Transportation and public utilities	2007	2014
Oncodesign	Services	1998	2014
Pixiumvision	Manufacturing	2011	2014
Supersonic Imagine	Services	2005	2014
Theraclion	Manufacturing	2004	2014
Txcell	Services	2001	2014
Carbios	Manufacturing	2011	2013
Delta Drone	Manufacturing	2011	2013
Ekinops	Transportation and public utilities	2003	2013
Erytech	Manufacturing	2004	2013
Implanet	Manufacturing	2007	2013
Spineway	Manufacturing	2005	2013

Spineguard	Manufacturing	2009	2013
Adocia	Services	2005	2012
DBV technologies	Manufacturing	2002	2012
EOS imaging	Services	2007	2012
Intrasense	Services	2004	2012
Nanobiotix	Manufacturing	2003	2012
Novacyt	Manufacturing	2006	2012
Theradiag	Services	1986	2012
Vexim	Manufacturing	2006	2012
Moulinvest	Agriculture, forestry and fishing	2000	2011
Leadmedia Group	Services	2008	2011
Phenix systems	Manufacturing	2000	2011
Visiomed Group	Manufacturing	2005	2011
Mauna Kea	Manufacturing	2000	2011
Median Technologies	Services	2002	2011
Global Bioenergies	Manufacturing	2008	2011
Biosynex	Manufacturing	2005	2011
Concours Mania	Services	2000	2011
Ucar	Transportation and public utilities	2000	2011
Tuto4PC	Services	2007	2011
Cogra	Manufacturing	1982	2011
Relaxnews	Services	2000	2011
Stentys	Manufacturing	2006	2010
Custom solutions	Services	2007	2010
Iscool entertainment	Services	2001	2010
Integragen	Services	2000	2010
AB Science	Services	2001	2010
Wedia	Services	2000	2010
Sapmer	Agriculture, forestry and fishing	1989	2009
Qiagen Marseille	Manufacturing	1999	2008
Dreamnex	Services	1999	2007
Metabolic Explorer	Services	1999	2007
Vivalis	Services	1999	2007
Orolia	Manufacturing	2005	2007
Eurogerm	Agriculture, forestry and fishing	1989	2007
Astellia	Services	1999	2007
DL Services	Services	2003	2007
Vergnet	Transportation and public utilities	1988	2007
Auto Escape	Transportation and public utilities	2005	2007
Adthink Media	Services	2001	2007
Cellectis	Services	2000	2007
Traqueur	Services	1997	2007
Dietswell	Transportation and public utilities	1999	2007

Emova Group	Retail trade	1998	2007
I2S	Manufacturing	1979	2007
Arkoon network security	Services	1999	2007
Streamwide	Transportation and public utilities	2001	2007
Genoway	Services	1999	2007
Filae	Services	1994	2007
Hybrigenics	Services	1998	2007
Entreparticuliers.com	Services	2000	2007
Acheter-louer.fr	Services	1994	2007
Innate Pharma	Manufacturing	1999	2006
Heurtey Petrochem	Mining	2002	2006
Prodware	Services	1989	2006
Netbooster	Services	1998	2006
Maesa	Services	1997	2006
Store Electronic Systems	Manufacturing	2004	2006
Environnement SA	Manufacturing	1978	2006
ECT industries	Manufacturing	1994	2006
Evolis	Manufacturing	1999	2006
1000 Mercis	Services	2000	2006
Leguide.com	Services	1999	2006
Ober	Agriculture, forestry and fishing	1957	2006
MGI Digital Graphic	Manufacturing	1982	2006
Octo technology	Services	1998	2006
Medicrea International	Services	1993	2006
Weborama	Services	1998	2006
Mastrad	Manufacturing	1994	2006
Millet Innovation	Services	1998	2006
Neotion	Services	2000	2006
Aquila	Services	1993	2006
Hitechpros	Services	2002	2006
CRM Company Group	Services	2001	2006
Budget Telecom	Transportation and public utilities	1999	2006
Nextedia	Services	2000	2006
SA Genfit	Services	2000	2006
E-Front	Services	1999	2006

Chapitre 4

It's what you don't see that counts: performance, working capital management, and the liability of smallness[43]

This chapter studies the relationship between working capital management and firm operating performance and focuses on the moderating effect of size. We use a large sample of 50,001 small, medium, and large firms from France, Germany, and Italy and our results indicate that the impact of working capital management on performance strongly depends on size. We identify a higher sensitivity of performance to underinvestment in net operating working capital for small firms but no higher sensitivity to overinvestment. These findings suggest that small firms experience high opportunity costs from lost sales when their net operating working capital is low. Financial constraints and lack of financial management are discussed as potential explanations because both are expressions of the liability of smallness.

Keywords: Working capital management, performance, small business

[43] This chapter builds on Lefebvre (2019) that is under revision after receiving a "revise and resubmit" from the *Journal of Small Business Management*.

1. Introduction

The performance and survival of firms largely depends on the manager's ability to acquire, create, and manage resources (Penrose 1959). Among them, financial resources, internal organization, and strong reputation to attract customers are some of the most important ones or, at least, are so perceived by managers (Stinchcombe 1965; Aldrich and Auster 1986; Dodge et al. 1994). The literature commonly refers to the liability of smallness to describe the fact that small firms only have a limited amount of resources and difficult access to new ones. As a result, small firms face a higher rate of failure or bankruptcy and lower operating performances than larger firms. Working capital management (WCM) is, we suggest, one dimension of this liability.

WCM refers to a firm's ability to identify and finance an efficient level of investment in the fraction of inventories and accounts receivable that is not covered by accounts payable. Intuitively, firms should maintain a low level of investment in these components to minimize both the interest expenses required to finance them and the storage costs of inventories. However, there are also benefits to maintain a higher level of investment in WCM components. For example, small firms partly alleviate lack of reputation by increasing payment delays to suppliers which can result in additional sales (Wilson and Summers 2002) and reduce the risk of lost sales due to stock outs (Corsten and Gruen, 2003). Thus, there is theoretically an optimal level of investment in WCM that balances the costs and benefits of different WCM practices and maximizes firm's performance and value (Baños-Caballero et al. 2012, 2014; Aktas et al. 2015). Consistent empirical findings in the literature support this view. However, no previous paper has investigated whether and to what extent the relationship between WCM and performance is influenced by firm size.

Filling this gap appears important for several reasons. First, as small firms strongly rely on internally generated cash, the role of WCM is likely to be more pregnant for them because it conditions the speed at which cash is available (Berger and Udell 1998; Cassar 2004). Larger firms on the other side have easier access to external funding and have therefore more flexibility in WCM, meaning they can more easily and at a lower cost finance a higher investment in WCM components (Kieschnick et al. 2013). Second, financial management is rather poor among small firms so despite their importance, WCM practices are often deficient for small firms (Peel and Wilson 1996; Peel et al. 2001; Howorth and Westhead 2003). For example, lack of WCM monitoring implies that small firms adjust WCM slower than larger firms making the effect of an inadequate level of WCM on performance more damaging. Thus, identifying the extent to which small firms' performance is affected by WCM is of significant interest for small firms' managers who lack time, skills and cash to dedicate to WCM (Peel and Wilson 1996).

In this paper, we show that the performance of small firms is more sensitive to underinvestment in WCM components than the one of large firms, a finding we interpret as an expression of the liability of smallness. Small firms do not adjust investment in WCM either because they are driven by the need for internally generated cash or because they do not monitor WCM often enough. Both cases result in significant opportunity costs due to lost sales. Strikingly, we observe no conclusive difference between small, medium and large firms when it comes to overinvestment in the operating components of working capital (inventories and accounts receivable). This suggests that small firms adjust faster investment in this latter case because they observe the costs of overinvestment.

Our work contributes to the literature in several ways. First, we extend the financial management literature as we investigate the role of size in the WCM-performance relationship. Second and unlike previous studies, we find that after controlling for

endogeneity between performance and WCM, only underinvestment in WCM components impacts the performance of small and medium firms. Last, we show that the impact of underinvestment in WCM components on performance is higher for small firms than for medium or large firms.

The rest of the paper is organized as follows. First, we review the literature on the relationship between firm performance and WCM and develop our hypotheses in the particular case of small firms. Next, we present our sample and methodology and describe our results. We also perform several robustness tests and control for reverse causality. Last, we discuss our findings and potential implications of our work for managers, policy makers and research and present our conclusions.

2. Theoretical foundations and hypotheses development

2.1. Working capital management and firm performance

Firms need to purchase raw materials to produce finished goods and eventually sell them which results in accounts receivables and, depending on payment delays, cash. As the time it takes to produce, sell and cash-in is longer than the payment delays granted by suppliers, firms invest money in inventories and accounts receivables that remains locked up. This amount of cash, which is the fraction of working capital not covered by accounts payable, is referred to as net operating working capital (NOWC) (Hill et al. 2010). When the NOWC is positive, it means that firms need to finance this requirement which is mostly achieved through banking debt (Kieschnick et al. 2013). Therefore, firms seek to keep the NOWC as low as possible because the higher it is and the higher the amount of financial

expenses the firm has to pay (Hill et al. 2010). If the NOWC is negative, it means that the firm generates available cash through its day-to-day operations, a situation that is generally considered as favorable.

The agility with which a firm adjusts the level of NOWC to internal and external conditions is called WCM. It represents an important part of financial management because it conditions the availability of internally generated cash or, in other words, the speed at which cash flows in. When a company grows and sales increase, the amount of NOWC grows as a mechanical result of an increase in inventories and accounts receivable, and thus additional financing is required. A stylized fact in the WCM literature is that firms largely overinvest in NOWC (Deloof 2003; Aktas et al. 2015). As a result, huge amounts of cash are unnecessarily locked up in inventories and accounts receivable, suggesting that most firms could improve their WCM by reducing investment in NOWC[44].

When it comes to WCM, firms adopt two approaches (Hill et al. 2010). The "aggressive" approach consists in cutting investment in NOWC by reducing the levels of inventories and by asking customers to pay faster. Thus, the NOWC is smaller which means that less cash is tied up in the operating cycle. Costs induced by the financing of the NOWC are lowered which should, in turn, increase profitability. However, there are drawbacks to this aggressive WCM because low levels of inventories increase the risk of stock-outs. As stressed by Corsten and Gruen (2003), when customers face stock-outs they just go somewhere else to find the products they want, and sales are lost for the firm. Additionally, the risk of an interruption in the production process is also increased when firms maintain low levels of inventories. Such opportunity costs negatively affect firm's profitability suggesting that the relationship between firm profitability and investment in NOWC is not linear.

[44] As noted by Aktas et al. (2015), longitudinal observations of WCM shows that the adoption of just-in-time practices in the last twenty years reduced the amount firms invest in inventories and, thus, in NOWC.

The “conservative” approach is the opposite of the aggressive approach. It means that firms grant longer payment delays and keep high level of inventories because they expect specific benefits. The risk of stock-outs is for example lower for a conservative WCM and it gives time to customers to assess product quality which in turn reduces information asymmetry between suppliers and customers (Blinder and Maccini 1991; Long et al. 1993; Ng et al. 1999). Granting longer payment delays to customers is also a way to gain and build trust with new clients (Summers and Wilson 2002). Customers may also select a supplier because it grants longer payment delays if no other criterion is available to differentiate between different suppliers (Shipley and Davis 1991). These expected benefits should positively affect firm’s profitability as they represent potential gain in sales. The drawback of the conservative strategy is that it increases the amount of inventory and receivables and, thus, the need for finance. As we already stress, as firms use banking debt to finance NOWC, a conservative WCM brings additional financial expenses (Kieschnick et al. 2013). Storage costs, as well as related costs like insurance and security expenses, also increase as a result of a conservative WCM (Kim and Chung 1990).

Overall, both WCM approaches have benefits and drawbacks that impact firm performances, making the investigation of the role of WCM on firm performance the major research stream in the WCM literature. This literature reports consistent findings about the fact that the relationship between WCM and firm performance has an inverted-U shape as suggested by the previous arguments. In other words, there is an optimal level of investment in NOWC that balances the benefits and costs of WCM strategies (Baños-Caballero et al. 2012, 2014; Aktas et al. 2015; Ben-Nasr 2016).

The WCM literature considers both aggressive and conservative WCM as “strategies” (Hill et al. 2010). Therefore, it looks like an implicit assumption that firms target a NOWC level that best suits their current strategy, and that they try to achieve this level as soon as

possible (Baños-Caballero et al. 2010). While this assumption is plausible for firms that have access to a large amount of resources, it appears less realistic for small firms which are known to have limited access to resources, especially financial ones. It is indeed possible that small firms deliberately constrain investment in NOWC to finance other fixed assets investments and operating expenses. Moreover, because small firms lack financial management, as we develop in the next section, it is likely that a fraction of them has no concrete WCM practices or a "passive" WCM (Khoury et al. 1999). This makes the investigation of the moderating role of size in the WCM-performance relationship an important issue that has not been previously addressed by the literature. Indeed, most of the recent works in the WCM literature only consider large or listed firms (Deloof 2003; Kieschnick et al. 2013; Baños-Caballero et al. 2014; Aktas et al. 2015; Ben-Nasr 2016). While Ebben and Johnson (2011) and Baños-Caballero et al. (2012) use samples of SMEs in WCM studies, it was not their purpose to compare large firms with small firms. Thus, we want to investigate the following research question: to what extent does size influence the NOWC-performance relationship?

2.2. Small firms and working capital management

For firms, the acquisition of resources is one of the keys to growth (Penrose 1959). A manager's ability to identify and acquire those resources whose combination with the ones that the firm already has conditions the achievement of performance (Wernerfelt 1984; Barney 1991). Scarcity of internal resources and difficult access to external resources are obviously some of the biggest weaknesses small firms face, a concept that is commonly referred to as the liability of smallness (Aldrich and Auster 1986). Among them, lack of reputation and bargaining power (Stinchcombe 1965; Wilson and Summers 2002; Crook and

Combs 2007), poor internal organization and management (Dodge et al. 1994) and constrained access to external finance (Cassar 2004) appear to be those with the strongest impact on WCM.

The lack of external financial resources is one of the major constraints that small firms have to face. Berger and Udell (1998) provide a theoretical explanation to these constraints based on information asymmetry. As small firms are informationally opaque, external investors are reluctant to provide them with cash because such an investment is riskier than in the case of a larger firm that has more collateral and a longer accounting track record. This reduces the amount of external finance small firms can access and increases the cost of these funds (Stiglitz and Weiss 1983; Audretsch and Elston 1997; Berger and Udell 1998; Cassar 2004). As a result, small firms need alternative sources of finance to grow in the early stages. A manager's ability to acquire financial resources and configure them to create value, which is financial management, is thus a key factor of survival and performance (Penrose 1959; Brinckmann et al. 2011). Brinckmann et al. (2011) distinguish between several aspects of financial management, like external financing and financing through operations. They show that, while most of the literature on small firms finance focuses on external financing, the role of financing through operations is even more crucial for small firms to grow. In other words, firms that generate cash internally alleviate limitations in the access to external finance. The bootstrapping literature offers several examples of techniques that start-ups' managers implement to generate cash internally. For example, such firms offer customers discounts on upfront payments and delay payment to suppliers (Winborg and Landström 2001). These practices have direct implications on WCM because they reduce the investment in NOWC as accounts receivable are lower and accounts payable are higher. Bootstrapping firms keep their NOWC as low as possible because they need to release cash quickly to finance operating expenses or investment. This means that, because of their resource constraint, small firms use

what we describe as aggressive WCM to generate available cash. Because small firms may not have any other financing source, we expect them to maintain a low level of investment in NOWC even if this increases the risk of stock-outs and possible opportunity costs[45]. Therefore, the potential negative impact of an aggressive WCM on performance is expected to be higher for small firms because they cannot easily adjust investment in NOWC.

A modest but consistent stream of research shows that small firms struggle with WCM[46] and that poor WCM practices contribute to explain a significant portion of small firms' failures (Berryman 1983). Survey based studies by Peel and Wilson (1996), Khoury et al. (1999) and Peel et al. (2001) show that financial management is rather poor among small firms. For example, the use of capital budgeting techniques to assess investment profitability is very low when compared to larger firms' standards (see for example Graham and Harvey 2001). In the case of WCM, small firms lack efficient practices in the management of the components of NOWC. This is particularly true for inventory management as more than a third of surveyed firms indicate that they never review inventory levels, turnover or re-order levels (Peel and Wilson, 1996; Howorth and Westhead 2003). Additionally, small firms' managers report that they review their WCM practices "whenever necessary" and not on a regular basis (Khoury et al. 1999). In the same vein, Howorth and Westhead (2003) show that small firms' WCM is based on routines. As small firms' managers have only limited resources to dedicate to WCM, both in terms of time and cash, they only focus on specific aspects of WCM for which they expect important returns. In other words, small firms' managers invest time in WCM when they need to release internally generated cash faster. Ebben and Johnson (2011) study a sample of US small firms and show that small firms'

[45] We acknowledge that small firms' managers sometimes have external financing aversion and that they prefer internal financing, even if this constrains their firm's growth as suggested by Howorth (2001). This, however, does not impact our reasoning as the consequence of external financing aversion is that investment in NOWC is low as the need for internally generated cash is high. The impact of NOWC on firm performance is therefore the same whether a small firm is constrained by external factors or by internal preferences.

[46] Arend and Wisner (2005) show that small firms performance is negatively related with supply-chain management.

managers are more reactive than proactive when it comes to WCM, suggesting hereby a lack of WCM monitoring. This means that if small firms implement, deliberately or not, an inefficient level of investment in NOWC, they will realize and adjust it slower than larger firms. Thus, the impact of NOWC on smaller firms performance is likely to be higher than for larger firms.

Hypothesis 1: The performance of smaller firms is more sensitive to underinvestment in NOWC than the one of larger firms.

H1a: The performance of small firms is more sensitive to underinvestment in NOWC that the one of medium firms.

H1b: The performance of small firms is more sensitive to underinvestment in NOWC than the one of large firms.

H1c: The performance of medium firms is more sensitive to underinvestment in NOWC than the one of large firms.

While the previous arguments indicate that smaller firms' performance should be more sensitive to underinvestment in NOWC, we also expect it to be more sensitive to overinvestment. Indeed, external financing costs are higher for smaller firms so financing investment in NOWC is more costly for them than for larger firms (Berger and Udell 1998, Cassar 2004). Using the same argument, storage costs are also higher for smaller firms. The financing costs of NOWC are overall higher for smaller firms than for larger which means that their impact on performance is expected to be higher than in the case of large firms. Last, the lack of WCM monitoring we describe previously is also likely to apply. This means that smaller firms will not quickly enough realize that their investment in NOWC is too high regarding a change in their operating conditions because they don't review their WCM

practices often enough. We expect therefore the performance of smaller firms to be more sensitive to overinvestment in NOWC than the performance of larger firms.

Hypothesis2: The performance of smaller firms is more sensitive to overinvestment in NOWC than the one of larger firms.

H2a: The performance of small firms is more sensitive to overinvestment in NOWC that the one of medium firms.

H2b: The performance of small firms is more sensitive to overinvestment in NOWC than the one of large firms.

H2c: The performance of medium firms is more sensitive to overinvestment in NOWC than the one of large firms.

3. Methods

3.1. Sample

To test our hypotheses, we use a sample of European firms. We use Bureau Van Dijk's Amadeus database to collect our data. This database provides access to financial and accounting information for private and public European firms. We include all German, French and Italian private firms for which ten years of data are available which considerably reduces the number of firms for which we have information[47]. The observation period covers the years 2009 to 2018. The choice of these countries is motivated by the fact that they are all bank-

[47] The calculation of one of our control variables, sales volatility motivates this choice. We acknowledge that this choice reduces the generalizability of our findings because many small firms, especially newly founded ones are excluded from the analysis.

oriented economies which is important to capture the impact of the financing costs of WCM. Moreover, these countries have different practices about payment delays[48] so we alleviate concerns that our results might be driven by a country's specific trade credit practices. The initial sample included 62,014 firms and we exclude financial and administration firms which is a common practice in the literature on WCM (Baños-Caballero et al. 2012, 2014; Aktas et al. 2015). These are defined as firms with a Standard Industrial Classification (SIC) code between 6000 and 6900 (finance) and between 9000 and 9900 (administration). This leaves 58,588 firms. Next, we eliminate cases with missing value and errors. Due to the construction of one of our control variable (sales volatility), firm-year observations from the first five years are necessary to create the panel but not studied. The final sample includes 248,212 firm-year observation and 50,001 unique firms[49]. Last, we should mention that we winsorize our data at the first and ninety-ninth percentiles to mitigate the impact of extreme values (Aktas et al. 2015).

3.2. Measures

3.2.1. Dependent variable

While other WCM studies use stock-price based measure to assess firm performance, we consider private companies and we cannot use the market value of equity or Tobin's Q as dependent variable (Baños-Caballero et al. 2014; Aktas et al. 2015). Therefore, following Deloof (2003) and Baños-Caballero et al. (2012), we use return on assets (ROA) as our main

[48] Germany is the country in Continental Europe with the shortest payment delays, while Italy is the one with the longest payment delays and France stands at the median (source: ECCBSO, Financial Statement Analysis Working Group).
[49] We provide a sample breakdown by country, years and industries as appendix A and B.

performance measure. We calculate ROA as operating income after financial expenses divided by total assets.

3.2.2. Independent variables

We consider WCM as our main variable of interest and we measure it through NOWC, which is equal to the sum of inventories and accounts receivables less accounts payable divided by total sales (Hill et al. 2010; Aktas et al. 2015). But a firm's level of NOWC largely depends on industry characteristics. Thus, we use the industry-adjusted NOWC as our independent variable (Aktas et al. 2015). To calculate it, we subtract from the NOWC of a given firm the annual median NOWC of the industry in which this firm operates and denote this variable *IndAdjNowc*:

$$Industry - adjusted\ Nowc = NOWC - Annual\ industry\ median\ NOWC$$

When the industry-adjusted NOWC is positive, it means that the firm is adopting a conservative WCM and that it is overinvesting in NOWC. This suggests that a more efficient WCM, meaning a reduction of the NOWC, should result in higher performances. Conversely, if the industry-adjusted NOWC is negative, it means that the WCM is aggressive and that the risk of lost sales and opportunity costs is high (Aktas et al. 2015). This approach is intuitively based on the assumption that the optimal NOWC is the industry-median NOWC.

Our primary goal is to identify if the sensitivity of firm performance to NOWC is moderated by firm size. Thus, we need to be able to distinguish between the sensitivity of a firm to a decrease in NOWC when the industry-adjusted NOWC is positive from its sensitivity to an increase in NOWC when industry-adjusted NOWC is negative. Both are

expected to result in a higher level of performance. To capture these effects, we need to allow the slope in our models to be different for positive industry-adjusted NOWC and for negative industry-adjusted NOWC. Therefore, we create a dummy variable D which equals one if the industry-adjusted NOWC is positive and zero otherwise. Last, we calculate the interaction term between D and industry-adjusted NOWC, and the interaction term between one minus D and industry-adjusted NOWC.

In order to distinguish between different sizes, we create size categories. According to the criteria of the European Commission, we consider a firm as small if its number of employees is less than 50 and either its total assets or its sales revenue is less than 10M€. We also define a medium firm as one with less than 250 employees and either less than 43M€ of total assets or less than 50M€ of sales. A firm that is neither small nor medium is thus large. This classification means that our sample includes approximately 22.23 percent of large firms, 54.99 percent of medium firms and 22.78 percent of small firms.

3.2.3. Control variables

Following Aktas et al. (2015), we use a large set of control variables known to affect firms' ROA. As we already discuss, the extent to which firms are financially constrained impacts the WCM-performance relationship (Kieschnick et al. 2013; Baños-caballero et al. 2014). First, we control for the extent to which a firm is indebted and include L*everage*, calculated as total financial debt divided by total assets, as a control variable. We also create a dummy *Financial Distress* which is equal to one if a firm meets two conditions and zero otherwise. First, it has to be overleveraged meaning that its leverage is in the top two deciles of its industry for a given year. Second, the cost of financial debt is high when compared to

internally generated cash resources. Therefore, we calculate the interest coverage ratio as operating income plus depreciation and amortization divided by total interests paid. If the interest coverage ratio is lower than 0.8 during any given year or lower than 1 during two consecutive years, the second condition is met (Molina and Preve 2009; Hill et al. 2010; Aktas et al. 2015).

Cash ratio, calculated as cash and equivalents divided by total assets, is also included as a control variable because cash and NOWC are substitutes (Bates et al. 2009). As operating conditions impact WCM, we also control for S*ales growth*, which is the percentage change in sales between two consecutive years, and *Sales volatility*. Hill et al. (2010) indicate that it is difficult for firms to identify the appropriate level of inventory level to face an increase in sales volatility because it also depends on their trade credit policy and need for cash. Thus, *Sales volatility* which is the standard deviation of sales over a rolling five-year period scaled by total assets, is included as a control variable. *Age* is the natural logarithm of the number of years since firm's creation and is also a common control variable in the WCM literature as it indicates the bargaining power regarding payment delays (Baños-Caballero et al. 2010; Aktas et al. 2015). *Size* calculated as the natural logarithm of total assets is also included as an additional control variable (Baños-caballero et al. 2012).

Last, Fazzari and Petersen (1993) show that firms reduce investment in NOWC when internally generated cash decreases. This helps them to maintain constant the level of investment in fixed assets when availability of cash fluctuates. Therefore, we also introduce a control variable *Fixed Assets* which is the growth rate between two consecutive years in a firm's fixed assets.

4. Results

4.1. Descriptive statistics

Table 4.1 presents the descriptive statistics and a correlation matrix. The average firm is 25 years old and holds 16.58M€ of total assets and NOWC represents 19 percent of its total assets. This figure is in line with other WCM studies (Baños-Caballero et al. 2012; Aktas et al. 2015). As some correlations exist between our variables, we calculate the VIF to ensure that multicollinearity is not an issue with our data. The highest VIF is 2.77 which is well below the threshold of 10, so multicollinearity will not affect the results of our estimations.

Table 4.1: Descriptive statistics and correlation table

		Mean	Median	SD	1	2	3	4	5	6	7	8	9	10
1	*Nowc*	0.19	0.14	0.22										
2	*Ind Adj Nowc*	0.04	0.00	0.21	**0.95**									
3	ROA	0.05	0.04	0.09	-0.06	-0.08								
4	*Sales Growth*	0.07	0.03	0.24	-0.04	-0.04	**0.12**							
5	*Leverage*	0.16	0.11	0.17	**0.15**	**0.16**	**-0.24**	-0.02						
6	*Size*	9.83	9.66	1.16	**0.14**	**0.12**	-0.06	-0.04	0.02					
7	*Fixed Assets*	0.11	-0.01	0.53	-0.01	-0.01	0.04	**0.15**	0.00	-0.02				
8	*Age*	3.21	3.26	0.61	0.09	0.06	-0.01	-0.09	-0.01	**0.16**	-0.07			
9	*Sales Volatility*	0.32	0.20	0.40	**-0.21**	**-0.19**	0.07	**0.12**	**-0.11**	**-0.25**	0.04	**-0.17**		
10	*Cash Ratio*	0.09	0.05	0.12	**-0.15**	**-0.15**	**0.26**	0.02	**-0.26**	**-0.15**	0.01	0.00	**0.24**	
11	*Financial Distress*	0.02	0.00	0.15	0.04	0.04	**-0.25**	-0.05	**0.27**	0.03	-0.01	-0.01	0.00	-0.07

Correlation coefficient >0.10 are significant at p<0.05 and shown in bold.
SD, standard deviation.

4.2. Multivariate analysis

We use a firm and year-fixed effects model to estimate the relationship between NOWC and firm performance measured as ROA[50]. Table 4.2 shows the results for the regressions with robust standard errors clustered at the company level (Aktas et al. 2015). The first column shows the results for the entire sample. As expected, underinvestment in NOWC is positively related to ROA and overinvestment in NOWC is negatively related with ROA. This is consistent with the view that the relationship between NOWC and firm performance is concave. Our results corroborate those of Aktas et al. (2015) and Ben-Nasr (2016) who use the same methodology and they are also in line with those of Baños-Caballero et al. (2012, 2014).

The next three columns of table 2 present the results for large, medium and small firms subsamples. The sensitivity of performance to underinvestment is statistically significant for all size buckets. We observe that the differences between the unstandardized coefficients are statistically significant at the 1 percent level. This means that small firms' performance is more sensitive to underinvestment in NOWC than the one of medium or large firms. We also observe that the performance of medium firms is more sensitive than the one of large firms, the difference[51] being statistically significant at the 5 percent level. This supports our H1a, H1b and H1c hypotheses. However, while the sensitivity of performance to overinvestment is statistically significant for all the size buckets, there is no statistically significant difference between the unstandardized coefficients between the buckets. Our results show therefore that the sensitivity of performance to NOWC is not different between large, medium and small

[50] Alternatively, we use return on investment, calculated as net income over total assets, and return on sales, calculated as operating income over sales as alternative performance measures. The results were equally significant.

[51] To estimate the existence of statistically significant differences between samples, we calculate the difference between the two samples coefficients divided by the square root of the sum of their squared errors. Then, we use a standard t-test to estimate whether or not the differences are statistically significant.

firms when it comes to overinvestment. Thus, none of our H2a, H2b and H2c hypotheses are validated. The economic significance of the results confirms this. Indeed, a one standard deviation decrease in overinvestment in NOWC is associated with a 0.34 percent increase in ROA for large firms, a 0.34 percent increase for medium firms and a 0.27 percent increase for small firms. However, the results are striking for small firms when it comes to underinvestment in NOWC. A one standard deviation increase in underinvestment in NOWC is associated with a 0.31 percent increase in ROA for large firms, a 0.50 percent increase for medium firms and a 0.80 percent increase for small firms.

Table 4.2: Fixed effects regressions of the impact of NOWC on firm operating performance by firm size

ROA is the dependent variable	All firms		Large firms		Medium firms		Small firms	
*Ind Adj Nowc * D*	-0.018	***	-0.021	***	-0.018	***	-0.017	**
	0.002		0.005		0.003		0.005	
*Ind Adj Nowc * (1-D)*	0.076	***	0.041	***	0.069	***	0.110	***
	0.005		0.011		0.006		0.010	
Sales growth	0.032	***	0.029	***	0.032	***	0.033	***
	0.001		0.002		0.002		0.001	
Leverage	-0.080	***	-0.055	***	-0.087	***	-0.084	***
	0.002		0.005		0.003		0.004	
Size	0.008	***	0.003		0.008	***	0.013	***
	0.001		0.002		0.002		0.002	
Fixed assets	0.000		0.001		0.000		0.001	†
	0.000		0.001		0.000		0.000	
Age	0.028	***	0.017	***	0.023	***	0.042	***
	0.002		0.004		0.003		0.004	
Sales volatility	0.008	***	0.002		0.008	***	0.011	***
	0.001		0.002		0.001		0.001	
Cash ratio	0.112	***	0.090	***	0.110	***	0.110	***
	0.003		0.007		0.004		0.007	
Financial distress	-0.069	***	-0.066	***	-0.071	***	-0.066	***
	0.001		0.003		0.002		0.003	
Firm fixed effects	YES		YES		YES		YES	
Year fixed effects	YES		YES		YES		YES	
Number of observations	248,212		55,185		136,482		56,545	
F-statistics	791.52	***	123.73	***	402.10	***	241.84	***
Adjusted R^2	0.776		0.798		0.808		0.797	

* p<0.1, ** p<0.05, *** p<0.01.

Errors are robust and clustered at the firm level. We report them under the coefficients.

4.3. Robustness checks

In this section, we perform several robustness tests to assess the validity of our results. First, as our sample includes firms from three different countries, institutional differences as well as economic conditions can have different impacts on our results. For example, there has been a banking crisis in Italy in recent years that likely affected Italian firms' access to banking debt and the subsequent cost of NOWC. We therefore estimate different regressions for the three countries and present the results in table 4.3[52].

The French subsamples show similar results to those observed on the entire sample. The sensitivity of performance to underinvestment and overinvestment in NOWC is statistically significant and the difference between the coefficients for large and medium firms, medium and small, and large and small French firms is statistically significant. Hypothesis 1 is thus fully validated for the French subsample. The Italian subsamples only present statistically significant differences between medium and small firms for both the sensitivity of performance to underinvestment and overinvestment in NOWC. Only the H1b hypothesis is therefore confirmed for the Italian subsample. With respect to the German subsamples, we observe that a statistically significant relationship between overinvestment in NOWC and performance for large and medium firms but not for small firms. We also only observe a statistically and significant relationship between underinvestment in NOWC and performance for small firms. This indirectly corroborates our H1a and H1b hypotheses for the German subsample.

[52] Alternatively, we calculate the industry-median NOWC by country as it is possible that the industry-median differs across countries. The results were comparable. We thank an anonymous referee for this comment.

Table 4.3: Fixed effects regressions of the impact of NOWC on firm operating performance by firm size and country clusters

	Germany			
ROA is the dependent variable	All firms	Large firms	Medium firms	Small firms
*Ind Adj NOWC * D*	-0.049 ***	-0.051 ***	-0.047 ***	-0.046
	0.009	0.014	0.014	0.040
*Ind Adj NOWC * (1-D)*	0.027 *	0.014	0.033	0.100 *
	0.016	0.024	0.026	0.053
Sales growth	0.041 ***	0.036 ***	0.041 ***	0.054 ***
	0.002	0.004	0.004	0.008
Leverage	-0.050 ***	-0.052 ***	-0.046 ***	-0.068 ***
	0.006	0.008	0.009	0.018
Size	-0.001	0.002	-0.002	-0.007
	0.003	0.005	0.006	0.011
Fixed assets	-0.001	0.000	0.002	-0.007 ***
	0.001	0.001	0.001	0.003
Age	0.023 ***	0.027 ***	0.014	0.028
	0.006	0.008	0.011	0.025
Sales volatility	0.010 ***	0.008 **	0.010 ***	0.007
	0.002	0.004	0.003	0.006
Cash ratio	0.110 ***	0.109 ***	0.098 ***	0.134 ***
	0.009	0.013	0.014	0.033
Financial distress	-0.085 ***	-0.081 ***	-0.088 ***	-0.117 ***
	0.004	0.005	0.006	0.018
Firm fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Number of observations	42,977	20,153	17,944	4,880
F-statistics	110.74 ***	77.35 ***	83.76 ***	10.35 ***
Adjusted R^2	0.775	0.784	0.792	0.824

† p<0.1, * p<0.05, **p<0.01, ***p<0.001.

Errors are robust and clustered at the firm level. We report them under the coefficients.

Table 4.3 (continued)

France			
All firms	Large firms	Medium firms	Small firms
-0.038 ***	-0.045 ***	-0.042 ***	-0.025 **
0.005	0.014	0.007	0.012
0.113 ***	0.042 **	0.098 ***	0.196 ***
0.010	0.018	0.015	0.018
0.033 ***	0.023 ***	0.027 ***	0.047 ***
0.003	0.003	0.005	0.003
-0.075 ***	-0.058 ***	-0.060 ***	-0.106 ***
0.004	0.009	0.006	0.008
0.009 ***	0.018 ***	0.015 ***	0.009 ***
0.002	0.004	0.003	0.003
-0.002 ***	0.001	-0.001	-0.002 ***
0.001	0.001	0.001	0.001
0.016 ***	0.023 *	0.020 **	0.003
0.006	0.013	0.010	0.010
0.000	-0.007 ***	-0.002	0.003 *
0.001	0.003	0.002	0.002
0.136 ***	0.097 ***	0.125 ***	0.166 ***
0.006	0.014	0.010	0.010
-0.055 ***	-0.045 ***	-0.058 ***	-0.061 ***
0.003	0.006	0.004	0.005
YES	YES	YES	YES
YES	YES	YES	YES
80,281	16,321	33,917	30,043
105.72 ***	15.02 ***	41.61 ***	65.52 ***
0.799	0.834	0.826	0.816

Table 4.3 (continued)

Italy			
All firms	Large firms	Medium firms	Small firms
-0.009 ***	-0.002	-0.007 ***	-0.013 ***
0.002	0.004	0.002	0.003
0.066 ***	0.048 ***	0.063 ***	0.076 ***
0.006	0.010	0.005	0.007
0.027 ***	0.025 ***	0.028 ***	0.026 ***
0.001	0.002	0.001	0.001
-0.095 ***	-0.054 ***	-0.117 ***	-0.079 ***
0.003	0.005	0.003	0.003
0.009 ***	-0.004 *	0.010 ***	0.009 ***
0.001	0.002	0.001	0.001
0.001 **	0.001	0.001 *	0.002 ***
0.000	0.001	0.000	0.000
0.009 **	0.007	0.005	0.006
0.004	0.006	0.003	0.004
0.012 ***	0.004 *	0.012 ***	0.013 ***
0.001	0.002	0.001	0.001
0.105 ***	0.057 ***	0.098 ***	0.107 ***
0.005	0.008	0.004	0.005
-0.072 ***	-0.067 ***	-0.071 ***	-0.067 ***
0.002	0.003	0.001	0.002
YES	YES	YES	YES
YES	YES	YES	YES
124,954	18,712	65,432	40,810
972.69 ***	78.83 ***	516.12 ***	326.14 ***
0.754	0.774	0.804	0.769

The study of potential differences of size in the NOWC-performance relationship raises the question of potential omitted variable that could affect only firms of a particular size and not others. We identify affiliation to a business group as such a potential issue. Deloof and Jegers (1996, 1999) report that trade credit, which is an important aspect of WCM, depends on a firm's affiliation to a business group (BG). Indeed, firms affiliated to a BG can benefit from financial management at the group level that helps them improve WCM practices. Moreover, if one assumes a common financial management within a BG, it is likely that cash-rich affiliates extend more trade credit to cash-poor affiliates (Deloof and Jegers 1996). Thus, the optimal level of WCM for a single firm is not necessarily the same as for a firm that is affiliated to a BG. As BGs are a very common form of industrial organization in Western Europe, affiliation to a business group could obviously affect our results. Thus, we first create subsamples to distinguish between firms that are not affiliated to a business group (single firms), firms affiliated to a small business group (less than six subsidiaries), firms affiliated to a medium business group (more than six and less than twenty subsidiaries), and large business groups (more than twenty subsidiaries). The thresholds we use to classify business groups sizes are close to those set by Khanna and Palepu (2000). Then, we run our regressions on each of these subsamples. The results are provided in table 4.4.

The relationship between the performance of single firms and overinvestment in NOWC is statistically significant for small firms only. Regarding underinvestment in NOWC, there is a positive and significant relationship with the performance of single firms of all size. Moreover, there is a statistically significant difference between the sensitivity of small single firms and medium single firms, confirming our H1a hypothesis but not our H1b and H1c hypotheses. We observe no statistically significant differences between firms affiliated to a small BG. However, we find support for our H1a hypotheses for both firms affiliated to medium and large BG. We also find support for our H1b in the case of large BG, indicating

that the sensitivity of performance to underinvestment in NOWC is higher for small firms than for large firms. Overall, we find conclusive results except for the case of firms affiliated to small business groups.

Table 4.4: Fixed effects regressions of the impact of NOWC on firm operating performance by business group affiliation and size

	Large firms			
ROA is the dependent variable	Large group	Medium group	Small group	Not member of a group
*Ind Adj NOWC * D*	-0.036 ***	-0.015	0.001	0.011
	0.007	0.012	0.011	0.013
*Ind Adj NOWC * (1-D)*	0.011	0.091 ***	0.066 **	0.104 ***
	0.014	0.025	0.028	0.031
Sales growth	0.028 ***	0.032 ***	0.027 ***	0.021 ***
	0.002	0.004	0.004	0.006
Leverage	-0.042 ***	-0.072 ***	-0.094 ***	-0.066 ***
	0.006	0.013	0.013	0.016
Size	0.002	-0.002	0.013 *	0.011
	0.003	0.006	0.006	0.007
Fixed assets	0.000	0.001	0.002	-0.001
	0.001	0.002	0.002	0.002
Age	0.030 ***	0.014	0.024 **	0.001
	0.009	0.011	0.012	0.017
Sales volatility	0.001	0.010 *	0.001	0.001
	0.003	0.005	0.003	0.006
Cash ratio	0.071 ***	0.117 ***	0.130 ***	0.095 ***
	0.011	0.017	0.015	0.020
Financial distress	-0.065 ***	-0.063 ***	-0.071 ***	-0.068 ***
	0.004	0.006	0.007	0.011
Firm fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Number of observations	30,131	9,823	10,830	4,402
F-statistics	75.44 ***	20.01 ***	21.34 ***	16.48 ***
Adjusted R^2	0.789	0.805	0.825	0.820

* p<0.1, ** p<0.05, *** p<0.01.

Errors are robust and clustered at the firm level. We report them under the coefficients.

Table 4.4 (continued)

Medium firms			
Large group	Medium group	Small group	Not member of a group
-0.026 ***	-0.013 *	-0.014 ***	-0.007
0.006	0.008	0.005	0.006
0.042 ***	0.075 ***	0.093 ***	0.063 ***
0.013	0.018	0.011	0.014
0.037 ***	0.033 ***	0.026 ***	0.025 ***
0.002	0.003	0.003	0.002
-0.043 ***	-0.090 ***	-0.114 ***	-0.113 ***
0.007	0.009	0.006	0.008
0.002	0.004	0.015 ***	0.011 ***
0.004	0.004	0.003	0.004
-0.001	0.002 *	0.001	0.001
0.001	0.001	0.001	0.001
0.016	0.020 *	0.005	0.009
0.010	0.011	0.006	0.008
0.000	0.014 ***	0.009 ***	0.011 ***
0.003	0.004	0.002	0.002
0.075 ***	0.103 ***	0.135 ***	0.112 ***
0.010	0.012	0.008	0.011
-0.069 ***	-0.076 ***	-0.073 ***	-0.064 ***
0.004	0.005	0.003	0.004
YES	YES	YES	YES
YES	YES	YES	YES
32,005	18,596	46,449	20,243
90.01 ***	38.42 ***	102.24 ***	146.42 ***
0.802	0.799	0.821	0.835

Table 4.4 (continued)

Small firms			
Large group	Medium group	Small group	Not member of a group
-0.034 ***	-0.019	-0.012 *	-0.016 *
0.012	0.014	0.006	0.008
0.114 ***	0.144 ***	0.101 ***	0.105 ***
0.024	0.030	0.013	0.017
0.039 ***	0.036 ***	0.032 ***	0.031 ***
0.004	0.005	0.002	0.002
-0.050 ***	-0.090 ***	-0.098 ***	-0.087 ***
0.012	0.013	0.006	0.007
0.015 ***	0.012 *	0.008 ***	0.008 ***
0.006	0.007	0.003	0.003
-0.004 ***	-0.001	0.002 ***	0.000
0.001	0.001	0.001	0.001
0.030 *	0.018	0.012 *	0.002
0.017	0.020	0.007	0.008
0.001	0.007	0.011 ***	0.011 ***
0.004	0.005	0.002	0.002
0.116 ***	0.149 ***	0.141 ***	0.139 ***
0.016	0.022	0.009	0.011
-0.076 ***	-0.069 ***	-0.070 ***	-0.063 ***
0.007	0.007	0.004	0.004
YES	YES	YES	YES
YES	YES	YES	YES
13,008	8,871	34,866	18,988
24.48 ***	21.34 ***	99.01 ***	61.58 ***
0.827	0.781	0.786	0.793

Next, we use a two-stage regression approach to estimate the extent to which a firm overinvest or underinvest in NOWC as the residuals of a first-stage regression. This allows us to alleviate the concern that industry-median adjusted NOWC we use in our baseline regression may not be a good estimation of the optimal NOWC. In other words, there is a risk that the current level of NOWC is endogenously determined. Building on the methodology suggested by Baños-Caballero et al. (2012) and Aktas et al. (2015), we estimate the excess investment in NOWC as the residuals of a first-stage regression. In this first-stage regression, we regress NOWC on *Sales Growth*, *Sales Volatility*, *Age*, *Size*, *Financial Distress*, *Cash-flow*[53], and *Leverage* for each industry/year. These variables are taken from Hill et al. (2010), Baños-Caballero et al. (2012) and Aktas et al. (2015). We exclude those industry/years for which we have less than 30 observations to ensure that we have enough observations to run the regressions so we end up with 371 regressions. We do not report the results of these regressions for brevity but the average adjusted R^2 is 18.85 percent which is in the same range as Hill et al. (2010) and Aktas et al. (2015). Furthermore, the average F-statistics is 13.50 indicating that the regression model fits correctly the data. Next, we use the residuals of this first regression as the excess investment in NOWC and denote them *ExcessNowc*. This is our independent variable in our second-stage regression which is the same as in model 1. Table 4.5 displays the results with ROA as dependent variable. The coefficients are statistically highly significant and the differences between them are also statistically significant in each case, except for the difference between large and medium firms regarding undervinvestment in NOWC. This brings additional credibility to our results[54] as it provides support to all our hypotheses, except H1c.

[53] We calculate cash-flow as operating income plus depreciation and amortization divided by total assets (Aktas et al., 2015).

[54] We also re-estimate the regressions for the country-clusters and the business group affiliation clusters with this alternative approach and observe comparable results.

Last, Baños-Caballero et al. (2012, 2014) indicate that studies on the sensitivity of performance to NOWC should control for endogeneity because it is likely that reverse causality affects the results. Thus, we re-estimate both our fixed-effects model and our two-stage regression model with the generalized method of moments estimator developed by Holtz-Eakin et al. (1988) and Arellano and Bond (1991). This estimator uses lagged observations of the variables as instruments and is common in the WCM literature (Baños-Caballero et al. 2012, 2014). As our panel data includes a large number of individuals and a small number of time periods (large N, small T panels), this methodology is relevant in this study (Roodman, 2009).

Table 4.5: Fixed effects regressions of the impact of regression based NOWC on firm operating performance by firm size

ROA is the dependent variable	All firms	Large firms	Medium firms	Small firms
*ExcessNwc * D*	-0.016 ***	-0.035 ***	-0.015 ***	-0.004
	0.002	0.007	0.003	0.005
*ExcessNwc * (1-D)*	0.127 ***	0.095 ***	0.109 ***	0.180 ***
	0.004	0.009	0.006	0.008
Sales growth	0.032 ***	0.027 ***	0.032 ***	0.034 ***
	0.001	0.002	0.001	0.001
Leverage	-0.083 ***	-0.058 ***	-0.087 ***	-0.093 ***
	0.002	0.005	0.004	0.004
Size	0.008 ***	0.005 **	0.009 ***	0.012 ***
	0.001	0.003	0.002	0.002
Fixed assets	0.000	0.001	0.000	0.000
	0.000	0.001	0.000	0.000
Age	0.017 ***	0.025 ***	0.011 **	0.011 **
	0.003	0.006	0.004	0.005
Sales volatility	0.000	-0.002	0.001	-0.002 *
	0.001	0.002	0.001	0.001
Cash ratio	0.127 ***	0.099 ***	0.114 ***	0.150 ***
	0.003	0.008	0.005	0.006
Financial distress	-0.064 ***	-0.061 ***	-0.066 ***	-0.063 ***
	0.001	0.003	0.002	0.003
Firm fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Number of observations	246,328	54,487	116,494	75,347
F-statistics	540.08 ***	73.76 ***	236.76 **	204.7 **
Adjusted R^2	0.779	0.799	0.811	0.801

* p<0.1, ** p<0.05, *** p<0.01.
Errors are robust and clustered at the firm level. We report them under the coefficients.

We include all the right-hand-side variables of our model 1 lagged two times as instruments and we include the dependent variable lagged one and two times in the estimation. To control for firm unobserved heterogeneity, we use the first difference in our observations (difference GMM) and we include time-dummies to control for macroeconomic conditions that could affect firm performance. We use a Hansen test for over-identifying restriction to check that there is no correlation between our instruments and the error term, which is the case in all our specifications. We also report the Arellano-Bond m_2 statistic to test for the absence of second order serial correlation in the first difference residuals. Last, we report the results both for the two-step estimators with robust standard errors, the latter including Windmeijer's correction because the two-step estimator's standard errors are downward biased (Arellano and Bond 1991; Windmeijer 2005). We do not report the results of the one-step estimator but they were similar to the two-step estimator results.

The results in table 4.6 show that the sensitivity of performance to NOWC is not significant for overinvestment and underinvestment in NOWC for large firms. However, the sensitivity of performance to NOWC for underinvestment remains statistically significant for medium and small firms. While the coefficients indicate that the sensitivity of performance to NOWC is higher for small firms than for medium, the difference is not statistically significant at the conventional levels. However, the only fact that there is no significant impact of underinvestment in NOWC on performance in the case of large firms but only for medium and small firms supports our H1b and H1c hypothesis.

In summary, we find support for our H1b and H1c hypotheses that the performance of small firms is more sensitive to underinvestment in NOWC than the one of medium and large firms. To a lesser extent, this is also true for medium firms when compared to large firms. However, we find no robust evidence that the performance of small firms is more sensitive to

overinvestment in NOWC than the one of medium and large firms so we reject our H2 hypothesis.

5. Discussion and conclusions

5.1. Discussion

In this paper, we study the impact of investment in NOWC on firm performance. While we observe that the performance of large, medium and small firm is influenced by underinvestment in NOWC, our results indicate no significant effect of overinvestment in NOWC after controlling for endogeneity. This contrasts with previous findings by Baños-Caballero (2012), Aktas et al. (2015) and Ben-Nasr (2016) who document that overinvestment in NOWC affects operating performances. As most of these studies consider observation periods that are prior to the Financial Crisis, it is possible that liquidity constraints after the crisis impacted WCM practices. More specifically, it is possible that most firms dramatically reduced investment in NOWC making the impact of overinvestment in NOWC on performance lower. Another possible argument to explain the differences between our results and those of previous studies is suggested by Aktas et al. (2015) who indicate a general decline in the levels of current assets over the last thirty years. The generalization of just-in-time inventory management is likely to explain these changes.

Table 4.6: Dynamic panel data estimations of the impact of NOWC on firm operating performance

	Large firms	Medium firms	Small firms
ROA is the dependent variable	Twostep robust difference GMM	Twostep robust difference GMM	Twostep robust difference GMM
Lagged ROA	-0.152	0.004	-0.063
	0.156	0.107	0.099
Two times lagged ROA	-0.183 ***	-0.109 ***	-0.103 †
	0.053	0.035	0.054
*Ind Adj Nowc * D*	-0.019	-0.040	0.046
	0.030	0.024	0.053
*Ind Adj Nowc * (1-D)*	0.003	0.239 ***	0.259 ***
	0.133	0.076	0.098
Sales growth	0.037 †	0.027	-0.001
	0.022	0.017	0.010
Leverage	-0.053 †	-0.114 ***	-0.085 ***
	0.031	0.023	0.028
Size	-0.016	-0.013	-0.021
	0.032	0.019	0.029
Fixed assets	0.034 *	0.001	-0.001
	0.014	0.010	0.012
Age	0.021	0.008	-0.016
	0.020	0.010	0.014
Sales volatility	0.006	0.007	0.002
	0.015	0.007	0.006
Cash ratio	0.190 †	0.126 *	0.117
	0.100	0.063	0.078
Financial distress	-0.097 *	-0.060	-0.095 ***
	0.046	0.037	0.030
Number of observations	23,193	51,270	25,489
m2 statistics	0.37	1.05	0.53
Hansen test	33.41 (42)	50.37 (47)	44.78(46)

† p<0.10, * p<0.05, **p<0.01, ***p<0.001.
m2 is the Arellano-Bond test for autocorrelation of second order asymptotically distributed as a *N(0,1)* under the null hypothesis of no serial autocorrelation.
Hansen test is a test of overidentifying restrictions, asymptotically distributed as a chi-squared under the null hypothesis of validity of instruments. Degrees of freedom are indicated under brackets.

Our results do not demonstrate a difference in the sensitivity of performance to overinvestment in NOWC between small and large firms. This seems surprising as we expect small firms to have poorer WCM and less NOWC monitoring. Both should affect the sensitivity of performance both to underinvestment and to overinvestment. One possible explanation is that the monitoring argument is not valid when it comes to overinvestment in NOWC because smaller firms observe the costs of overinvestment in NOWC. But it is likely that they do not observe the opportunity costs of underinvestment in NOWC. This interpretation is consistent with Howorth and Westhead (2003) who indicate that small firms adjust their WCM only when cash availability is an issue. They find that small firms turn to WCM only when they need cash and that they cut investment in NOWC in this case. Moreover, Howorth and Westhead (2003) show that larger firms adjust WCM at the same speed than smaller firms when they need cash. This suggests that the sensitivity of performance to overinvestment in NOWC is close for small, medium and large privately held firms because they all rely heavily on internally generated cash.

We find that the sensitivity of performance to underinvestment in NOWC is higher for small firms than for large firms. This means that small firms could improve their profitability by increasing investment in NOWC when they are currently underinvesting in NOWC because they would reduce opportunity costs of lost sales. This raises the question to know why they are currently underinvesting in NOWC. The first, and maybe the most obvious explanation, is that they don't have the skills or the time to do it (Peel and Wilson 1996; Peel et al. 2001). In other word, small firms managers don't realize the opportunity costs of underinvestment in NOWC precisely because they are not directly observable and they don't monitor NOWC often enough. However, it is also possible that managers decide to keep their investment in NOWC as low as possible because they believe this to be an efficient way of reducing the costs related to storage and to the financing of NOWC. In this case, our results

clearly indicate the limitations of this reasoning. As small firms maintain low levels of inventory and accounts receivable, they increase the risk of stock-outs and potential customers choose other suppliers because they offer longer payment delays. This results in large opportunity costs for small firms.

We believe that there is a third possible explanation. Consistent with the bootstrapping literature (Winborg and Landström 2001), small firms managers use customers-related techniques and late payment as financing sources when external financing is not available. It means that they keep a very low level of investment in NOWC, or even a negative NOWC, to finance investments in fixed assets or to face operating expenses. To put it short, WCM is driven by financial resources constraints for small firms. Our results show the limitations of such bootstrapping techniques because they result in lost sales which are more harmful for the performance of small firms than for the one of larger companies. This comes from the fact that small firms lack reputation more than large firms (Stinchcombe 1965; Aldrich and Auster 1986). Lost sales harm both small firms and large firms' profitability but they hinder small firms' growth more as it reduces potential reputation benefits of successful business transactions (Basdeo et al. 2006). This finding reveals that, despite the common wisdom on WCM that the lower the NOWC the better the performance, maintaining a low level of NOWC is not relevant for small firms. Moreover, we believe that small firms' managers should use only carefully bootstrapping techniques that constrain investment in NOWC and that external financing, while costly, offers a better cost-performance trade-off.

5.2. Implications

This paper has a number of implications for managers, policy makers and research. For managers, our findings show that moving away from an optimal level of investment in NOWC reduces firm performance. In the case of small firms, underinvestment in NOWC is especially problematic. Contrary to the widespread view that investment in NOWC should be very low, we suggest that small firms invest more in NOWC to earn benefits related to increased sales and reputation. Additionally, a more frequent monitoring of WCM components is essential to regularly adjust investment in NOWC. From this perspective, relationships with the bank appear crucial. Jonsson and Lindbergh (2011) indicate that banks can bring financial management expertise to small firms' managers in addition to the financing of investments. Thus, small firms managers could benefit from bank's advices on WCM which would in turn help the bank to better assess the small firm's creditworthiness.

Our work has implications for policy makers as well. Hyttinen and Toivanen (2005) and Beck et al. (2008) show that the role of institutional environment is crucial for small firms to access external finance. More specifically, small, young and fast-growing firms benefit from governmental financial support and advice (Storey and Tether 1998; Fischer and Reuber 2003; Hyttinen and Toivanen 2005). However, Lee (2018) shows that there are limited benefits of government financial support to small firms on regional development. Thus, we suggest that policy makers consider more deeply the financing of NOWC of small and young firms when providing support to them. We interpret our results as indirect evidence that if small firms had have a better access to external finance but also a better guidance in financial management, they could have invested more in NOWC. This would have a direct effect on the performance of the firm that is government backed but also an indirect spillover effect on the firm's trade partners because of increased payment delays to customers.

Last, we contribute to the growing stream of research on working capital management as well as to the discussion on the liability of smallness. Our results corroborate previous findings by Baños-Caballero et al. (2012, 2014), Aktas et al. (2015) and others and extend them by considering mostly small and medium privately held firms. Furthermore, we show that size should be considered in future WCM research as it shapes the performance-WCM relationship. We also add to our understanding of factors that affect small firms' performances in general and not only high-tech or high-growth firms. Brush and Chaganti (1999) indicate that for these less "glamorous" firms, capabilities of the firm and resource-combination activities better explain small firms' performance than strategy. WCM is, we argue, closer to resource-management activities than to strategy for small firms. Indeed, the greater sensitivity of performance to underinvestment in NOWC we observe is likely explained by the constraints faced by small firms in accessing external finance. Thus, their WCM is driven by the need for available money which means that as long as a firm cannot have access to external finance, it will maintain a low level of investment in NOWC. This affects the firm's performance. But it is also possible that small firms do not lack financial resources but only financial management and that their WCM is poor because it is only performed "whenever necessary" (Khoury et al. 1999). Both explanations are possible expressions of the liability of smallness.

5.3. Limitations and future research

This study has several limitations. The first, and maybe the most obvious one, is that we only observe the outcome of WCM through our NOWC measure and not WCM practices. Thus, we cannot distinguish between firms that have very different WCM practices resulting

in the same level of NOWC. For example, we cannot distinguish between a financially constrained small firm that relies on bootstrapping finance and a less financially constrained firm that decides to maintain a very low level of investment in NOWC. Both of them would have the same sensitivity of performance to underinvestment in NOWC. We can only call for additional research on WCM that would be based on case-studies and surveys to understand how small firms manage WCM when they are financially constrained and the resulting impact on firm performance. While several papers explored WCM practices among small firms (Peel and Wilson 1996; Peel et al. 2001; Howorth and Westhead 2003), they focused on the US and the UK and they did not really consider WCM as a whole but rather its components. Moreover, they did not bridge WCM practices with the resulting performance.

Another limitation comes from the fact that, while we study the role of size on the performance-NOWC relationships, our sample does not include a significant number of fast-growing and high-tech firms. Therefore, our results cannot be fully generalized to this category of firms and future research could investigate the role and practices of WCM in start-ups and its relationship with bootstrapping techniques.

5.4. Conclusion

What explains firm performance? This question is at the core of research on management, strategy, finance, and entrepreneurship. In this paper, we make a modest contribution to the literature as we provide empirical evidence on the role of size in the sensitivity of firm performance to investment in NOWC. Using a large sample of international firms, we show that small firms' performance is more sensitive to underinvestment in NOWC than the one of larger firms. Our goal was to demonstrate the role of WCM in our

understanding of small firms' management and performance and to shed some light on this sometimes neglected aspect of financial management.

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Appendices

Table 4.7: Number of observations per country and size

Country	Large	Medium	Small	Total
France	16,321	33,917	30,043	80,281
Germany	20,153	17,944	4,880	42,977
Italy	18,712	65,432	40,810	124,954
Total	55,185	136,482	56,545	248,212

Table 4.8: Number of observations per industry

Industry	Number of observations
Agricultural Production - Crops	1,155
Agricultural Production - Livestock and Animal Specialties	615
Agricultural Services	1,092
Forestry	32
Fishing, Hunting and Trapping	79
Metal Mining	92
Coal Mining	26
Oil and Gas Extraction	132
Mining and Quarrying of Nonmetallic Minerals, Except Fuels	627
Building Cnstrctn - General Contractors and Operative Builders	3,707
Heavy Cnstrctn, Except Building Construction - Contractors	2,754
Construction - Special Trade Contractors	6,684
Food and Kindred Products	13,561
Tobacco Products	51
Textile Mill Products	2,642
Apparel, Finished Prdcts from Fabrics and Similar Materials	1,994
Lumber and Wood Products, Except Furniture	1,773
Furniture and Fixtures	1,678
Paper and Allied Products	4,142
Printing, Publishing and Allied Industries	2,871
Chemicals and Allied Products	7,856
Petroleum Refining and Related Industries	492
Rubber and Miscellaneous Plastic Products	6,511
Leather and Leather Products	1,190
Stone, Clay, Glass, and Concrete Products	3,495
Primary Metal Industries	4,609
Fabricated Metal Products, Except Machinery and Transport Equipment	11,889
Industrial and Commercial Machinery and Computer Equipment	13,734
Electronic, Electronical Equipment	5,986
Transportation Equipment	3,898
Measure, Analyze, Control Instruments; Optic Goods; Watchs,Clocks	2,669
Miscellaneous Manufacturing Industries	1,320
Railroad Transportation	168
Local, Suburban Transit and Interurban Highway Passenger Transport	2,436
Motor Freight Transportation	5,414
United States Postal Service	119
Water Transportation	1,237
Transportation by Air	509
Pipelines, Except Natural Gas	85
Transportation Services	3,460
Communications	884
Electric, Gas and Sanitary Services	9,651

Wholesale Trade - Durable Goods	43,351
Wholesale Trade - Nondurable Goods	23,517
Building Materials, Hardware, Garden Supply and Mobile Home Dealers	758
General Merchandise Stores	615
Food Stores	8,627
Automotive Dealers and Gasoline Service Stations	1,674
Apparel and Accessory Stores	2,102
Home Furniture, Furnishings and Equipment Stores	1,804
Eating and Drinking Places	1,199
Hotels, Rooming Houses, Camps, and Other Lodging Places	1,559
Personal Services	831
Business Services	10,089
Automotive Repair, Services and Parking	1,383
Miscellaneous Repair Services	969
Motion Pictures	551
Amusement and Recreation Services	1,394
Health Services	6,842
Legal Services	68
Educational Services	581
Social Services	1,629
Museums, Art Galleries and Botanical and Zoological Gardens	120
Membership Organizations	26
Engineering, Accounting, Research, Management and Related Services	5,209
Total	248,212

Chapitre 5

Working capital management of small and medium-sized IPO firms

This chapter investigates the impact of an initial public offering on small firms' working capital management practices. Our main argument is that going public brings flexibility in working capital management through the increased financing capacity of the firm, a view that is particularly important for small and medium-sized firms that are financially constrained. The study uses a difference-in-differences approach with panel data regressions on a sample of 105 French small and medium-sized IPO firms that went public between 2006 and 2014. Empirical findings show that small and medium-sized IPO firms extend more trade credit to their customers. However, we find no evidence that other aspects of working capital management are influenced by the going public decision. The results highlight the benefits of the going public decision for small firms' customers which benefit from longer payment delays which is consistent with the liquidity spillover hypothesis. This likely indicates that small and medium-sized firms try to gain new markets shares by offering more trade credit after the listing. The study contributes to the scarce literature on factors that drive WCM practices by considering the impact of the going public decision.

Keywords: Small and medium enterprises, Working capital management, Initial public offering, Liquidity

1. Introduction

Working capital management (WCM) is the field of financial management that deals with the management of current assets and liabilities. More specifically, as firms need to invest money in inventory and accounts receivable as a result of the duration of the operating cycle, this investment should be financed (Gitman, 1974). Accounts payable, or trade credit taken by the firm, represents a resource that partially covers this requirement. The fraction of investment in inventory and accounts receivable that is not covered by accounts payable is referred to as net operating working capital (NOWC). If the NOWC is positive, firms need external financial resources to finance it which is mostly achieved through banking debt (Kieschnick et al., 2013; Chen and Kieschnick, 2018). If the NOWC is negative, it means that the operating cycle releases more cash than it requires. Thus, common wisdom suggests that firms should maintain NOWC as low as possible because internally generated money is faster available when the NOWC is low.

A recent revival of WCM research over the last ten years has highlighted the role of WCM on firm performances. Firms that tighten investment in NOWC limit the financial costs related to its financing and avoid excessive inventory storage costs, an approach that is considered as an “aggressive” WCM (Hill et al., 2010). However, this WCM strategy also increases the risk of stock-outs (Corsten and Gruen, 2004) and interruption in the production process (Blinder and Maccini, 1991) that result in lost sales and opportunity costs. The opposite strategy, or “conservative” WCM, consists in maintaining high level of inventories and offering longer payment to customers (trade credit offered) which is known to foster trade relationships (Lee and Stowe, 1993). While this strategy reduces the risk of lost sales, it requires the financing of a large amount of NOWC and is therefore costly. These arguments

suggest the existence of an optimal level of NOWC that maximizes firms' performances. Strong empirical evidence support this hypothesis (Baños-Caballero et al., 2012; Aktas et al., 2015; Afrifa and Padachi, 2016; Tran et al., 2016).

While the importance of WCM is well established, few papers have investigated the factors that influence investment in NOWC. In other words, we know that WCM is important because it impacts firms' performances but we don't what drives how firms WCM practices. Fazzari and Petersen (1993) show that financially constrained firms reduce investment in NOWC to maintain a constant level of investment in fixed assets. Hill et al. (2010) classify factors that affect NOWC into operating factors and financing factors. They show that operating factors like growth in sales and sales volatility are negatively related with NOWC as firms reduce investment in NOWC when they achieve target levels of sales or face high uncertainty in demand. With respect to financing conditions, Hill et al. (2010) report that firms with easier access to external finance and higher cash-flows have more conservative WCM strategies. Baños-Caballero et al. (2010) corroborate Hill et al. (2010) findings on a sample of Spanish SMEs. More recently, Chen and Kieschnick (2018) study the role of bank credit availability on firms WCM and highlight that WCM practices largely depend on the extent to which it relies on bank credit to finance NOWC.

So far, however, no paper has investigated if and how firms' strategic decisions influence their WCM practices. In this paper, we suggest that small IPO firms use their new access to external finance to adopt a more conservative WCM strategy. Indeed, small firms are financially constrained (Berger and Udell, 1998) and they rely heavily on internally generated money (Carpenter and Petersen, 2002). Thus, their investment in NOWC is expected to be low as well as their investment in the components of NOWC, namely inventories and accounts receivable. Going public partly releases the financial constraints small firms face and facilitates the use of a more relaxed WCM that, in turn, brings benefits for the company's

performances. Therefore, the goal of this study is to explore if WCM practices change after a small firm goes public.

This chapter uses a sample of French small and medium-sized IPO firms to explore this question. We collect data over 105 French small IPO firms over the 2006-2014 period using Bureau Van Dijk's Amadeus databse. The empirical analysis uses a Difference-in-Differences (DiD) methodology because this framework allows us to control for several causality issues. We also control for industry-specific considerations with the use of industry-adjusted WCM measures. The results show that only the amount of trade credit offered (accounts receivable) significantly increases after the IPO. We infer that small IPO firms try to gain new markets shares by granting longer payment delays and offering more trade credit to their customers. Neither inventory management nor investment in NOWC is impacted by the going public decision. Unlike previous work by Kutsuna et al. (2016), it seems that small IPO firms do not take less trade credit after the listing. The rest of the chapter is structured as follows. In the second section, we review the literature on small firms' financial constraints to develop our hypothesis. We present our data and methodology in the third section. The fourth section presents our results and robustness checks. The results are discussed in the fifth section that also provides some conclusions and implications.

2. IPO and working capital management

Small firms are financially constrained because of the high degree of informational opacity they have (Berger and Udell, 1998). As a result, they have difficulties to access external capital market financing and both their ability to raise money and the cost of this money is higher than for larger firms (Stiglitz and Weiss, 1983; Cassar 2004). The older and larger

firms grow, the easier it becomes to diversify their financing resources as more is known about the firm's strategy and performances and more collateral is available. This conceptual framework of small firms finance is referred to as the financial growth cycle (Berger and Udell, 1998). In the early stages, small firms have therefore to rely on alternative financing techniques that are referred to as financial bootstrapping (Winborg and Landström, 2001). An important dimension of bootstrap finance is the use of trade credit as a financial resource. Small firms take more trade credit (ask for longer payment delays) and offer less trade credit (ask for early payments) to release internally generated cash faster. This allows them to finance investment in fixed assets or to cover operating expenses with internal finance (Carpenter and Petersen, 2002).

One consequence of the use of financial bootstrapping is that investment in operating working capital is very low for small firms. Operating working capital is the sum of inventory and accounts receivable minus accounts payable. Thus, if a firm asks its customers to pay fast and pays its own suppliers with delay, operating working capital is low, assuming constant inventories. This WCM approach is described as an "aggressive" WCM as it reduces the financial costs that are related to the financing of WC investment but it also increases the risk of losing potential customers because the payment delays are to short (Hill et al., 2010). In other words, small firms that adopt an aggressive WCM because they need to release internally generated cash faster may experience some opportunity costs from lost sales. This can also result from a poor inventory management as stock-outs negatively affect small firms' performances (Corsten and Gruen, 2004). Overall, review of inventory management and trade credit practices are very low for small firms and WCM appears to be rather neglected by small firms' managers who don't have enough time, cash and skills to devote to it (Peel et al., 2001; Howorth and Westhead, 2003). This obviously impacts small firms' growth and performances as we discussed in the introduction and suggests that a more conservative

WCM strategy could improve small firms' performances (Baños-Caballero et al., 2012; Tauringana and Afrifa, 2013; Afrifa and Padachi, 2016; Tran et al., 2016).

The last step of the financial growth cycle is to conduct an initial public offering. Through the listing, small firms have to disclose much information about their business and strategy and therefore significantly reduce informational opacity. Because small listed firms have access to larger financial resources and are less financially constrained after their IPO, we expect them to develop new WCM strategies. If we assume that small firms adopt an aggressive WCM to release cash faster, the need for this practice decrease when the firm is listed as external finance is available. Thus, newly listed firms can use their financial resource to adopt a more conservative WCM strategy and increase their investment in operating working capital to increase their performances[55]. For example, increasing investment in inventory reduces the risk of stock outs, facilitates and smooths production process, and brings economies of scale if larger amounts of raw materials are purchased (Blinder and Maccini, 1991). Thus, we hypothesize that:

H1: Small firms increase their investment in inventories after their IPO.

Another benefit of a more conservative WCM strategy comes from the payment delays a small firm offers to its customers (the amount of trade credit offered). Granting longer payment delays to customers facilitates the assessment of product quality by customers and thus reduces information asymmetry about product quality (Lee and Stowe, 1993; Long et al., 1993). Moreover, if the products offered by different suppliers are equivalent, the customer's final choice is likely driven by the payment delays the suppliers offer (Shipley and Davis, 1991). Kutsuna et al. (2016) indicate that IPO firms' supply-chain partners experience a liquidity shock and increased sales when the IPO occurs. They show that IPO firms

[55] We assume that small firms have inefficient WCM strategies and that their investment in operating working capital is below the optimum level because of the financial constraints they face (Baños-Caballero (2012).

significantly change their trade policy as they offer more trade credit and take less trade credit[56]. Because of the previous empirical findings indicating the benefits of additional investment in accounts receivable (trade credit offered), we hypothesize that:

H2: Small firms increase their investment in accounts receivable after their IPO.

There are contrasted findings in the literature as to whether that trade credit is a substitute or a complement to other financing sources (see Psillaki and Eleftheriou (2015) and Gama and Van Auken (2015) for a discussion). Thus, whether or not the IPO influences the use of trade credit is an empirical question and we do not predict the impact of the going public decision on the amount of trade credit a small IPO firms takes (accounts payable).

Overall, the previous hypotheses suggest that small firms increase their investment in operating working capital after their IPO because of the benefits they expect from this relaxed WCM. Following suggestions by Hill et al. (2010) and Baños-Caballero et al. (2010) that an increased access to capital markets is positively related with investment in operating working capital[57], we hypothesize that:

H3: Small firms increase their investment in operating working capital after their IPO.

3. Methodology

3.1. Sample description

[56] Kutsuna et al. (2016) consider a sample of Japanese IPO firms but they do not focus on small firms.
[57] These papers use size and age as proxies of a firm's access to external capital markets but they do not study the impact of an IPO on WCM.

Our goal is to explore the impact of an IPO on a small firm's working capital management. We use a sample of French small IPO firms to investigate this issue. The choice of French firms is motivated by the fact that France is a bank-oriented economy. As working capital requirements are mostly financed by banking debt (Kieschnick et al., 2013; Chen and Kieschnick, 2018), the growth of French small firms is likely constrained by the fact that bank financing is required for both fixed asset investment and working capital investment. Therefore, going public might be motivated, at least to some extent, by the need of new financial resources to cover working capital requirements and the will to adopt a more conservative WCM strategy.

We identify all the French small and medium-sized firms that went public over the 2006-2014 period. To do this, we use Euronext's website[58] and we consider a firm as small if it satisfies the criteria of the European Commission. Thus, a firm is considered as small if its number of employees is lower than 250 and if either its total assets is lower than 43M€ or its sales revenue is lower than 50M€. At this stage, 183 firms were eligible. We exclude 66 firms that transferred from another segment of the financial market as they don't raise new money through the transfer but are still reported as IPO firms. We also exclude financial and real estate firms which is a common practice in the IPO literature (reference) and firms for which information was unavailable. Our final sample includes 105 small IPO firms for which we collect data on Bureau Van Dijk's Amadeus database for the two years prior to the IPO, the IPO year, and the three years that follow it. This time horizon is consistent with prior literature on IPOs (Kutsuna et al., 2016) and ensures that we observe the same company on a long enough period. Indeed, it is well established that some IPO firms managers make use of earnings management techniques that could affect their working capital ratios (Teoh et al., 2002).

[58] https://www.euronext.com/fr/listings/ipo-showcase/all-ipos

To estimate the impact of an IPO on a firm's WCM, we need a control group of non-IPO firms. Therefore, we use the Amadeus database once again to collect accounting data for all French firms that are available, excluding IPO firms. The control sample includes 23,426 firms and covers the 2004-2017 period.

3.2. Variables definition

3.2.1. Dependent variables

We consider several components of WCM that have been commonly used in recent WCM research (Chen and Kieschnick, 2018). More specifically, we use the following indicators to examine the impact an IPO has on WCM practices. INV is the ratio of total inventories[59] over sales and measures the extent to which a firm stores important reserves of inventories. AR is the ratio of accounts receivable over sales and it indicates the extent to which a company offers credit to its customers. AP is the ratio of accounts payable over sales and it measures the amount of trade credit the firm is taking from its suppliers.

Previous works by Schiff and Lieber (1974) or Kim and Chung (1990) indicate that inventory management and trade credit practices are fundamentally linked. This comes from the fact that firms partly finance investment in inventories and accounts receivable through accounts payable. Thus, an integrative measure of WCM is required and the most commonly used one is net operating working capital (NOWC) calculated as:

$$NOWC = \frac{inventories + accounts\ receivable - accounts\ payable}{Sales}$$

The regressions use these four variables as dependent variables.

[59] This includes raw materials, finished goods and work-in-progress.

3.2.2. Independent variables

To estimate the impact of an IPO on a firm's WCM, we need to ensure that we capture a causal effect in our regressions. Indeed, we cannot directly observe what the WCM of a small IPO firm would have been if the firm did not go public. Thus, we rely on a Difference-in-Differences (DiD) framework as this approach allows us to compare pre-treatment (pre-IPO observations) differences between the treated group (IPO firms) and the control group (non-IPO firms) with post-treatment differences (post-IPO observations). First, we create a dummy Treated that is equal to one if a firm is an IPO firm and 0 otherwise. Then, we create a dummy Post that is equal to one if a firm-year observation takes place after the IPO and 0 otherwise. Last, we calculate the interaction term Treated*Post between these two variables (see Lechner (2010) for a detailed discussion on the theoretical and practical use of DiD). The interaction term indicates the impact of an IPO on a dependent variable.

3.2.3. Control variables

Many factors are known to impact WCM and we ensure to include them in our regressions to avoid an omitted variable bias. Studies by Hill et al. (2010) and Baños-Caballero et al. (2010) highlight that operating and financing conditions affect NOWC as discussed in the introduction. Thus, we follow their findings and include the following control variables.

With respect to operating conditions, we include sales growth, calculated as the percentage change in sales over two consecutive years. We also include operating performance, measured as return on assets (ROA), as a control variable. ROA is operating income divided by total assets. Age is a proxy of a firm's ability to negotiate with its trade

partners as longer trade relationships are expected to facilitate WCM, so we include a firm's age, calculated as the number of years since firm creation, in our control variables. Just like age, a firm's size represents its market power so we include firm size, calculated as the natural logarithm of total assets.

While we consider the role of IPO on WCM, many firms finance their working capital requirements through banking debt (Chen and Kieschnick, 2018) so we include leverage, calculated as total debt over total assets, as a control variable. Fazzari and Petersen (1993) indicate that financially constrained firms favor investment in fixed assets over investment in working capital. Thus, we include investment in fixed assets measured as the percentage change in fixed assets over two consecutive years as a control variable.

Following Hill et al. (2010), we winsorize our data at the 1st and 99th percentiles to mitigate the influence of extreme values and we use lagged values of all our control variables. This alleviates concerns about reverse causality between our dependent and independent variables.

4. Results

4.1. Univariate analysis

We present the descriptive statistics for the treated group (IPO firms) and the control group (non-IPO) firms in table 5.1. The average IPO firm is 12.4 years old and holds 17.2M€ of total assets while control firms are on average older but smaller. Sales growth is, by far, higher for IPO firms than for non-IPO firms. Consistent with the view that an IPO brings

additional financial resources through equity, IPO firms have lower leverage than non-IPO firms and they also invest more in fixed assets. Strikingly, the average IPO firm has a negative ROA. This comes from the fact that many French IPO firms operate in the biotechnology industry and are not profitable at the time at which they go public because of the high level of research and development expenses they have.

The last column of the table indicates the results of a Mann-Whitney test of median equality. Results show that there is a statistically significant difference in all our variables between the treated and control groups, except for the ratio of accounts receivable over sales. On average, inventories represent 15% of a firm's total sales and accounts receivables 29.5% while accounts payable represent 25.9% of total sales. We observe that IPO firms have lower inventory over sales ratio, higher accounts payable on sales but higher NOWC. This indicates that there are indeed differences in the WCM of small IPO firms during the IPO period.

Table 5.1: Summary statistics

	IPO firms				Non IPO firms				Mann-Whitney test of median equality	
	N	Mean	Standard deviation	median	N	Mean	Standard deviation	median	t-stat	
INV	607	0.150	0.191	0.071	198,443	0.182	0.189	0.127	6.209	***
AR	607	0.295	0.203	0.273	198,443	0.296	0.206	0.273	0.786	
AP	607	0.259	0.211	0.191	198,443	0.269	0.171	0.239	4.557	***
NOWC	607	0.211	0.280	0.199	198,443	0.142	0.192	0.105	-8.503	***
Age	607	12.412	9.476	10	198,443	27.578	15.132	25	27.936	***
Size	607	9.753	0.959	9.744	198,443	9.485	1.251	9.261	-8.946	***
Leverage	607	0.521	0.226	0.497	198,443	0.670	0.227	0.682	15.919	***
Sales growth	509	0.289	0.505	0.197	198,443	0.078	0.295	0.031	-13.919	***
ROA	607	-0.030	0.179	0.011	198,443	0.061	0.101	0.052	11.701	***
Fixed asset investment	509	0.502	1.028	0.137	198,443	0.136	0.631	-0.006	-12.460	***

***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively.

Table 5.2: Correlation matrix

	Variables	1	2	3	4	5	6	7	8	9
1	INV									
2	AR	**-0.35**								
3	AP	**0.19**	**0.30**							
4	NOWC	**0.29**	**0.15**	**-0.39**						
5	Age	**0.09**	**-0.06**	**-0.10**	**0.10**					
6	Size	**-0.11**	**-0.15**	**-0.25**	**0.18**	**0.20**				
7	Leverage	**0.03**	**0.20**	**0.45**	**-0.12**	**-0.13**	**-0.07**			
8	Sales growth	**-0.04**	**0.05**	**0.03**	-0.02	**-0.11**	-0.02	**0.07**		
9	ROA	**-0.06**	0.00	**-0.13**	**-0.03**	**-0.03**	**-0.09**	**-0.37**	**0.09**	
10	Fixed asset investment	**-0.04**	0.01	0.00	0.00	**-0.07**	-0.02	**0.04**	**0.19**	0.01
	N=198,950									

Coefficients > to 0.02 are significant at the 0.05 level.

Table 5.2 presents a correlation matrix between our main variables. As some correlations exist between our variable, we calculate the variance inflation factors (VIF) to test for the presence of multicollinearity. The highest VIF is 4.18, well below the threshold of 10 above which multicollinearity is an issue. An industry-breakdown of the number of firm-year observations is reported in table 5.3. Most of the sample's IPO firms operate in the service and manufacturing industries.

Table 5.3: Firm-year observations industry breakdown

Industry	Number of firm-year observations		
	IPO firms	Non-IPO firms	Total
Agriculture, forestry and fishing	6	1,337	1,343
Mining	12	1,006	1,018
Construction	18	17,270	17,288
Manufacturing	159	46,576	46,735
Transportation and communications	30	18,417	18,447
Wholesale trade	0	26,105	26,105
Retail trade	12	18,166	18,178
Services	370	31,685	32,055
Total	607	160,562	161,169

4.2. Multivariate analysis

We use a Breusch-Pagan (1980) Lagrange multiplier test to determine whether or not the use of pooled ordinary least squares (OLS) is adequate. Results show that the variations in WCM ratios are partly the results of unobservable factors, so we cannot use pooled OLS for our regression model. It is common to use a Hausman (1978) test to identify if the correct specification should be based on firm fixed or random-effects in this case. However, the use of the Hausman test is largely put into question by recent methodological research (see, e.g. Clark and Linzer (2014) for a discussion and empirical guidance). Therefore, instead of relying on a formal test, we run our specifications both with firm-fixed and random-effects.

We observe no difference between the results of both approaches. Therefore, we report the results of the random effects generalized least squares regressions, as this approach increases efficiency and reduces variance when there are few observations per unit (Clark and Linzer, 2014). We estimate the following regressions that include a set of industry-dummy variables and another one of year-dummy variables:

$$DepVar_{i,t} = \beta_0 + \beta_1 Treated_i + \beta_2 Post_{i,t} + \beta_3 Treated_i * Post_{i,t} + \beta_4 Age_{i,t-1} + \beta_5 * Size_{i,t-1} + \beta_6 Leverage_{i,t-1} + \beta_7 Sales\ growth_{i,t-1} + \beta_8 ROA_{i,t-1} + \beta_9 Fixed\ asset\ investment + Controls + \varepsilon_{i,t}$$

Results for the regressions are reported in table 5.4. The interaction term Post*Treated is positive for each of our dependent variable. Only the interaction term for the accounts receivable on sales ratio is statistically significant (at the 1% level). This provides support for our H2 hypothesis, as it means that small IPO firms increase their payment delays towards customers after they go public. We find no support for our H1 and H3 hypothesis as even if the signs of the interaction terms are positive as expected, the effects are not statistically significant at the common thresholds. We observe no effect of the IPO on the amount of trade credit taken (accounts payable).

Table 5.4: Difference-in-differences estimations of the impact of IPO on working capital management

Dependent variable	INV	AR	AP	NOWC
Treated	0.085 ***	-0.071 ***	0.071 ***	0.015
	0.021	0.022	0.024	0.031
Post	-0.019	-0.050	-0.006	-0.045
	0.027	0.032	0.031	0.030
Treated*Post	0.010	0.087 ***	0.029	0.040
	0.030	0.031	0.033	0.035
Lagged Age	0.001 ***	0.000 ***	-0.001 ***	0.001 ***
	0.000	0.000	0.000	0.000
Lagged Size	-0.004 ***	-0.025 ***	-0.025 ***	0.013 ***
	0.001	0.001	0.001	0.001
Lagged Leverage	0.030 ***	0.082 ***	0.154 ***	-0.043 ***
	0.002	0.003	0.003	0.004
Lagged Sales growth	0.004 ***	0.009 ***	0.011 ***	-0.010 ***
	0.001	0.001	0.001	0.001
Lagged ROA	0.001 ***	0.017 ***	-0.017 ***	-0.018
	0.003	0.005	0.005	0.005
Lagged Fixed asset investment	-0.004	-0.005 ***	-0.005 ***	0.000 ***
	0.000	0.000	0.000	0.000
Year dummies	YES	YES	YES	YES
Industry dummies	YES	YES	YES	YES
R^2	0.380	0.348	0.322	0.179
N	174,011	174,011	174,011	174,011

Errors are robust and clustered at the company level. We report them under the coefficients. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively. All regressions include industry and times dummies for which we do not report the results.

4.3. Robustness checks

WCM practices and resulting ratios are often considered as being industry-dependent, even the impact of industry affiliation might have been overestimated (Hill et al., 2010). In the previous section, we control for industry-specific considerations with a set of industry-dummies. However, Hill et al. (2010) offer a different approach to account for industry

characteristics in WCM studies and suggest the use of industry-adjusted ratios that are equal to a firm's WCM ratio less the annual industry mean WCM ratio. Aktas et al. (2015) use the same approach but consider the annual industry median WCM ratio, a methodology we follow. Thus, we calculate for each industry-year the median inventories on sales, accounts receivable on sales, accounts payable on sales, and NOWC ratios. We use the standard industrial classification (SIC) two-digit codes to identify a firm's industry. Next, we calculate for each firm-year observation the industry-adjusted ratios as:

$$Industry - adjusted\ INV = INV - annual\ industry\ median\ INV$$

$$Industry - adjusted\ AR = AR - annual\ industry\ median\ AR$$

$$Industry - adjusted\ AP = AP - annual\ industry\ median\ AP$$

$$Industry - adjusted\ NOWC = NOWC - annual\ industry\ median\ NOWC$$

Then, we estimate the same regression models as in the previous sections with our industry-adjusted WCM ratios as dependent variables. We report the results in table 5.5 and we observe once again that the interaction term Treated*Post is positive and statistically significant for the industry-adjusted AR ratio, confirming our H2 hypothesis. However, we observe no statistically significant impact of the IPO on the other WCM ratios.

Due to the high number of IPO firms that operate in the service industry, our previous results may be driven by the role WCM has in a particular industry. For example, service firms have low levels of inventory and for these firms inventory management is less important and receives less attention. Thus, we split our sample into two buckets, service-industry firms and firms in other industries and we re-run the same regressions. The results, unreported for brevity, are identical in terms of signs and significance levels to those of the entire sample.

Table 5.5: Difference-in-differences estimation of the impact of IPO on industry-adjusted working capital management ratios

Dependent variable	Industry-adjusted INV	Industry-adjusted AR	Industry-adjusted AP	Industry-adjusted NOWC
Treated	0.079 ***	-0.074 ***	0.060 ***	0.026
	0.019	0.022	0.022	0.030
Post	-0.012	-0.046	-0.003	-0.045
	0.022	0.034	0.028	0.031
Treated*Post	0.006	0.087 **	0.027	0.036
	0.025	0.033	0.030	0.036
Lagged Age	0.001 ***	0.000 ***	-0.001 ***	0.001 ***
	0.000	0.000	0.000	0.000
Lagged Size	-0.004 ***	-0.025 ***	-0.025 ***	0.013 ***
	0.001	0.001	0.001	0.001
Lagged Leverage	0.029 ***	0.081 ***	0.151 ***	-0.043 ***
	0.002	0.003	0.003	0.004
Lagged Sales growth	0.004 ***	0.009 ***	0.010 ***	-0.010 ***
	0.001	0.001	0.001	0.001
Lagged ROA	0.001 ***	0.021 ***	-0.015 ***	-0.018
	0.003	0.005	0.005	0.005
Lagged Fixed asset investment	-0.004	-0.005 ***	-0.005 ***	0.000 ***
	0.000	0.000	0.000	0.000
Year dummies	YES	YES	YES	YES
Industry dummies	YES	YES	YES	YES
R^2	0.045	0.087	0.213	0.050
N	174,011	174,011	174,011	174,011

Errors are robust and clustered at the company level. We report them under the coefficients. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively. All regressions include industry and times dummies for which we do not report the results.

5. Conclusion and discussion

The goal of this paper was to explore the impact of the going public decision on small firm's WCM practices. Our main hypothesis was that, thanks to the initial amount of money a firm raises through the IPO, WCM practices are more conservative after the listing. This means that we expected newly listed firms to increase their investment in inventories and to

offer more trade credit to their customers. As a result, the NOWC should increase after the listing. We use a sample of French small IPO firms and a large control group to test this hypothesis. Our results show that newly listed small firms significantly increase the amount of trade credit they offer to their customers as their accounts receivable on sales ratio increases after the listing. This finding is consistent with the view that small firms try to gain new market shares by offering longer payment delays to their customers (Long et al., 1993). While small firms are financially constrained (Berger and Udell, 1998; Cassar, 2004), going public releases this constraint and allows small firms to adopt a more conservative WCM strategy (Hill et al., 2010).

However, our results do not support the view that other aspects of WCM are impacted by the going public decision. Increasing inventories is also a way to increase sales as it reduces the risk of stock-outs (Corsten and Gruen, 2004) and smooths production (Blinder and Maccini, 1991). However, we observe no significant changes in the inventory on sales ratio after the listing. A possible explanation to this absence of result is likely found in the fact that a large fraction of our IPO firms operate in the service industry. For these firms, inventories are usually very low when compared to manufacturing firms and inventory management appears therefore less important. As small firms focus their WCM practices on actions for which they expect important gains (Howorth and Westhead, 2003), inventory management is considered as less strategic for these firms' managers. However, our robustness checks do not indicate that firms operating outside the service industry have different inventory management after the IPO.

Unlike previous findings by Kutsuna et al. (2016), we do not observe that the amount of trade credit a small IPO firm takes is impacted by the going public decision. Suppliers of an IPO firms do not experience any liquidity benefit after their trade partner's IPO. In other words, we find no evidence that small IPO firms pay faster their suppliers. As we consider

only small IPO firms over the three-year period that follows their IPO, it is possible that the use of trade credit as a financing resource is still required to contribute to the financing of the NOWC. This is consistent with the fact that we do not observe an increase in the NOWC of IPO firms. Indeed, if small firms simultaneously increase accounts receivable and decrease accounts payable, NOWC should mechanically increase. It seems that small IPO firms need more time to adjust all the aspects of WCM, something that can be achieved because they have access to new financial resources. An alternative explanation is that equity finance is not a substitute for trade credit but rather a complement and that small IPO firms still rely on trade credit as financial resource.

Previous research has shown that WCM practices largely depend on the access to bank financing (Chen and Kieschnick, 2018). We show that small firms use IPO resources (equity financing) to adopt a more conservative trade credit policy, at least for the amount of trade credit that is offered to customers. Thus, we highlight that the financing of WCM is not only made through banking debt but also through equity and therefore contribute to the literature on WCM. This result has implications for managers and policy makers. Indeed, there appears to be a liquidity transmission phenomenon from the IPO firms towards their customers which is likely to facilitate these customers' growth and development (Kutsuna et al., 2016). Thus, going public is a way to foster trade relationship and increase sales for the newly listed firm which, in turn, enhances this firm's performances (Baños-Caballero et al., 2012; Aktas et al., 2015). Entrepreneurs should therefore consider the possible benefits of an IPO on their WCM strategy in the sense that they gain agility to offer more trade credit to their customers after the listing.

The fact that IPO firms' customers benefit from their partner's listing underlines the importance of an easy access to external capital markets in regional and national economic development. Indeed, it indicates the existence of a liquidity spillover mechanism that IPOs

bring to the IPO firm's customers (Kutsuna et al., 2016). In other words, the IPO of a single firm benefits to multiple firms and contributes to overall economic growth.

Of course, this study has limitations. First, as our sample if made of French firms, the results may not be generalizable to other countries. Additional cross-country data would be required to improve the robustness of the findings and a larger sample would bring additional credibility to the results. Second, while our findings suggest that there are post-IPO benefits for the IPO firms' customers, we only measure these benefits indirectly as we observe the IPO firm's accounts receivable ratio. It would be interesting to explore which aspects of the customers' performances are influenced by the additional trade credit offered by the IPO firms. For example, the customers' liquidity and cash holdings are likely to increase after the supplier's IPO. Last, it is possible that we only observe an impact of the IPO on the accounts receivable ratio because we consider a three-year time-horizon that is too short to capture further changes in small firms' WCM. Longitudinal observations of small firms' post-IPO WCM practices, including the role of seasoned equity offerings, would provide useful insights on how equity-financing shapes WCM practices.

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Chapitre 6

Working capital management constraints and the role of business group affiliation[60]

In this chapter, we explore the role of business group affiliation on the working capital management of affiliated firms. Using a large sample of privately held firms from continental Europe, we show that business group affiliation provides flexibility in the management of working capital. Factors that constrain investment in working capital, such as informational opacity or growth, have a lower impact for business group-affiliated firms than for standalone firms. These effects are higher for small firms affiliated with large business groups.

Keywords: Business groups, Working capital management, Financial constraints, Firm size

[60] This chapter has been written with Anaïs Hamelin.

1. Introduction

Business groups (BGs), which are several independent firms tied together by a network of ownership links, represent a very common form of business organization all over the world (Colpan et al., 2010; Khanna and Palepu, 2010). The key feature of BGs comes from their internal market through which resources, especially financial ones, are allocated to the affiliates (Khanna and Palepu, 1997). Firms affiliated with a BG thus have easier access to financial resources through intragroup loans, cross-subsidies, and trade credit that increases their ability to invest and enhances their liquidity (Deloof and Jegers, 1996, 1999; Gopalan et al., 2007; Buchuk et al., 2014). This is especially useful in countries where public equity markets are not very developed (Belenzon et al., 2012) and in more developed markets for informationally opaque firms that have only limited access to public equity markets (Bamiatzi et al., 2013; Gorodnichenko et al., 2008; Hamelin, 2014). Overall, the literature provides evidence of the channel through which BG affiliation influences the affiliated firm's financial capacity. However, the question of how BG affiliation affects an affiliate's financial management remains almost unexplored, particularly if we consider its short term financial management (Deloof and Jegers, 1996, 1999; Locorotondo et al., 2014).

Firm financing capacity and short term financial management are interdependent. Financing conditions and growth influence a firm's ability to invest in working capital[61]. On one hand, informationally opaque firms, which have limited access to banking debt, are constrained in regard to investing in working capital (Kieschnick et al., 2013; Chen and Kieschnick, 2018). On the other hand, financially constrained firms prioritize investment in fixed assets over investment in working capital (Fazzari and Petersen, 1993). Thus,

[61] Working capital is the difference between current assets (inventories and accounts receivable) and current liabilities (accounts payable). To avoid any misunderstanding, we exclude cash and equivalents from current assets in our definition of working capital.

investments in working capital are reduced when financial resources become scarce to maintain a constant level of investment in fixed assets. Lastly, any increase in sales creates a mechanical increase in working capital that should be financed. Thus, fast growing firms often struggle with working capital management because they can hardly cover the increased financing requirements resulting from the increased working capital (Hill et al., 2010).

In this study, we explore whether BG affiliation provides flexibility to the affiliates' working capital management. In other words, the benefits of BG affiliation and access to financial resources are not limited to long term decisions and extend to short term financial management. Specifically, access to the BG internal market provides the affiliated firm with access to a unique pool of resources that increases its access to financial resources. In turn, BG-affiliated firms gain flexibility in their short term financial management. Indeed, firms with easier access to financial resources more easily increase their working capital whenever necessary, for example, to attract new customers by offering longer payment delays (Long et al., 1993). Thus, through the channel of increased access to financial resources, BG affiliation allows more flexibility in the firm's short term financial management. Overall, we conjecture that the sensitivity of working capital to financial determinants, such as informational opacity and growth, will be lower for BG-affiliated firms than for standalone firms.

We explore this question in the context of developed economies, specifically continental Europe, where BG are ubiquitous in both large and small companies because of the relatively low developments of public equity markets (Colpan and Hikino, 2016; Hamelin, 2011; Belenzon et al., 2012). BGs in continental Europe are typically pyramidal structures of several operating firms held together by one holding company (Masulis et al., 2011; Belenzon et al., 2013). This holding company concentrates control, decides the strategy and allocates resources to the BG members. Thus, one of the key roles of the holding company is the monitoring of daughter companies' performances and investments. Our sample is made of

46,210 firms, both affiliated to a BG and standalones, from France, Germany and Italy over the time period 2010-2017. Bureau Van Dijk's Amadeus database is our source of financial and accounting information. The results show that firms affiliated with a BG are less affected than standalone firms by the factors that constrain working capital management. More specifically, we observe that investment in fixed assets does not reduce the ability of BG-affiliated firms to invest in current assets regardless of the size of the BG to which a firm is affiliated. Additionally, medium firms affiliated with medium and large BGs are less constrained by their informational opacity to raise money to finance investment in working capital requirements. Lastly, we document that firms affiliated with cash-rich and profitable BGs have more flexibility than others in working capital management. In a nutshell, we find that the factors affecting short term financial management differ across business group affiliates and standalone firms. Business group firms have working capital management that is less sensitive to financial determinants than those of standalone firms. Our results are consistent with the fact that BG affiliation provides financial flexibility in working capital management.

This study makes a number of contributions to the literature on financial management and BG affiliation. First, previous studies on the relationship between BG affiliation and working capital have shown that working capital is a channel used by BGs to distribute liquidity across affiliated firms (Deloof and Jegers, 1996, Yamada and Honjo, 2019, Deloof and Jegers, 1999). However, they do not explore if and how common financial management at the group level influences affiliated firms' short term financial management, which is precisely the GAP this study addresses. Indeed, our results show that affiliated firms have more financial flexibility in the management of working capital. Thus, our results suggest that BG affiliation might be beneficial in some specific contexts, particularly for informationally opaque and

growing firms. Lastly, we show that these effects are different depending on the size of the BG, highlighting the need to consider BG size in the BG literature.

Second, our study contributes to the research on BG. As this stream of research had focused on the performance effect of BG affiliation, emerging literature explores how BG affiliation influences a firm's financial decisions. This literature, which exclusively focuses on the capital structure consequences of BG affiliation, is based on the argument that BG affiliates may face relatively low adjustment costs (to leverage) because of their access to both internal and external capital markets. However, the few papers that address how BG affiliation influences affiliate level financial management focuses on the long term (leverage) financial structure choice of the firm (Gopalan et al., 2007; Masulis et al., 2011; Dewaelheyns and Van Hulle, 2012; Saona et al., 2018).

Third, our study enriches emerging, and empirically driven, research on working capital management determinants, which investigate operating and financing factors that influence working capital management practices and strategies (Hill et al., 2010; Baños-Caballero et al., 2010; Chen and Kieschnick, 2018; Jalal and Khaksari, 2019). Indeed, this literature shows that economic conditions and business environment impact firms' working capital management. However, it does not explore how firms' organizational features help them alleviate external constraints on working capital management, a gap we propose to fill. Moreover, our dataset allows us to distinguish between small, medium, and large firms, and our results show that the factors affecting working capital management are different depending on the size of the firm considered. Finally, the results highlight the relatedness among ownership structure, financial management and growth, particularly for small firms.

The rest of the study is organized as follows. First, we review the literature on factors that affect working capital management and on BG. Then, we bridge these two literature fields to

develop our hypotheses. Next, we describe our sample and present descriptive statistics and our econometric approach. Last, we present our results as well as our conclusions.

2. Literature review and hypothesis development

First, we review the literature on the influence of BG affiliation on a firm's financial management. Then, we review the literature on the determinant of working capital management. Finally, we develop our hypotheses at the intersection of these two literatures.

2.1. Why BG affiliation might influence a firm's financial management

Why should business groups matter? What do they do? How do they affect the performance of the firms within them? Are longstanding questions that have been extensively examined in the management and economic literature. The distinguishing characteristic of business groups is that they create an internal market to which only affiliated firms have access. Prior studies have focused on both the bright and dark sides of this unique feature[62]. In what follows, we develop the literature focusing on the impact of business group affiliation on a firm's financial management.

The BG internal market puts affiliated firms in a privileged position to access group-wide resources, particularly financial resources. First, BG affiliation (BGA) might relax financial constraints, particularly for informationally opaque firms. Indeed, BG controlling firms have access to private information on group firms, which increases their ability to assess the quality

[62] For detailed reviews, see Khanna and Yafeh (2007) and Carney et al. (2011)

of projects, reducing adverse selection issues (Alchian, 1969 and Williamson, 1975). Moreover, controlling firms differ from banks because they hold residual control rights on group-firm assets. This reduces monitoring costs and gives to controlling firms the authority to redeploy assets, reducing moral hazard issues (Gertner et al. 1994). Overall, BG internal capital market reduces the costs of information asymmetries. Thus, BGA is a setting that facilitates firms' access to external financial resources, particularly for those that are informationally opaque. Second, BGA reduces firm risk, which in turns facilitates its access to external finance. On the one hand, BG firms can combine their cash flows to reduce the volatility of affiliated firm cash flow by operating mutual insurance (Khanna and Yafeh, 2005). Mutual insurance reduces idiosyncratic shocks on financial indicators, which increases BG firms' external financing capacity. Byun et al. (2013) explored how BGA influences the cost of debt for firms in the specific setting of Korea and find that firms affiliated with major Korean business groups enjoy a substantially lower cost of public debt than do standalone firms, consistent with the mutual insurance argument. On the other hand, BGs also use cross-subsidies to redistribute cash flow to weak affiliates. This provides affiliated firms with implicit insurance against bankruptcy (Riyanto and Toolsema, 2008), which increases their debt capacity (Kim, 2004). Similarly, intragroup debt guarantee also increases affiliated firms' debt capacity (Chang and Hong, 2000). Furthermore, group affiliates share a reputation simply by being associated with a particular BG, which allows them, for example, to obtain bank lending more easily (Chang and Hong, 2000) and improve bank perceptions (Schiantarelli and Sembenelli, 2000). Overall, mutual insurance and cross-subsidies among BG firms facilitates affiliated firms' access to external financial resources.

In a nutshell, the access to the BG internal market provides the affiliated firm with access to a unique pool of resources that increases its external financing capacity. Consistent with this idea, several authors observe that the internal capital market reduces the financing

constraints of group-affiliated firms (He et al., 2013; Manos et al., 2007; Shin and Park, 1999; Saona et al., 2018; Lensink et al., 2003; Shyu, 2013), particularly for the smallest firms in the European context (Dewalheyns and Van Hulle, 2010; Gorodnichenko et al., 2009). Moreover, there is also evidence that affiliated firms benefit from lower bank loan spread thanks to mutual insurance, which lowers their credit risk (Chandera et al., 2018) or cross subsidies that reduces the firm bankruptcy risk (Gopalan et al., 2007; Buchuk et al., 2014; Dewaelheyns and Van Hulle, 2006) or the group's reputation (Dewaelheyns and Van Hulle, 2012).

2.2. Working capital management literature

Research on working capital management mainly focuses on the relationship between working capital management and firm performance (Aktas et al., 2015; Ben-Nasr, 2016; Zeidan and Shapir, 2017). However, emerging literature focuses on the determinants of the investment in the operating components of working capital management, namely, inventories and accounts receivable (current assets). Baños-Caballero et al. (2010), on a sample of Spanish SMEs, show that older firms and firms with higher cash flows have higher investment in inventories and accounts receivable. They find that firms with more growth opportunities, higher leverage, investment in fixed assets and operating performance have a lower amount invested in the components of working capital management. Hill et al. (2010) use a sample of listed firms and document that firms with strong internal financing capacity and higher access to external capital markets invest more in the operating components of working capital management. Conversely, they observe that sales growth, sales volatility and financial distress are associated with a lower investment in inventories and accounts receivable. Chen and Kieschnick (2018) show that working capital management practices

strongly depend on the way working capital requirements are financed. For example, they observe that bank-dependent firms hold more current assets than those of less bank-dependent firms. Moreover, they stress that bank-dependent firms (smaller firms) respond to fluctuations in the availability of bank credit in a different way than less bank-dependent firms. For example, they report that young and small firms rely more on trade credit and thus reduce working capital management requirements when bank credit is less available. Their findings highlight that the working capital management of smaller and younger firms strongly depends on the availability of bank credit because these firms rely heavily on bank credit to finance working capital management requirements.

To a large extent, the results of this empirically driven literature are consistent. They allow identifying two main categories of the determinants of working capital: operating vs financing (Hill et al., 2010). The first category, operating, includes growth in sales, operating performance and sales volatility, and market share. The second category includes the financial determinants of working capital. This literature agrees with the fact that higher financial flexibility, the ease with which the firm can access/mobilize financial resources, increases the firm working capital. Indeed, easier access to financing gives the firm the resources necessary to finance its working capital. This is confirmed by the fact that a credit crunch period, such as during the global Financial Crisis creates an external shock that affects working capital management practices and cash management (Campello et al., 2010; Enqvist et al., 2014; Casey and O'Toole, 2014).

A firm's financial flexibility to finance its working capital depends on two factors. On the one hand, a firm's financial flexibility mechanically decreases with its financial constraints. On the other hand, the firm's financial flexibility depends on the firm's growth. Indeed, a firm that is growing rapidly faces a tradeoff between investment in working capital and in CAPEX. As firms grow, their investment in CAPEX requires additional financial resources, which

reduces the slack in resources available to finance working capital. Fazzari and Petersen (1993) show that financially constrained firms prioritize investment in fixed assets at the expense of working capital to maintain a constant level of investment in fixed assets. In other words, investment in working capital is constrained by investment in fixed assets. Overall, this implies that there is no separation between short and long term investment decisions and that the relationship between investments in fixed assets and working capital is expected to be negative.

2.3. Impact of business group affiliation on short term financial management operating working capital

How can these two literature approaches allow for exploring if the financial management of working capital of an affiliated firm differs from that of standalone firms? Next, we develop our hypotheses on how BGA might influence the financial determinants of working capital.

Our literature review shows that access to the BG internal market provides the affiliated firm with access to a unique pool of resources that increases it financing capacity, particularly for opaque firms. Therefore, the working capital management of affiliated firms should be less sensitive to firm informational opacity than that of standalone firms.

Hypothesis 1: The impact of informational opacity on working capital management is lower for BG affiliates than for non-affiliates.

Further, the higher slack in financial resources for BGA firms gives them more flexibility in the management of growth of the firm. Thus, BGA firms' working capital

management will be less sensitive to the firms' growth as the financial flexibility provided by the BGA allows better separation of the investment decision over time (long vs short term).

Hypothesis 2: The impact of growth constraints on working capital management is lower for BG affiliates than for non-affiliates.

Overall, we can conjecture that BGA firms benefit from more financial flexibility than non-BGA firms in the financial management of working capital. Therefore, we expect the sensitivity of a BGA firm's working capital to financial determinants to be lower than that for non-BGA firms.

3. Sample and variables

3.1. Sample

We obtain our data from Bureau Van Dijk's Amadeus database. Amadeus provides access to accounting and financial information for a large number of European privately held firms. We decided to consider firms from the three dominant economies in continental Europe, namely, Germany, France, and Italy. Our motivation to do so is as follows: BGs represent a very common form of business organization in these countries because of the relative low development of public equity markets (Belenzon et al., 2013). However, other aspects of institutional voids, including the low development of transport infrastructure, labor market organizations and regulatory systems, have found little ground in Western Europe (Khanna and Palepu, 1997). Therefore, if we observe an effect of BG affiliation on working capital management, this effect will be the result of the financing advantages provided by the BG and not of other advantages that the BG can provide. Thus, the choice of this context is relevant to

test our hypotheses about the role of BG affiliation on working capital management. We only consider firms for which we have ten consecutive years of data available[63], so many small and young firms are excluded from the analysis. Consistent with previous research on working capital management, we exclude firms from the financial industry as well as administration firms and cases with missing data (Hill et al. 2010). We use the Standard Industry Classification (SIC) two-digit codes to classify our firms in industries. Because of the construction of one of the control variables (sales volatility), the first five years of data are required but not studied. The final sample includes 46,210 firms and 247,870 firm-year observations from 2010 to 2017. Focusing on this period allows us to avoid direct effects of the Financial Crisis that could drive the opportunity for BG-affiliated firms to internalize the financing of working capital management.

3.2. Dependent variable

The most commonly used measure of working capital management is the net operating working capital (NOWC) calculated as the ratio of inventories and accounts receivable less accounts payable over sales (Hill et al., 2010; Aktas et al., 2015). The choice of an integrated measure of working capital management[64] is in line with previous research highlighting the fact that the management of inventories and trade credit is joint (Kieschnick et al., 2013):

$$NOWC = \frac{Inventories + Accounts\ receivable - Accounts\ payable}{Sales}$$

[63] One of our control variables, sales volatility, is calculated as the standard volatility of sales over a rolling five-year period. Thus, a shorter period of time would reduce the number of observations per firm.

[64] Some papers focus on several aspects of working capital management and use various dependent variables like the ratio of inventories on sales or accounts receivable on sales to measure working capital management (Chen and Kieschnick, 2018).

However, one limitation of NOWC as a measure of working capital management is that it is does not account for heterogeneity between industries in terms of working capital management practices. Following the suggestions of Hill et al. (2010), we use as an alternative dependent variable an industry-adjusted measure of working capital management. More specifically, we calculate the annual median NOWC for each industry. Then, we calculate the difference between a firm's annual NOWC and the corresponding annual industry median NOWC and refer to it as the industry-adjusted NOWC:

$$Ind.Adj.NOWC = NOWC - annual\ industry\ median\ NOWC$$

3.3. Independent variable

To distinguish between standalone firms and firms affiliated with a BG, we created a dummy variable business group affiliation (BGA) and let it interact with the four previously defined independent variables. Information about BG affiliation for a single firm is directly available in Amadeus as a variable indicating the total number of firms affiliated with the BG (this number is zero if the firm is not affiliated with a BG).

A firm's ability to finance the requirements of working capital management is conditioned by its access to external finance. The extent to which a firm is informationally opaque directly constrains its access to external financing (Stiglitz and Weiss, 1981; Berger and Udell, 1998). Thus, we measure a firm's informational opacity by its size, calculated as the natural logarithm of net assets and age, calculated as the natural logarithm of the number of years since the firm's creation because larger and older firms have a greater ability to raise funds.

Hill et al. (2010) and Baños-Caballero et al. (2010) report that the speed at which firms grow influences its working capital management. More specifically, they find that firms with fast growing sales reduce investment in working capital and that investment in fixed assets is also negatively related to investment in working capital. This shows that the faster a firm grows, the more difficult it is to finance the working capital. Therefore, we use growth in sales, calculated as the percent change in sales between two consecutive years, and growth in fixed assets, calculated as the percent change in sales between two consecutive years, as measures of the growth constraints on working capital management.

3.4. Control variables

There are of course other factors that could influence working capital management and including them in our model is important to avoid omitted variable bias. Following the literature (Hill et al., 2010; Baños-Caballero et al., 2010), we identify several control variables. First, we control for the amount of internally generated cash flow as firms with high cash flows can more easily invest in working capital. Second, the extent to which a firm is indebted conditions its future ability to raise banking debt. Thus, we include leverage, calculated as the ratio of short-term financial debt plus long-term financial debt over net assets. Third, there is a mechanical relationship between gross operating profit (GPM, difference between sales and cost of sales) and NOWC in the sense that firms with high GPM have, with everything else equal, higher amounts of accounts receivable compared to accounts payable so its control is important. Last, fluctuations in demand influence a firm's inventory management as firms avoid excess inventories when sales become volatile. Thus, we calculate the ratio of the standard deviation of sales over a rolling five-year period and net assets.

3.5. Descriptive statistics

Table 6.1 presents the descriptive statistics for our variables. The mean NOWC is 18.8% of total assets, which is close to the level reported by Hill et al. (2010) of 19.8%, a result that highlights the importance of investment in inventory and accounts receivable. The average firm is 25 years old and holds 16.58M€ of total assets, so most of our firms are rather small. The mean sales growth is 6.6% for our sample firms, and mean growth in fixed assets is 11.2%. Overall, most of these observations are in line with previous studies (Hill et al., 2010; Baños-Caballero et al., 2010). We calculate the variance inflation factors (VIFs) to test for the presence of multicollinearity as some of our variables are correlated (a correlation matrix is provided as appendix). The highest VIF is 1.33, which is well below the common threshold of 10 above which multicollinearity is an issue.

Table 6.1: Summary statistics

This table provides summary statistics for our sample firms. The sample includes nonfinancial privately held firms from the Amadeus database for the period 2010-2017. NOWC is the net operating working capital. IndAdjNOWC is the annual industry median adjusted NOWC. GPM is the gross profit margin. N denotes the sample size.

Variables	N	Mean	Standard deviation	Minimum	Median	Maximum
NOWC	247,870	0.188	0.224	-0.212	0.143	1.345
IndAdjNOWC	247,870	0.039	0.21	-0.368	0	1.159
Size (log(M€))	247,869	9.716	1.193	7.112	9.556	13.725
Age (log(years))	247,842	3.209	0.606	1.386	3.258	5.106
Sales growth	247,870	0.066	0.231	-0.529	0.032	1.685
Fixed assets growth	247,870	0.112	0.533	-0.634	-0.005	3.952
Cash-flow	247,870	0.110	0.115	-0.229	0.086	0.760
Leverage	247,870	0.162	0.175	0.000	0.105	0.782
GPM	247,870	0.491	0.290	0.010	0.455	1.000
Sales volatility	247,870	0.322	0.395	-0.664	0.201	3.483

As our main variable of interest is the role of BG affiliation, we provide in Table 6.2 mean and median figures for each variable for both BG-affiliated firms and standalone firms. Approximately 82.4% of our observations correspond to BG-affiliated firms, a figure that highlights the presence of BG in continental Europe. The last column of the table reports the results difference in means tests between BG-affiliated firms and standalone firms. BGA-affiliated firms and non-BGA firms differ significantly in each variable. BG-affiliated firms have a higher NOWC and higher cash-flow but a lower growth rate of sales than non-BG-affiliated firms. BG-affiliated firms are also larger, younger and less leveraged than their standalone counterparts. Overall, the results indicate that both operating and financing conditions are different between BG-affiliated firms and standalone firms. This clearly strengthens the interest of our research question.

4. Empirical results

We use firm and year-fixed effect regressions to test our hypothesis to control for unobserved heterogeneity across firms as well as for economic factors that could influence NOWC. Consistent with previous research on working capital management, we use one-year lagged observations of all the right-hand-side variables in our regressions. Thus, we avoid the issue that NOWC and independent variables are determined in equilibrium and alleviate endogeneity concerns (Hill et al. 2010; Aktas et al. 2015). The estimated empirical model is as follows:

$$NOWC_{i,t} = \beta_0 + \beta_1 Age_{i,t-1} + \beta_2 * Age_{i,t-1} * BGA_i + \beta_3 Size_{i,t-1} + \beta_4 * Size_{i,t-1} * BGA_i + \beta_5 Sales\ growth_{i,t-1} + \beta_6 Sales\ growth_{i,t-1} * BGA_i + \beta_7 Fixed\ assets_{i,t-1} +$$

$$+\beta_8 Fixed\ assets\ growth_{i,t-1} * BGA_i + \beta_9 Leverage_{i,t-1} + \beta_{10} Cash - flow_{i,t-1} +$$

$$\beta_{11} GPM_{i,t-1} + \beta_{12} Sales\ volatility_{i,t-1} + \tau_i + \delta_t + \varepsilon_{i,t}$$

Our hypotheses propose that BG affiliation provides more flexibility in working capital management, meaning that the constraints related to informational opacity (age and size) and growth (sales growth and fixed assets growth) are lower for BG-affiliated than for standalone firms. NOWC is supposed to be positively related to age and size, indicating that larger and older firms have easier access to external financing resources to cover the needs of NOWC. NOWC is supposed to be negatively related to sales growth and fixed asset investments because firms that reach target levels of sales have to reduce investment in NOWC and firms prioritize investment in fixed assets over NOWC. Thus, we expect the coefficients of the interaction terms to be negative for informational opacity variables and positive for growth variables.

4.1. Role of BG affiliation on working capital management

In columns 3 and 4 of Table 6.3, we provide the results of the regression that includes interaction terms among all our previous variables and a BG-affiliation dummy that equals 1 if a firm is affiliated with a BG and 0 otherwise. We observe that two interaction terms have a statistically significant effect: interaction between BG affiliation and lagged sales growth and interaction between BG affiliation and lagged investment in fixed assets.

Table 6.2: Sample characteristics (standalone and BG-affiliated firms)

This table compares the results of standalone firms and BG-affiliated firms. The sample includes nonfinancial privately held firms from the Amadeus database for the period 2010-2017. NOWC is the net operating working capital. IndAdjNOWC is the annual industry median adjusted NOWC. GPM is the gross profit margin. N denotes the sample size.

Variables	BG affiliated		Standalone		p-values for Standalone - BG affiliated
	N	Mean	N	Mean	Mean
NOWC	204,325	0.194	43,545	0.186	0.000
IndAdjNOWC	204,325	0.037	43,545	0.049	0.000
Age	204,301	3.206	43,541	3.224	0.000
Size	204,324	9.810	43,545	9.275	0.000
Sales growth	204,325	0.065	43,545	0.069	0.000
Fixed assets	204,325	0.113	43,545	0.108	0.084
Leverage	204,325	0.155	43,545	0.197	0.000
Cash-flow	204,325	0.111	43,545	0.106	0.000
GPM	204,325	0.507	43,545	0.420	0.000
Sales volatility	204,325	0.317	43,545	0.346	0.000

Table 6.3: BG affiliation and NOWC

This table presents the results of firm and year fixed effects regressions. BGA is a dummy that is equal to 1 if the firm is affiliated with a BG and 0 otherwise. Errors are robust and clustered at the firm level. All independent and control variables are lagged one year with respect to the dependent variables. p-Values are associated with the null hypothesis that the coefficient is equal to zero.

Dependent variable	NOWC		Ind Adj NOWC		NOWC		Ind Adj NOWC	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
Age	0.014	0.017	0.014	0.020	0.022	0.018	0.019	0.050
Age × BGA					-0.010	0.283	-0.006	0.539
Size	0.008	0.001	0.008	0.001	0.017	0.007	0.016	0.012
Size × BGA					-0.010	0.115	-0.009	0.170
Sales growth	-0.021	0.000	-0.021	0.000	-0.028	0.000	-0.028	0.000
Sales growth × BGA					0.008	0.085	0.008	0.088
Fixed assets growth	-0.001	0.046	-0.001	0.023	-0.004	0.000	-0.004	0.000
Fixed assets growth × BGA					0.003	0.008	0.003	0.010
Leverage	0.040	0.075	0.040	0.000	0.040	0.000	0.039	0.000
Cash-flow	0.010	0.000	0.011	0.053	0.010	0.079	0.011	0.055
GPM	-0.010	0.000	-0.010	0.000	0.057	0.000	0.057	0.000
Sales volatility	0.057	0.000	0.058	0.000	-0.010	0.000	-0.010	0.000
Constant	0.029	0.329	-0.123	0.000	0.029	0.343	-0.124	0.000
Firm- and year-fixed effects	Yes		Yes		Yes		Yes	
Number of observations	189,596		189,596		189,596		189,596	
R^2	0.89		0.87		0.89		0.87	
F statistics	29.23	0.000	45.68	0.000	24.45	0.000	37.14	0.000

The interaction term between BG affiliation and lagged sales growth is positive and significant (p<.10). As the coefficient between lagged sales growth and NOWC is negative, this means that the marginal effect of sales growth on NOWC is lower for BG-affiliated firms than for non-BG-affiliated firms. In other words, firms that belong to a BG reduce less investment in working capital when sales are growing. This suggests that BG-affiliated firms benefit from BG internal resources to finance their working capital when sales are growing.

The interaction term between BG affiliation and lagged investment in fixed assets is also positive and significant (p<.01 for NOWC and p<.05 for industry-adjusted NOWC). Again, as the coefficient between lagged investment in fixed assets and NOWC is negative, this means that the marginal effect of lagged investment in fixed assets is lower for BG-affiliated firms than for non-BGA firms. Fazzari and Petersen (1993) show that firms that have limited access to financing cut investment in working capital to maintain investment in fixed assets at a constant level. Thus, our result indicates that BG-affiliated firms are less financially constrained than standalone firms because they benefit from intragroup resources. These resources are likely intragroup loans (Buchuk et al., 2014) or a reduction in payment delays by intragroup customers (Deloof and Jegers, 1996).

We interpret our results as indirect evidence that BG facilitates the growth of their members by shifting resources toward them. This validates our H2 hypothesis. However, we observe no effect of BG affiliation on the impact of informational opacity variables; thus, we find no support for our H1 hypothesis.

4.2. Impact of firm size

To investigate further the role of BG affiliation on working capital, we examine if the previous effects are the same depending on the size of the BG-affiliated firm. Indeed, even if

we control for size in the previous regressions, the moderating effect of BG is likely to be different for small firms that have limited access to external financing (Berger and Udell, 1998; Cassar, 2004). Additionally, Chen and Kieschnick (2018) report that size is a key driver of working capital management practices and that it should be considered carefully in working capital management research. Thus, we create three size buckets for large, medium and small firms, respectively. According to the criteria of the European Commission, a firm as considered as small if its number of employees is lower than 50 and either its total assets is lower than 10M€ or its sales revenue is lower than 10M€. A firm is considered as medium if it is not small and its number of employees is lower than 250 and either its total assets is lower than 43M€ or its sales revenue is lower than 50M€. A firm that is neither small nor medium is considered as large.

We present the results for the size subsamples using the same regression model as in the previous section in Table 6.4. Columns 1 and 2 present the results for large firms. Only lagged size and sales growth show statistically significant effects on NOWC. The interaction terms are not significant at all. These results indicate that, for large firms, there is no effect of BG affiliation on working capital.

Results for the medium firms subsample show that lagged age, size, sales growth, leverage, GPM, and sales volatility have a statistically significant marginal effect on NOWC. More interestingly, the interaction term between size and BG affiliation is negative and statistically significant ($p<.05$). This shows that, as expected, the BG affiliation reduces the impact of informational opacity on working capital and validates our H1 hypothesis for medium firms. We observe no evidence that BG affiliation moderates the impact of growth variables on working capital. Lastly, we observe that lagged sales growth, investment in fixed assets, leverage, gross profit margin, and sales volatility have a statistically significant effect on NOWC for small firms. The interaction term between BG affiliation and investment in

fixed assets is positive and statistically significant ($p<.01$). Small firms affiliated with a BG are less constrained in regard to investment in working capital even if their investment in fixed assets is already high. This validates our H2 hypothesis for small firms.

In summary, we observe that the benefits of being affiliated with a BG only concern small and medium firms. This is not a surprise as smaller firms are financially constrained and have a more difficult access to external financing than large firms. Resources provided by the BG alleviate difficulties in accessing external funding to invest in working capital. The nature of these benefits are however different for small and medium firms. The ability of small firms affiliated with a BG to invest in working capital is less constrained by their level of investment in fixed assets. In other words, BG affiliation facilitates the growth of small affiliates. For medium firms, affiliation to a BG reduces the degree of informational opacity as measured by size and facilitates the financing of working capital.

Table 6.4: BG affiliation, firm size and NOWC

This table presents the results of firm and year fixed effects regressions by firm size cluster. A firm is considered as medium if its number of employees is lower than 250 and either its total assets is lower than 43M€ or its sales turnover is lower than 50M€. A firm is considered as small if its number of employees is lower than 50 and either its total assets is lower than 10M€ or its sales turnover is lower than 10M€. Firms that are neither small nor medium are large. BGA is a dummy that is equal to 1 if the firm is affiliated with a BG and 0 otherwise. Errors are robust and clustered at the firm level. All independent and control variables are lagged one year with respect to the dependent variables. p-Values are associated with the null hypothesis that the coefficient is equal to zero.

Dependent variable	Large firms				Medium firms				Small firms			
	NOWC		Ind Adj NOWC		NOWC		Ind Adj NOWC		NOWC		Ind Adj NOWC	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
Age	0.009	0.746	-0.009	0.755	0.029	0.065	0.025	0.100	0.009	0.493	0.007	0.620
Age × BGA	-0.016	0.573	0.010	0.750	-0.020	0.184	-0.019	0.213	0.008	0.557	0.008	0.534
Size	0.037	0.016	0.030	0.059	0.028	0.000	0.027	0.001	0.009	0.229	0.008	0.268
Size × BGA	-0.023	0.143	-0.016	0.330	-0.018	0.034	-0.017	0.044	-0.012	0.169	-0.010	0.239
Sales growth	-0.032	0.059	-0.031	0.058	-0.020	0.002	-0.019	0.004	-0.025	0.000	-0.024	0.000
Sales growth × BGA	0.018	0.303	0.018	0.285	0.002	0.800	0.001	0.872	0.009	0.183	0.009	0.184
Fixed assets growth	-0.001	0.723	0.000	0.988	-0.002	0.252	-0.003	0.171	-0.005	0.000	-0.005	0.000
Fixed assets growth × BGA	0.000	0.988	-0.001	0.741	0.001	0.733	0.001	0.613	0.006	0.001	0.006	0.002
Leverage	0.004	0.566	0.002	0.738	0.047	0.000	0.046	0.000	0.040	0.000	0.040	0.000
Cash-flow	0.011	0.342	0.013	0.264	0.005	0.532	0.006	0.493	0.015	0.106	0.016	0.084
GPM	0.023	0.306	0.024	0.297	0.042	0.004	0.042	0.004	0.080	0.000	-0.007	0.000
Sales volatility	-0.007	0.113	-0.007	0.112	-0.007	0.011	-0.008	0.009	-0.007	0.001	0.079	0.000
Constant	-0.010	0.869	-0.175	0.007	0.023	0.623	-0.133	0.004	0.072	0.115	-0.068	0.138
Firm- and year-fixed effects	YES		YES		YES		YES		YES		YES	
Number of observations	42,744		42,744		92,053		92,053		54,799		54,799	
R^2	0.91		0.89		0.91		0.90		0.89		0.88	
F statistics	12.27	0.000	17.84	0.000	10.74	0.000	14.59	0.000	6.40	0.000	8.45	0.000

4.3. Role of BG size

In the previous sections, we consider BG affiliation without paying attention to the BG ability to concretely provide resources to the BG members. As some BGs are very small while others include hundreds of subsidiaries, it is unlikely that there is a homogeneous BG effect on working capital. If we assume for example that the holding company of a BG is listed, the BG ability to allocate financial resources to its subsidiaries is higher than if none of the group members are listed. Therefore, we refine our analysis by introducing three BG size buckets for large, medium and small BGs. We proxy BG size by the number of firms affiliated with the BG (Khanna and Palepu, 2000). However, to the best of our knowledge, there is no consensus in the literature about thresholds to define small, medium and large BGs using their number of subsidiaries. Thus, we rely on examples in Khanna and Palepu (2000), Lechner and Leyronas (2009) and Iacobucci and Rosa (2010) and consider that a BG is small if its number of subsidiaries is lower than 8[65]. We also consider that a BG is medium if its number of subsidiaries is between 8 and 30 and that a BG is large if its number of subsidiaries is higher than 30.

Table 6.5 presents the results of our baseline regression by BG size cluster and firm size subsamples using industry-adjusted NOWC as the dependent variable66. First, we observe that small BG-affiliated firms are less constrained than standalone small firms with respect to the role of investment in fixed assets. Indeed, the interaction term between BG affiliation and fixed asset growth is positive ($p<.05$), whereas the coefficient for fixed asset growth is negative ($p<.01$). This effect is also present when we compare standalone small firms to small firms affiliated with large and medium BGs. Second, firms affiliated with a large BG are also

[65] As a robustness test, we use different thresholds to define the group size buckets. The results hold.
66 We do not report the results of the regressions with NOWC as a dependent variable for brevity. However, they are pretty much alike, and the differences between the size buckets are equally significant with NOWC as a dependent variable.

less constrained regarding the role of sales growth as the interaction term between sales growth and BG affiliation is positive ($p<.01$) and the coefficient for sales growth is negative ($p<.01$). This effect is not present however for medium and small BGs, highlighting that the effect of BG affiliation depends on and increases with BG size. Third, medium firms affiliated with large and medium BGs are less affected by informational opacity in regard to financing working capital. This is shown by the negative interaction terms between size and BG affiliation ($p<.01$ for large BGs and $p<.10$ for medium BGs) and the positive coefficients for size. Overall, the benefits of BG affiliation increase with the size of the BG. Larger BGs have a larger internal market, and the subsequent financing capacity of the BG is also higher. It follows that larger BGs can provide their affiliates with more resources to cover the working capital requirements and facilitate their affiliates growth. Medium firms' affiliations to large BGs benefit from the BG reputation that alleviates their informational opacity.

Table 6.5: BG affiliation, BG size, firm size, and NOWC

This table presents the results of firm and year fixed effects regressions by firm size and BG size cluster. A BG is considered as small if its number of affiliated firms is higher 30, as medium if its number of affiliated firms is between 8 and 30, and as small otherwise. A firm is considered as medium if its number of employees is lower than 250 and either its total assets is lower than 43M€ or its sales turnover is lower than 50M€ and as small if its number of employees is lower than 100 and either its total assets is lower than 10M€ or its sales turnover is lower than 10M€. Firms that are neither medium nor small are large. BGA is a dummy that is equal to 1 if the firm is affiliated with a BG and 0 otherwise. Errors are robust and clustered at the firm level. All independent and control variables are lagged one year with respect to the dependent variables. p-Values are associated with the null hypothesis that the coefficient is equal to zero.

Dependent variable	Large BG and independent firms						Medium BG-Independent firms						Small BG-Independent firms					
IndAdjNOWC	Large firms		Medium firms		Small firms		Large firms		Medium firms		Small firms		Large firms		Medium firms		Small firms	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
Age	-0.02	0.60	0.03	0.09	0.00	0.86	0.01	0.65	0.04	0.04	0.00	0.82	-0.01	0.77	0.02	0.19	0.01	0.70
Age × BGA	0.01	0.77	-0.02	0.34	0.01	0.78	-0.01	0.85	-0.04	0.05	0.02	0.30	0.02	0.64	-0.01	0.35	0.01	0.59
Size	0.03	0.06	0.03	0.00	0.01	0.30	0.03	0.05	0.03	0.00	0.01	0.24	0.03	0.06	0.03	0.00	0.01	0.28
Size × BGA	-0.02	0.27	-0.03	0.00	0.00	0.79	0.00	0.88	-0.02	0.09	-0.02	0.29	-0.02	0.26	-0.01	0.40	-0.01	0.16
Sales growth	-0.03	0.05	-0.02	0.00	-0.03	0.00	-0.03	0.07	-0.02	0.00	-0.02	0.00	-0.03	0.06	-0.02	0.01	-0.02	0.00
Sales growth × BGA	0.02	0.19	0.01	0.17	0.04	0.00	0.02	0.40	0.00	1.00	0.00	0.89	0.01	0.72	0.00	0.59	0.00	0.58
Fixed assets growth	0.00	0.97	0.00	0.17	-0.01	0.00	0.00	0.93	0.00	0.17	-0.01	0.00	0.00	0.91	0.00	0.17	-0.01	0.00
Fixed assets growth × BGA	0.00	0.85	0.00	0.23	0.01	0.02	0.00	0.57	0.00	0.10	0.01	0.01	0.00	0.72	0.00	0.37	0.00	0.04
Leverage	0.00	0.60	0.02	0.01	0.05	0.00	0.00	0.82	0.01	0.46	0.01	0.42	0.02	0.25	0.06	0.00	0.04	0.00
Cash-flow	0.01	0.36	0.01	0.54	0.02	0.28	0.04	0.04	0.04	0.00	0.05	0.00	0.03	0.10	-0.01	0.60	0.01	0.29
GPM	0.03	0.29	0.03	0.10	0.05	0.07	-0.03	0.51	0.01	0.61	0.10	0.01	0.06	0.28	0.05	0.01	0.07	0.00
Sales volatility	0.00	0.42	-0.01	0.00	0.00	0.45	-0.01	0.36	-0.01	0.05	0.00	0.09	-0.01	0.17	0.00	0.15	-0.01	0.01
Constant	-0.15	0.05	-0.14	0.07	-0.11	0.10	-0.33	0.01	-0.22	0.01	-0.08	0.27	0.11	0.00	-0.20	0.00	-0.05	0.35
Firm- and year-fixed effects	YES		YES		YES		YES		YES		YES		YES		YES		YES	
Number of observations	23,939		36,573		21,495		11,841		29,923		20,302		14,064		58,545		41,410	
R^2	0.89		0.89		0.88		0.90		0.90		0.88		0.90		0.90		0.88	
F statistics	8.84	0.00	5.09	0.00	7.56	0.00	10.14	0.00	11.68	0.00	10.03	0.00	10.02	0.00	13.73	0.00	7.25	0.00

4.4. Role of group specific characteristics

To further identify what role the BG plays on its affiliates' working capital management, we study the impact of some of the BG characteristics and ratios on the affiliates' working capital. We use the Amadeus database to create a sample of BG for which we have affiliates in the initial sample and we collect consolidated financial and accounting information[67]. The initial number of BGs identified is 10,711. After excluding missing data, we obtain a sample of 5,942 BGs and 27,998 BG-year observations over the same period of time as for the initial sample of affiliated firms. Next, we merge the two samples. Because a single BG-year observation can apply to different affiliates, our merged database includes only 23,434 affiliate-year observation for which we have matched information about the BG.

The variables we consider at the BG level represent both the financing and operating conditions of the BG. We therefore include growth in sales, fixed asset investment, leverage, cash-flow and NOWC calculated at the BG level. Last, cash ratio, calculated as cash and equivalents divided by total assets, and return-on-assets (ROA), calculated as operating income divided by total assets, are also considered as potential drivers of an affiliate's working capital.

We estimate the impact of one-year lagged BG characteristics on an affiliate's working capital management with an affiliated firm-fixed effects regression. The results are presented in Table 6.6 and show that the relationship between a BG cash ratio and an affiliate's NOWC is positive and statistically significant ($p<.01$ for NOWC and $p<.05$ for industry-adjusted NOWC). This shows that firms affiliated with a cash-rich BG have higher levels of working capital and suggests more flexibility in working capital management. As a larger investment in the components of working capital must be financed, this finding

[67] Intra-group balances and revenues are eliminated in consolidated financial statements. Thus, our data correspond to extra-group business operations and financing activities.

suggests that BG indeed allocates cash to their affiliates to facilitate these affiliates' working capital management. We also observe a positive and statistically significant relationship between the BG ROA and the affiliate's NOWC ($p<.05$ for NOWC and $p<.10$ for industry-adjusted NOWC). With respect to the affiliate's characteristics, only gross profit margin has a statistically significant impact on the affiliate's working capital, and this impact is positive.

Table 6.6: Impact of BG characteristics on affiliates NOWC

This table presents the results of firm and year fixed effects regressions for firms affiliated to a BG including firm-level variables and BG-level variables. ROA is the return on assets calculated as operating income divided by total assets. Errors are robust and clustered at the firm level. All independent and control variables are lagged one year with respect to the dependent variables. p-Values are associated with the null hypothesis that the coefficient is equal to zero.

Dependent variable	NOWC		Ind Adj NOWC	
	coef.	p-value	coef.	p-value
Firm level variables				
Age	0.006	0.822	0.004	0.879
Size	-0.011	0.126	-0.009	0.205
Sales growth	-0.008	0.150	-0.007	0.251
Fixed assets growth	0.002	0.163	0.001	0.380
Leverage	0.004	0.676	0.003	0.761
Cash-flow	0.011	0.437	0.010	0.450
GPM	0.062	0.060	0.059	0.078
Sales volatility	-0.001	0.913	0.000	0.979
BG level variables				
BG Cash ratio	0.039	0.002	0.027	0.034
BG Leverage	-0.001	0.951	-0.001	0.921
BG ROA	0.092	0.035	0.077	0.077
BG Sales growth	0.003	0.281	0.002	0.463
BG Fixed assets	-0.001	0.609	-0.002	0.419
BG Size	-0.007	0.144	-0.005	0.330
BG Cash-flow	-0.074	0.086	-0.056	0.194
BG NOWC	0.002	0.602	0.001	0.643
Constant	0.272	0.023	0.098	0.419
Firm- and year-fixed effects	YES		YES	
Number of observations	23,434		23,434	
R^2	0.90		0.88	
F statistics	4.24	0.000	3.19	0.000

In summary, our results indicate that firms affiliated to cash-rich and profitable BGs have a higher working capital. More profitable BGs have a higher internal financing capacity that can be used to fund the affiliate's requirements in terms of working capital. Additionally, the profitability of the BG enhances its external access to financing as well, acting as an indicator of performance. The positive relationship between the BG cash holdings and the affiliates' working capital is likely explained by the fact that the BG can shift available funds

to those affiliates that need it to finance their working capital. Both results highlight the role of the internal capital market mechanism.

5. Robustness checks

The formation of BG is likely driven by consideration of the characteristics of potential new affiliate members that could be acquired or created. In other words, BG affiliation can be endogenous, and the selection of BG affiliates is likely affected by their impact on the BG working capital management. One can imagine that the acquisition of a particular firm by a BG is motivated by vertical integration that will substantially modify the BG working capital management. Due to the limitations of our dataset, we cannot exclude that some of our results are affected by endogeneity. However, in many countries, BG were created before the mid-twentieth century (Deloof and Jegers, 1996; Khanna and Yafeh, 2005; Byun et al., 2013). Thus, BG formation and structure are largely driven by history for large BG. As our observation period is rather short, it seems unlikely that endogenous BG formation affects our findings. Additionally, smaller BGs do not develop by acquisitions but rather by the formation of subsidiaries (Lechner and Leyronas, 2009; Iacobucci and Rosa, 2010). As a result, the working capital management practices of these subsidiaries are not selection criteria that could drive BG formation.

Our empirical design also allows us to mitigate some of the endogeneity issues. Our regressions include several control variables, including operating performances and leverage that capture some of the factors that affect the probability of being acquired by a BG. We also control for firm- and time-specific factors in all of our regressions. As a reminder, affiliation to a BG, especially privately held ones, is rather constant over short-term periods.

Nevertheless, we perform a robustness check to ensure that endogeneity is not the main driver of our findings. We use a matching procedure prior to our regressions to ensure that the characteristics of BG-affiliated firms (treated group) and standalone firms (control group) are comparable. More specifically, we rely on the coarsened exact matching (CEM) algorithm (Blackwell et al., 2010) that creates strata based on ex ante characteristics of our sample firms and matches treated and control firms. The procedure ensures that there is a satisfying number of firms in each strata for both treated (BG-affiliated) and control (standalone firms) groups. Then, it generates weights that account for the differences between the number of firms in each strata and that can be used in regressions. By doing so, the CEM procedure reduces the degree of model dependence and the risk of causal effect estimation errors (Blackwell et al., 2010). Concretely, we made the matching on three variables: the industry in which the firm operates (two-digit SIC code), the country in which the firm is based (Germany, France, or Italy), and the age of the firm in 2009. The regressions yielded qualitatively comparable results when using the matched sample in the BG size and firm size clusters even if the significance was lower, confirming our hypothesis.

To control for the effect of economic conditions and institutional settings, we also perform some additional tests. Following previous work on BG affiliation (Byun et al., 2013), we include industry × year fixed effects instead of standard year fixed effects in our regressions to account for time-varying industry factors that determine simultaneously the BG formation phenomenon and working capital management practices. Indeed, working capital management is known to be industry-dependent (Hill et al., 2010) but also changing over time (see, e.g., Aktas et al., 2015). The inclusion of industry × year fixed effects does not change the results (unreported for brevity). Next, because we consider firms operating in different countries, institutional differences among France, Germany and Italy could also affect our results. For example, there has been a banking crisis in Italy over the period we consider that

could have lead some Italian BGs to provide more assistance to their subsidiaries than that of French and German BGs. Thus, we use country × year fixed effects instead of year fixed effects. The results hold, indicating that institutional context does not significantly influence our results.

A limitation of the firm-fixed effects estimator is that we can not include a dummy variable accounting for BG affiliation since BG affiliation is time-invariant. Thus, we re-estimate the model with a generalized least squares random-effects estimator including a BG affiliation dummy and industry dummies based on the two-digit SIC code classification. The results were qualitatively the same.

Lastly, to account for past values of NOWC, we use lagged NOWC as an additional control variable because Baños-Caballero et al. (2010) report that firms have a target level of NOWC that they try to achieve. Therefore, observed deviations from the target level during a specific year should lead to adjustments in working capital management practices during the following year. Our results hold when we include lagged NOWC as an additional control variable (unreported for brevity).

Overall, these alternative approaches and robustness checks help alleviate the concerns that our results could be endogenous to other factors than our variables of interest.

6. Conclusions

How does common financial management at the group level influence affiliated firms short-term financial management? In this study, we try to answer this question by analyzing how the working capital management of firms affiliated to a BG and of standalone firms differ. Our results highlight that the factors that constrain a firm's working capital

management are moderated by the affiliation to a BG. More specifically, we observe that firms affiliated with a BG are less constrained by investment in fixed assets in regard to investing in working capital. This suggests that BGs effectively monitor and provide financial support to their affiliates to help them manage and finance their working capital requirements. We also show that this result is mostly true for small firms. Medium firms benefit from BG affiliation in a different way as their informational opacity affects less their working capital management. This means that it is easier for medium firms affiliated with a BG to finance their working capital. We observe no effect of BG affiliation on large firms. Additionally, the role of BG affiliation depends on the size of the BG. Only medium and large BGs help their affiliates alleviate the constraints related to working capital management because smaller BGs do not have enough internal resources. The extent to which a BG is cash-rich and profitable also appears to be an important driver of its ability to provide assistance to its affiliates. Overall, BG affiliates benefit from their affiliation in the sense that BGs use the internal capital market to shift funds to those affiliates that need to invest in working capital, facilitating their growth.

Although the literature on BG is plentiful and largely focuses on the role of BG affiliation on performance, few papers investigate the channels through which this occurs. The fact that BG affiliation facilitates investment (Gopalan et al., 2007; Buchuk et al., 2014) and cash management (Locorotondo et al., 2014) through an internal capital market is established and provides one illustration of the support affiliates receive from the BG. Our results contribute to this literature by showing that, in addition, BG affiliation also facilitates working capital management at the affiliates level by separating investment in fixed assets and in working capital (small firms) and facilitating the financing of working capital requirements by reducing the affiliates' informational opacity (medium firms).

This work has limitations. The first is that we do not observe working capital management practices, but the outcome of working capital management as our dependent variable is NOWC. Firms with very different working capital management practices can have the same level of NOWC. If a firm has low levels of inventory but a generous trade credit policy toward customers (high levels of accounts receivable), its NOWC is close to that of a firm that holds important levels of inventory but fewer accounts receivable (assuming everything else equal). Whether different approaches of working capital management are perceived differently by a BG and cause different responses in resource allocation is an interesting aspect of financial management that we could not capture. Future research could build on case-study approaches or BG chief financial officers' interviews to better understand how financial management is concretely conducted in BG. Another limitation is found in the fact that we cannot measure explicitly the extent to which a firm's working capital is the result of intragroup transactions or extra group business activities. Intuitively, a BG can influence easily the financing conditions of the fraction of working capital that corresponds to intragroup sales by asking cash-rich BG customers to pay fast when BG suppliers need liquidity as well as the converse (Deloof and Jegers, 1996; 1999). This is not true for the fraction of working capital that is the result of extra group trade. If one could gather information about all the subsidiaries of a given set of BGs, it would be possible to disentangle extragroup working capital from intragroup working capital by comparing individual accounts for the BG affiliates and consolidated accounts at the group level. The difference between the algebraic addition of individual accounts and the consolidated accounts is a measure of intragroup business activities because consolidated accounts exclude intragroup operations.

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Appendices

Table 6.7: Time distribution of the sample

This table provides the distribution of the sample across time for 247,870 firm-year observations across 46,210 firms over the period 2010-2017. Median values for IndAdjNOWC are not reported because they equal zero by definition.

Observation year	N	Mean		Median
		NOWC	IndAdjNOWC	NOWC
2010	1,044	0.156	0.027	0.122
2011	7,741	0.145	0.026	0.113
2012	37,248	0.196	0.041	0.149
2013	39,826	0.190	0.040	0.144
2014	42,617	0.188	0.041	0.143
2015	42,954	0.186	0.039	0.141
2016	42,750	0.185	0.039	0.141
2017	33,690	0.191	0.037	0.149
Observations	247,870	0.188	0.039	0.143

Table 6.8: Industry distribution of the sample

This table provides the distribution of the sample across industries for 247,870 firm-year observations across 46,210 firms over the period 2010-2017. Industry classification uses the two-digit SIC classification. Financial and administrative firms are omitted. Median values for IndAdjNOWC are not reported because they equal zero by definition.

Industry	N	Mean		Median
		NOWC	IndAdjNOWC	NOWC
Agricultural Production - Crops	1,142	0.357	0.095	0.269
Agricultural Production - Livestock and Animal Specialties	614	0.207	0.033	0.173
Agricultural Services	1,077	0.095	0.032	0.059
Forestry	32	0.139	-0.005	0.149
Fishing, Hunting and Trapping	79	0.218	0.111	0.106
Metal Mining	92	0.163	0.048	0.103
Coal Mining	25	0.170	0.031	0.140
Oil and Gas Extraction	132	0.128	0.037	0.093
Mining and Quarrying of Nonmetallic Minerals, Except Fuels	627	0.240	0.055	0.183
Building Construction - General Contractors & Operative Builders	3,703	0.410	0.205	0.208
Heavy Construction, Except Building Construction - Contractors	2,753	0.291	0.125	0.166
Construction - Special Trade Contractors	6,678	0.256	0.076	0.179
Food and Kindred Products	13,533	0.206	0.065	0.139
Tobacco Products	51	0.230	0.102	0.146
Textile Mill Products	2,642	0.300	0.026	0.274
Apparel, Finished Products from Fabrics & Similar Materials	1,988	0.311	0.043	0.269
Lumber and Wood Products, Except Furniture	1,770	0.281	0.062	0.221
Furniture and Fixtures	1,677	0.218	0.034	0.186
Paper and Allied Products	4,131	0.175	0.006	0.170
Printing, Publishing and Allied Industries	2,871	0.160	0.034	0.127
Chemicals and Allied Products	7,843	0.214	0.019	0.196
Petroleum Refining and Related Industries	491	0.148	0.018	0.128
Rubber and Miscellaneous Plastic Products	6,504	0.204	0.017	0.187
Leather and Leather Products	1,189	0.262	0.028	0.233
Stone, Clay, Glass, and Concrete Products	3,495	0.284	0.039	0.243
Primary Metal Industries	4,608	0.230	0.022	0.208
Fabricated Metal Products, Except Machinery & Transport Equipment	11,881	0.272	0.036	0.236
Industrial and Commercial Machinery and Computer Equipment	13,720	0.293	0.040	0.255

Electronic, Electronic Equipment	5,980	0.251	0.024	0.229
Transportation Equipment	3,896	0.239	0.050	0.187
Measure, Analyze, Control Instruments; Optic Goods; Watches, Clocks	2,663	0.305	0.035	0.271
Miscellaneous Manufacturing Industries	1,318	0.269	0.019	0.251
Railroad Transportation	168	0.037	0.009	0.028
Local, Suburban Transit & Interurban Highway Passenger Transport	2,430	0.043	0.019	0.016
Motor Freight Transportation	5,411	0.087	0.011	0.075
United States Postal Service	119	0.084	0.025	0.062
Water Transportation	1,237	0.084	0.020	0.061
Transportation by Air	508	0.090	0.048	0.035
Pipelines, Except Natural Gas	85	0.163	0.114	0.024
Transportation Services	3,456	0.052	0.008	0.042
Communications	882	0.059	0.019	0.030
Electric, Gas and Sanitary Services	9,647	0.129	0.043	0.084
Wholesale Trade - Durable Goods	43,298	0.183	0.039	0.144
Wholesale Trade - Nondurable Goods	23,459	0.164	0.041	0.122
Building Materials, Hardware, Garden Supply & Mobile Home Dealers	755	0.209	0.020	0.186
General Merchandise Stores	613	0.076	0.021	0.052
Food Stores	8,612	-0.007	-0.003	-0.005
Automotive Dealers and Gasoline Service Stations	1,673	0.096	0.022	0.074
Apparel and Accessory Stores	2,102	0.127	0.022	0.106
Home Furniture, Furnishings and Equipment Stores	1,804	0.014	0.051	-0.034
Eating and Drinking Places	1,198	0.020	0.021	-0.002
Hotels, Rooming Houses, Camps, and Other Lodging Places	1,556	-0.014	0.001	-0.023
Personal Services	830	0.129	0.029	0.100
Business Services	10,067	0.169	0.029	0.139
Automotive Repair, Services and Parking	1,382	0.117	0.025	0.092
Miscellaneous Repair Services	969	0.242	0.039	0.202
Motion Pictures	550	0.109	0.084	0.012
Amusement and Recreation Services	1,389	0.037	0.029	-0.012
Health Services	6,843	0.096	0.021	0.075
Legal Services	67	0.219	0.006	0.211
Educational Services	581	0.088	0.039	0.044
Social Services	1,629	0.121	0.044	0.067
Museums, Art Galleries and Botanical and Zoological Gardens	120	-0.009	0.017	-0.029
Membership Organizations	26	0.057	0.000	0.060
Engineering, Accounting, Research, Management & Related Services	5,199	0.237	0.065	0.173
Observations	247,870	0.188	0.039	0.143

Table 6.9: Correlation matrix

This table provides correlation coefficients of 247,841 firm-year observations over the period 2010-2017.

Variables	NOWC	IndAdjNOWC	Age (log(years))	Size (log(M€))	Sales growth	Fixed assets	Leverage	Cash-flow	GPM
IndAdjNOWC	0.9486								
Age (log(years))	0.0902	0.0593							
Size (log(M€))	0.1596	0.1343	0.1564						
Sales growth	-0.0374	-0.0399	-0.0959	-0.0423					
Fixed assets	-0.0149	-0.0136	-0.0683	-0.0216	0.1517				
Leverage	0.1487	0.1600	-0.0097	0.0511	-0.0152	0.0034			
Cash-flow	-0.1362	-0.1372	-0.0224	-0.1239	0.0993	0.0036	-0.1895		
GPM	0.0242	0.0332	-0.0202	0.1118	0.0189	0.0027	-0.1199	0.1517	
Sales volatility	-0.2107	-0.1907	-0.1700	-0.2749	0.1191	0.0402	-0.1124	0.0865	-0.2081

Conclusion générale

Cette thèse a pour objectif d'éclairer le lien entre stratégie de croissance, cycle de vie financier et gestion financière au sein des PME. Dans la première partie, nous avons vu que les PME réalisent couramment des opérations de croissance externe, facilitées par une introduction en bourse préalable (chapitre 1). De telles opérations s'avèrent bénéfiques en termes de performances économiques (chapitre 2) et conduisent à la formation de groupes de sociétés, rapidement diversifiés et internationalisés. Bien que la formation d'un groupe ne soit pas nécessairement recherchée explicitement à travers la stratégie de croissance, elle en constitue néanmoins un élément indissociable et offre une structure permettant d'articuler le développement futur de la société et de ses filiales (chapitre 3). La deuxième partie a mis en lumière les rôles essentiels de la gestion et du financement du besoin en fonds de roulement pour les PME. Contraintes financièrement, les PME s'appuient beaucoup sur l'autofinancement pour leur croissance. Il en résulte une tension forte sur le besoin en fonds de roulement qui est lui aussi contraint de façon à limiter les coûts de son financement. Cela provoque des coûts d'opportunités en cas de sous-investissement dans le besoin en fonds de roulement qui nuisent à la performance globale (chapitre 4). Afin d'apporter de la flexibilité au financement du besoin en fonds de roulement, deux contextes ont été étudiés. Tout d'abord, dans le cadre d'une introduction en bourse, l'apport de liquidités permet d'assouplir la gestion du crédit client et d'octroyer des délais de paiement plus longs (chapitre 5). Ensuite, l'appartenance à un groupe de sociétés permet l'accès au marché interne de capitaux du groupe ce qui permet une gestion plus flexible du besoin en fonds de roulement (chapitre 6).

Fondée sur le cadre théorique de la Resource-based View et du cycle de vie financier, cette thèse offre plusieurs contributions empiriques qui soulignent certaines caractéristiques fortes des PME. Tout d'abord, du fait des contraintes de financement qui pèsent sur elles, la

mise en œuvre par les PME d'une stratégie de croissance externe, par nature gourmande en capitaux, est étroitement articulée à la réalisation d'une introduction en bourse. Ensuite, la croissance des PME aboutit à la formation de groupes de sociétés, c'est-à-dire à la création d'un marché interne de capitaux. L'on peut y voir la volonté pour la société tête de groupe de prendre en charge le processus d'allocation de ressources financières à ses filiales pour pallier les difficultés d'accès direct à des financements externe pour ces dernières. Enfin, la gestion du besoin en fonds de roulement pour les PME présente des différences importantes avec celle d'entreprises plus grandes. En raison des contraintes de financement déjà évoquées, les PME contraignent à l'excès leur besoin en fonds de roulement, ce qui pèse négativement sur leur croissance et leur performance.

Le cadre conceptuel du cycle de vie financier n'intègre pas la possibilité que les PME fassent partie d'un groupe de sociétés qui offre l'accès à un marché interne de capitaux. En montrant la place des groupes dans la croissance et le financement des PME, cette thèse souligne la nécessité de développements théoriques de ce cadre conceptuel. D'autre part, les spécificités induites par l'appartenance à un groupe tant en termes de stratégies de croissance que de financement montrent le besoin d'une prise en compte systématiques de cette caractéristique dans les travaux empiriques sur les PME. Ce travail apporte également des contributions en matière de politiques publiques. La facilitation de l'accès des PME aux financements est d'ores et déjà au cœur des initiatives qui leur sont destinées. Il semble néanmoins utile de souligner le besoin d'accompagnement des PME en matière de gestion financière et plus particulièrement de gestion du besoin en fonds de roulement. Les PME qui assouplissent leur gestion du besoin en fonds de roulement gagnent en performance, mais ne mesurent pas nécessairement ce gain a priori. En canalisant les efforts vers cette prise de conscience, l'effet serait double. D'une part, les PME qui modifieraient leur gestion du besoin

en fonds de roulement gagneraient en performances et d'autre part, tous leurs partenaires commerciaux, clients comme fournisseurs bénéficieraient d'un choc de liquidités.

Il convient également de reconnaître les limites de ce travail. L'une des difficultés centrales dans l'étude des PME réside dans l'obtention de données. Le travail de collecte manuelle réalisé dans la première partie a permis de constituer un échantillon d'une centaine de PME qui ont réalisé une introduction en bourse. Il en découle que la validité des conclusions porte sur une catégorie d'entreprises très particulière dans la mesure où elles recherchent explicitement la croissance, ce qui n'est pas nécessairement le cas des PME en général. De plus, les PME qui s'introduisent en bourse ont franchi avec succès plusieurs étapes pour dépasser le stade de la « liability of smallness » ce qui augmente leurs chances de survie. Dans la deuxième partie, l'étude du besoin en fonds de roulement s'est basée sur des indicateurs exclusivement comptables et financiers. Il est difficile de rendre compte des pratiques de gestion financière, dont la fréquence est hebdomadaire sinon quotidienne, à travers de tels indicateurs. On s'en convaincra en considérant le cas d'une PME en difficulté et dont les résultats ont connu une baisse brutale. Il est probable que dans une telle situation l'entreprise cherche à accélérer les encaissements des créances clients afin de dégager de la trésorerie ce qui aura pour effet de diminuer le niveau du besoin en fonds de roulement. Mais dans le même temps, conquérir de nouveaux clients peut passer par la proposition de délais de paiement plus longs aussi une stratégie de relance pourra passer par une augmentation du besoin en fonds de roulement. Dès lors, il devient délicat d'analyser la causalité entre gestion du besoin en fonds de roulement et performance à travers des indicateurs exclusivement financiers.

Ces limites constituent autant d'opportunités de recherches futures. Comprendre l'articulation entre stratégies de croissance, financements et gestion financière nécessite assurément de faire appel à d'autres approches méthodologiques. Ainsi, la réalisation de

questionnaires et d'interviews auprès de directeurs financiers et de gérants de PME permettrait d'obtenir des données intéressantes sur les pratiques réelles de gestion financière et l'articulation de ces contraintes avec la structure de la PME et ses sources de financement (appartenance à un groupe, cotation en bourse). Des études longitudinales sur la croissance des groupes et la mise en place effective de marchés internes de capitaux représenteraient également des apports essentiels à notre compréhension de la place des groupes dans l'économie.

Enfin, la gestion du besoin en fonds de roulement tout comme les choix de modes de croissance dépendent des disponibilités en matière de trésorerie dont les entreprises disposent. Plus précisément, l'existence d'une réserve de trésorerie en excédent de ce qui est strictement nécessaire pour les opérations courantes peut permettre l'exploration de projets de croissance supplémentaires et faciliter la gestion du besoin en fonds de roulement. L'étude de la relation entre croissance et performance des PME et montant de trésorerie en excédent complèterait le travail entamé dans cette thèse sur l'étude de la gestion du bas de bilan.

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Table des matières

Vivien LEFEBVRE

Stratégie de croissance, cycle de vie financier et gestion financière des petites et moyennes entreprises

Résumé

Les petites et moyennes entreprises (PME) font face à des contraintes de financement qui restreignent leurs stratégies de croissance et la flexibilité de leur gestion financière. Cette thèse contribue à une meilleure compréhension des stratégies de croissance de PME ainsi qu'à leur gestion et leur financement du besoin en fonds de roulement. La première partie se concentre sur les stratégies de croissance mises en œuvre par les PME. Le premier chapitre présente les principales caractéristiques des opérations de croissance externe des PME et l'articulation de ces opérations avec l'introduction en bourse. Le deuxième chapitre étudie l'impact sur la performance des opérations de croissance externe. Le troisième chapitre propose une étude exploratoire de la formation de groupes de sociétés par les PME. Dans la deuxième partie, les caractéristiques de la gestion et du financement du besoin en fonds de roulement des PME sont analysées. Le quatrième chapitre montre ainsi que la performance des PME est négativement affectée par un sous-investissement en besoin de roulement à travers des coûts d'opportunités et que cet effet est plus fort que pour des entreprises plus grandes. Le cinquième chapitre indique que les PME nouvellement introduites en bourse offrent des délais de paiement plus importants à leur clients mais sans que d'autres aspects de la gestion du besoin en fonds de roulement ne soient modifiés par l'introduction. Le sixième chapitre montre la flexibilité financière offerte par l'appartenance à un groupe de sociétés en matière de gestion du besoin en fonds de roulement.

Mots-clés : PME, performance, croissance, acquisition, groupes de sociétés, besoin en fonds de roulement, introduction en bourse

Résumé en anglais

Small and medium-sized enterprises (SMEs) face financing constraints that limit both their growth choices and financial management. This thesis contributes to a better understanding of SMEs growth strategies and working capital management. The first part focuses on SMEs growth strategies. The first chapter documents the main characteristics of SMEs acquisition activities at the initial public offering stage. The second chapter investigates the impact of acquisitions on SMEs performances. The third chapter is an exploratory study of the formation and expansion of business groups by SMEs. In the second part, we study the characteristics of SMEs working capital management. The fourth chapter highlights that the performance of SMEs is negatively related to underinvestment in working capital due to opportunity costs and that this effect is higher than for larger firms. Chapter five reports that newly listed SMEs offer longer payment delays to their customers but that going public does not impact other aspects of working capital management. Chapter six documents the financial flexibility offered by business group affiliation with respect to working capital management.

Keywords: SMEs, performances, growth, acquisition, business groups, working capital management, initial public offering