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The Deep-Pocket Effect of Internal Capital Markets*

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Abstract

We provide evidence that incumbent and entrant firms' access to business group deep pockets affects entry patterns in product markets. Relying on a unique French data set on business groups, our paper shows that entry in manufacturing industries is negatively related to the cash hoarded by incumbent-affiliated groups, and positively related to entrant groups' cash. In line with theoretical predictions, we find that the impact on entry of group cash holdings is more important in environments where financial constraints are pronounced and in more financially dependent sectors. The cash holdings of incumbent and entrant groups also affect the survival rate of entrants in the 3 to 5 year post-entry window. Overall, our findings suggest that internal capital markets operate within corporate groups and affect the product market behavior of affiliated firms by mitigating financial constraints.

Keywords: Business Groups, Cash Holdings, Internal Capital Markets, Entry.
JEL Classification: G32, G38, L41.

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1 Introduction

A vast theoretical and empirical literature has emphasized that the availability of internally generated liquidity enhances firms' investment capacity in environments where access to external funds is limited.[1] Indeed, research on internal capital markets has shown that, within multi-segment firms and business groups, investment capacity in one sector can as well be enhanced by cash generated in other sectors.[2] This suggests that firms that enjoy access to internal capital markets can take actions that are not available to their stand-alone rivals due to financial constraints, which would explain why group firms and conglomerates engage more in corporate innovation (Belenzon and Berkovitz, 2010, Belenzon, Berkovitz and Bolton, 2011) and plant acquisitions (Maksimovic and Phillips, 2008).

Although conglomerates and business groups are ubiquitous both in advanced and emerging economies,[3] the economic literature on the product market effects of groups is fairly limited. In particular, it is not obvious how internal capital markets operating within groups affect the competitive behavior of affiliated firms.

Our analysis sheds light on one of the channels through which groups shape the economic environment, exploring the idea that internal capital markets – by alleviating financial constraints – enhance a firm's actual and perceived competitive strength. We do so by investigating whether entry in manufacturing industries is affected by the cash reserves hoarded by incumbent and entrant groups.

To the best of our knowledge, this is the first paper that tries to assess the impact of group cash holdings – as opposed to individual firm liquidity – on product market competition. This gap in the literature is also due to the lack of detailed information on business group structures, which typically take the form of pyramids and are quite hard to reconstruct. Our analysis relies on unique information on the ownership structure of business groups and firms' balance sheets provided by the INSEE (Institut National de la Statistique et des Etudes Economiques). We thus focus on the French economy, an interesting case study for our purposes: recent statistics (Skalitz, 2002) estimate that 30 percent of French manufacturing firms are affiliated with a group and generate 72 percent of the sales in their sectors; in our data 89 percent of the largest incumbents in manufacturing industries belong to corporate groups, suggesting that group-affiliated firms in France enjoy strong positions in their markets. One possible explanation for this is that incumbents that are able to draw on group deep pockets are better able to fund R&D, advertising and other capital expenditures that are central to the competitive game. Our paper empirically investigates this idea focusing on the impact of group liquidity on entry.

Our first finding is that – controlling for a host of factors including incumbents' own cash holdings and efficiency – the liquid wealth owned by affiliated subsidiaries operating in *other* markets is negatively related to entry in the incumbents' market. This is per se a novel con-

[1] See Hubbard (1998) and Stein (2003) for detailed surveys of this literature.

[2] See among others Hoshi, Kashyap and Scharfstein (1991), Lamont (1997), and Shin and Stulz (1998).

[3] Recent work by ECGN (1997), La Porta, Lopez-de-Silanes and Shleifer (1999), Claessens, Djankov and Klapper (2000) and Khanna and Yafeh (2007) highlights the role played by diversified business groups in various countries, including continental Europe.

tribution – while a few papers have investigated the link between competition and business group *presence* in product markets, there is little evidence relating product market dynamics to business group *characteristics*.

The robust negative relationship between entry and group cash holdings that we identify calls for further investigation, as it could be ascribed to both a financial constraint explanation and an efficiency explanation. As suggested earlier on, it may be the case that internal capital markets operated by cash rich groups relax financial constraints faced by affiliated units, hence providing the latter with a competitive edge over potential entrants, who may instead have a harder time raising capital. However, it may well be that potential entrants are scared out of markets dominated by cash-rich groups because the latter are perceived as very efficient. Our results suggest that the relaxation of financial constraints plays a non-negligible role in explaining why entry is inversely related to group cash: indeed, the negative correlation survives after controlling for several measures of efficiency.

To further explore the financial constraint explanation, we draw and take to the data two theoretical predictions that relate the impact of group cash holdings on entry in a given industry to the severity of financial constraints and the need for external capital that characterize that industry. Theory suggests that the impact of internal finance – hence of group cash holdings – on firms' competitive strength should be more pronounced in environments where firms are more financially constrained. In line with this prediction, we find that entry is more sensitive to incumbent groups' liquidity in industries where intangible assets, that sustain little external financing, make up for a large part of firm value; by contrast, the group deep pocket effect is absent in high tangibility industries. Group liquidity is also more relevant to entry in industries experiencing a downturn (an event that tends to exacerbate financial constraints) with respect to booming industries. Finally, we find that in growing and innovative industries, that are typically associated with larger information asymmetries vis-à-vis external financiers, the group deep pocket effect is more pronounced than in mature and less innovative sectors.

The second prediction we test is that the effect of group cash holdings on entry should be more pronounced in manufacturing sectors characterized by larger technological needs for external finance, along the lines of Rajan and Zingales (1998). This rests on the argument that financially dependent incumbents who can draw upon additional sources of funding – such as group liquidity generated in *other sectors* – will be perceived as stronger competitors by equally financially dependent, stand-alone firms. Our results support this hypothesis: entry in financially dependent industries negatively responds to increases in group cash; by contrast, group cash has no role in explaining entry in non-dependent industries.

Our analysis then focuses on group-backed entry. One would expect that entrant groups compare both their financial strength and their efficiency to those of incumbent groups when making entry decisions. Indeed, we find that entry by business groups, while being significantly affected by relative efficiency, is also facilitated when entrant groups have piled large cash reserves in their originating markets; this effect is more pronounced in high-growth and financially dependent industries. Also, while group-backed entry is negatively affected by incumbent

groups' deep pockets, this effect is smaller when entrant groups are cash-richer. Finally, we find that entry into young industries is more facilitated by entrant groups' cash when entering groups are established in older sectors; this supports the idea (see Maksimovic and Phillips 2008) that internal capital markets are used by conglomerates to channel funds from mature sectors which lack investment opportunities towards young growing sectors.

Stand-alone entrants are also discouraged by the incumbent groups' deep pockets, although to a lesser extent. This is in line with a pattern common to various 4-digit sectors, where several small entrants, mostly stand-alone firms, challenge few large group-affiliated incumbents. The significantly smaller size of stand-alone firms as opposed to group-affiliated firms may suggest that in some industries stand-alone entrants try to exploit local market niches where they may be shielded from the strategic moves of group-affiliated players. On the other hand, stand-alone entrants do represent 3/4 of the entrants that exit the market within 5 years after entry. This would rather suggest that small entrepreneurial firms have limited product market experience to gauge their actual post-entry productivity, and may overstate their ability to withstand their rivals' financial muscle (Hopenhayn, 1992). Consistently with this latter explanation, we find that the exit rate of stand-alone entrants in the 3 to 5 year window post-entry is particularly affected by the presence of deep-pocketed groups in the market. Indeed, a 1 percent increase in incumbent groups' cash increases the 3-to-5 year exit rate of stand-alone entrants by 7.8%, as opposed to a 5.8% increase in the exit rate of group-backed entrants. Moreover, contrary to group-backed entrants, stand-alone entrants cannot rely on the liquidity provided by the internal capital market to increase their survival rate. These findings provide further support to the hypothesis that group deep pockets mitigate firms' financial constraints thus enhancing their competitive strength.

Our paper adds to the extensive body of evidence confirming that in the presence of capital market frictions industry outcomes are affected by the financial status of market participants.[4] Building a bridge between this literature and work on internal capital markets, a few theoretical papers have recently investigated whether internal capital markets established within business groups and multi-segment firms, by providing a source of financial slack to member units, may turn them into stronger competitors.[5] However, due to the lack of reliable data on corporate group structures, little work has empirically explored whether and how access to internal capital markets affects a firm's competitive conduct. Lawrence (1991) shows that imports and entry tend to be lower in Japanese markets where keiretsu-affiliated firms have larger market shares. Weinstein and Yafeh (1995) find that, upon entry in a market, group-affiliated firms compete more aggressively than stand-alone entities. Khanna and Tice (2000, 2001) find that multi-segment incumbents responded very differently from stand-alone incumbents to Wal Mart's entry in the discount department store business between 1975 and 1996. However, none of the above papers has tried to assess the impact of group financial strength on the product market

[4]See, among others, Chevalier (1995a and 1995b), Zingales (1998), Kovenock and Phillips (1995 and 1997), Maksimovic and Phillips (2002), Campello (2003), Mac Kay and Phillips (2005), Bertrand, Schoar and Thésmar (2007) and Frésard (2009).

[5]See Matsusaka and Nanda (2002), Cestone and Fumagalli (2005), Faure-Grimaud and Inderst (2005) and Mathews and Robinson (2008).

behavior of incumbents and their rivals.

Our paper also contributes to the literature on internal capital markets. While most empirical work on the topic has made use of multi-segment firm data, a growing number of recent papers rely, like ours, on accurate balance sheet data of group-affiliated firms, i.e. of independent legal entities controlled by a single individual or family.[6] The results we present provide indirect evidence that French business groups operate active internal capital markets. Our findings suggest that wealthy groups tend to inject liquidity towards more financially constrained as well as more financially dependent affiliates, that as a consequence rely on a cheaper source of capital than comparable stand-alone firms and affiliates of cash-stripped groups. This confirms a longstanding claim that in the presence of pronounced financial frictions conglomerates may represent a valuable organizational form (See for instance Khanna and Palepu, 1997 and Rajan, 2010).

The rest of the paper is organized as follows. Section 2 presents the underlying theoretical framework to be tested and discusses our empirical strategy. Section 3 describes the data set and the variables used in the analysis, and provides descriptives statistics. Section 4 presents the empirical results. Section 5 concludes.

2 Internal Capital Markets and Product Market Competition

A copious literature dating back to Fazzari, Hubbard and Petersen (1988) has emphasized how the availability of internally generated cash affects firms' real investment decisions by alleviating their financial constraints. This suggests that firms that can rely on internal finance can take actions and strategies that are not available to their cash-poor rivals: as recent empirical findings suggest, this advantage is likely to be pronounced in environments where access to external funds is limited.[7]

A set of recent papers builds on these theories to put forth the idea that the competitive strength of firms may be substantially affected by their access to internal capital markets. Cestone and Fumagalli (2005) show within a formal model that cash-rich groups can be expected

[6]Among the papers investigating the functioning of internal capital markets in multi-segment firms are Lamont (1997), Shin and Stulz (1998), Rajan, Servaes and Zingales (2000), Scharftsein and Stein (2000), and Maksimovic and Phillips (2002). Houston, James and Marcus (1997), Houston and James (1998) and more recently Campello (2002) provide evidence that ICMs also operate within multi-bank holding companies, whereas Perotti and Gelfer (2001), Samphantharak (2006), Gopalan, Nanda and Seru (2007), and Bertrand, Mehta and Mullainathan (2002) find that internal assets are extensively reallocated within Russian, Thai and Indian business groups. We refer to Stein (2003) for a more ample survey of the internal capital market literature.

[7]Recent work confirms the prominent role of financial constraints and internal liquidity in determining firms' investment decisions. Campello, Graham and Harvey (2010) document that credit constrained firms planned to dramatically cut investments in advertising, R&D and marketing (as opposed to unconstrained firms) during the 2008 financial crisis. Moreover, a majority of corporate financial officers reported that they would turn to internal resources (whether operating income or cash reserves), where available, to fund attractive investments. Duchin, Ozbas and Sensoy (2010) find that the decline in corporate investment following the onset of the crisis was greatest for firms with low cash reserves.

to inject liquidity into those units facing higher costs of external finance.[8] Due to this privileged access to liquidity, firms affiliated with wealthy groups end up enjoying a competitive edge over stand-alone rivals. The alleviation of financial constraints may for instance enhance group firms' ability to make R&D and advertising investments that are central to the competitive race.[9] Of course, if efficiency considerations drive internal capital market allocations, as the evidence in Maksimovic and Phillips (2002) suggests, then more efficient group firms are the ones that benefit most from this effect.

Matsusaka and Nanda (2002) unveil in contrast a commitment cost of internal capital markets: new rivals may be encouraged to enter an industry if conglomerates are expected to drain financial resources from that sector once this is faced with more intense competition. In other words, diversified business groups and multi-segment firms may lack – when compared to focused firms – the commitment to "stay and fight" in response to new entry. However, this commitment cost is only likely to affect *cash-poor* groups, whereas affiliation with cash-rich groups mitigates financial constraints and thus enhances a firm's actual and perceived strength vis-à-vis its stand-alone rivals.[10]

Theory then suggests that if access to financial resources is a source of competitive strength *and* internal capital markets operate within business groups, an increase in the liquid wealth owned by groups affiliated with market incumbents should turn the latter into stronger competitors. Drawing upon this setting, we derive the following testable prediction:

P1: Other things equal, a market displays lower entry rates when incumbent-affiliated subsidiaries have larger cash holdings.

We next delineate in detail the empirical model the brings Prediction 1 to the data.

Basic Entry Equation

Our baseline empirical model relates, in each year, the cash holdings of groups affiliated with market incumbents with the entry rate in that market, controlling for a list of factors that includes incumbents' own liquidity. Differently from the existing literature, which has focused on the role of *individual firm* deep pockets, we make a distinction between an incumbent's cash holdings and the cash held by *the rest of the group* this incumbent is affiliated with. Formally,

$$Entry_{i,t} = \gamma_1 TC^{BG}_{i,t-1} + \gamma_2 TC^{INC}_{i,t-1} + Z^{INC}_{i,t-1}\lambda + X_{i,t-1}\beta + \alpha_i + \theta_t + \varepsilon_{i,t} \quad (1)$$

[8]The main intuition behind this result is that as individual group firms have autonomous access to external capital markets, the shadow value of internal funds is larger for units with tighter financial constraints. In this respect, the internal capital market acts as a credit line that guarantees access to liquidity to those firms facing a larger cost of outside finance. This argument is supported by the empirical findings in Maksimovic and Phillips (2008) that conglomerate firms relax financial constraints faced by segments operating in industries where access to external funding is more problematic.

[9]Belenzon and Berkovitz (2010) provide empirical evidence that business group affiliates engage in more successful innovation than stand-alone firms, particularly in industries that rely more on external finance and have a higher degree of informational asymmetries.

[10]See Cestone and Fumagalli (2005) for a formal derivation of this result. Faure-Grimaud and Inderst (2005) also show within a model of product market competition and financing that access to an internal capital market can bring along both strategic benefits and commitment costs. Mathews and Robinson (2006) build on the trade off between flexibility and commitment to model competition between a multi-divisional corporation and a stand-alone firm.

where $Entry_{i,t}$ is the entry rate in market i at time t; the variable $TC^{INC}_{i,t-1}$ measures the cash holdings of incumbents in market i at time $t-1$; similarly $TC^{BG}_{i,t-1}$ measures the cash holdings of all subsidiaries that operate in other markets and are affiliated with market i's incumbents.[11]

The matrix $X_{i,t-1}$ includes sectoral controls such as the size of the market (both in levels and in growth rates), capital intensity, return on assets (ROA) and the level of market concentration as measured by the Herfindahl index. These are the usual suspects in the determination of entry rates as they account for the profitability of the market, for technological barriers to entry, and for the intensity of competition in the market. The inclusion of sector fixed effects, denoted by α_i, accounts for any time-invariant sectoral determinant of entry rates we have possibly omitted. The matrix $Z^{INC}_{i,t-1}$ controls for time-varying characteristics of incumbent firms that may affect entry rates among which, most notably, efficiency and business group affiliation. Finally, θ_t is a full set of year dummies that takes care of aggregate shocks. All variables are one-year lagged to account for the information set of potential entrants when the entry decision is made. This also makes them more likely to be pre-determined at the time entry occurs.

As argued above, one could rationalize a negative correlation between entry in a given market and group cash holdings in other markets arguing that cash rich groups relax financial constraints faced by affiliated units, hence providing the latter with a competitive edge over potential entrants, who may instead have a harder time raising capital. However, a negative correlation may also be consistent with alternative interpretations that do not rely on financial market imperfections. For instance, entrants may be scared out of markets dominated by cash-rich groups because incumbents affiliated with deep-pocketed groups are perceived as more efficient.

In the paper, we try to disentangle the financial constraint explanation from the efficiency explanation in two ways. First, in equation (1) we control for the efficiency of incumbent firms in the market to make sure that group deep pockets are not just proxying for superior incumbent efficiency with respect to smaller entrant firms. Additionally, we investigate to which extent efficiency and financial considerations interact in determining the competitive strength of group affiliated firms, asking whether the group deep pocket effect is amplified for the more efficient affiliated incumbents. If internal capital markets in business groups respond to efficiency considerations, then the most efficient affiliated firms are the ones that see their financial constraints alleviated (Maksimovic and Phillips, 2002 and 2008). Hence, we expect the effect of group deep pockets on entry to be most apparent in markets where group-affiliated incumbents are very efficient.

Secondly, we draw and put to the test two additional theoretical predictions that can be ascribed to the financial constraint explanation. These predictions relate the product market impact of group deep pockets to the financial constraints that are faced by firms in different industries, as well as the external financial needs that characterize those industries.

Group Deep Pockets and External Finance

In environments where raising external funding is more problematic, access to internally gen-

[11] We refer the reader to Section 3.2 for a detailed description of the variables included in equation (1).

erated cash is crucial to support corporate investment. This implies that in sectors facing more severe financial constraints a company's actual and perceived strength is more likely to be enhanced by its ability to call on group cash holdings. This argument translates into the following prediction:

P2: Holding other factors constant, the effect of group deep pockets on entry is greater in industries facing more serious financial constraints.[12]

We test this prediction by splitting our market-year observations into two sub-samples constructed on the basis of different proxies for the severity of financial frictions.[13] We then estimate equation (1) separately on the two sub-samples. Asset tangibility is a first natural proxy for the ease of access to external capital: assets that are more tangible sustain more external financing by increasing the value that can be pledged to creditors in default states. As credit constraints are alleviated, internal liquidity becomes less central to a company's competitive strength.[14] We therefore expect the group deep-pocket effect to be less important in industries characterized by a high proportion of tangible assets.

Financial constraints are also likely to be exacerbated during recessions, whereas booms are usually associated with looser credit conditions.[15] One would then expect that entrants' disadvantage vis-à-vis deep-pocketed incumbent groups should shrink in boom times. In line with this intuition, for each sector we identify periods of boom and of periods of bust, and we expect the group deep pocket effect to be larger in the sub-sample of market-year observations that experience a downturn.

Financial constraints also tend to be more prevalent in the growth stage of the industry life cycle and in more innovative industries, as various factors limit the payouts that can be credibly pledged to external financiers. In growing and innovative industries, most of a firm's value derives from future, yet unexploited business opportunities rather than from predictable income streams and hard, collateralizable assets; furthermore, informational asymmetries between managers and outside investors tend to be larger with respect to more mature industries, which may exacerbate credit rationing. Indeed, Maksimovic and Phillips (2008) show that the effect of conglomerate status on plant acquisitions is stronger in growing industries, suggesting that internal capital markets play an important role in relaxing financial constraints in the early stages of the industry life cycle. In a similar spirit, we expect that the group deep-pocket

[12]A further theoretical argument behind Prediction 2 rests on the efficient functioning of internal capital markets in business groups. If parent companies aim at maximizing group value, funds should be optimally reallocated from units that face a lower cost of capital towards more financially constrained units (see Cestone and Fumagalli, 2005), a prediction that is corroborated by recent empirical evidence in Gopalan, Nanda and Seru (2007). Of course, this reinforces the prediction that firms operating in financially constrained environments enjoy larger strategic benefits from access to internal capital markets.

[13]See Section 4.2.1 for details on the construction of these proxies.

[14]The corporate finance literature has exploited in different ways the idea that tangible assets can reduce the severity of financial constraints. Almeida and Campello (2007) find for instance that the sensitivity of corporate investment to cash flow increases with asset tangibility for those firms that are most likely to be constrained. Braun and Larrain (2005) show that the response of financially dependent industries to negative shocks is less pronounced for higher tangibility industries.

[15]Braun and Larrain (2005) show that financially dependent industries are hit harder during recessions, thus providing indirect evidence that credit conditions worsen in downturns.

effect should be stronger in markets where real sales have grown more during our sample period, 1995-2004. To complement our results on growth industries we also identify innovative industries in our sample.[16] We classify sectors based on the number of patents awarded by the European Patent Office to French firms, and regard as innovative those sectors where the number of patents awarded over the entire sample period has grown relatively more. In line with Prediction 2, we expect group deep pockets to have a more negative effect on entry in more innovative sectors.

We then move on to relate the group deep pocket effect to firms' financial dependence. The latter has to do with *external financial needs*, namely a firm's intrinsic demand for outside funding as driven by the mismatch between its capital expenditures and its internally generated cash, as opposed to the firm's *ability to raise external finance*. A vast literature starting with Rajan and Zingales (1998) has highlighted that access to finance (whether external or internally generated) has more significant real effects in financially dependent industries. One would then expect competition in financially dependent industries to be more affected by the presence of cash-rich incumbents. This leads us to test the following prediction:

P3: Ceteris paribus, the effect of group deep pockets on entry is greater in more financially dependent industries.

In order to identify industries whose intrinsic, technologically driven (unobservable) demand for external funds is larger, we follow Rajan and Zingales (1998) and gauge it by the reliance on external finance of U.S. listed firms in the Compustat database.[17] We expect group deep pockets to discourage firms' entry more in the sub-sample of industries that are more dependent on external funds.[18]

Group-Backed Entry and Entrant Groups Cash

If access to group cash provides firms with a competitive edge by mitigating their financial constraints, one would expect that own deep pockets can as well help business groups make their way into new markets. Indeed, group entry in financially constrained or in financially dependent industries can be particularly facilitated by the entrant groups' cash reserves. This is summarized in Prediction 4:

P4: Other things equal, the rate of (group-backed) entry into a market is larger when entrants are affiliated with cash-richer groups. The positive effect of entrant groups' cash on entry is more pronounced when external finance is costly to raise and in financially dependent industries.

To test this prediction, in section 4.3. we estimate a system of equations in which the

[16]Several papers have provided indirect evidence of severe financial constraints in innovative industries, by examining the sensitivity of R&D investment to cash flow shocks (see Hall 2009 for a comprehensive survey). More recent evidence relies instead on firms' own assessment of financial constraints: Hajivassiliou and Savignac (2008) document that in French manufacturing industries innovative firms are more likely to report difficulties in raising external capital.

[17]The construction of this index will be illustrated more extensively in Section 4.2.2.

[18]The corporate finance literature has highlighted that besides facing more serious financial constraints, innovative industries are as well more financially dependent. This is because R&D investments call for large capital expenditures but take a considerable amount of time before cash flows can be harvested. Hence, our split regressions on innovative sectors also provide a test to Prediction 3.

dependent variables are the stand-alone and the group-backed entry rate – with entrant groups' cash added as a control in the group-backed entry equation. The system is also estimated separately on the different sub-samples used to verify Predictions 2 and 3.

Exit of Recent Entrants and Groups Cash

The previous theoretical considerations also suggest that while recent entrants should find it more difficult to survive on the market when facing established rivals affiliated with cash-rich groups, they should be better equipped to survive when they are backed by cash-rich groups. This is summarized in Prediction 5:

P5: Holding other factor constant, the rate of exit of recent entrants is larger when established firms are affiliated with cash-richer groups. The rate of exit of affiliated recent entrants is lower when these are backed by cash-richer groups.

To test this prediction, in section 4.4 we estimate the impact of entrants and incumbents group cash on the exit rates of stand-alone and affiliated recent entrants.

We now turn to the description of the data.

3 Data

3.1 Data sources

Empirical investigation on the relationship between ICM activity in business groups and entry requires reliable and extensive information not only on product markets and on the financial wealth of individual firms, but also on firm ownership status. The latter is needed to recover the structure and characteristics of business groups controlling individual firms. We obtain this information from the following data-sets.

As in Bertrand, Schoar and Thésmar (2007), we use the firm- and industry-level data sets based on accounting data extracted from tax files that the French Fiscal Administration (Direction Générale des Impôts) collects. The accounting information available covers all French firms, regardless of ownership, whose annual sales exceed 100,000 Euros in the service sector and 200,000 Euros in other sectors. Above these thresholds firms are required to fill in a detailed balance sheet and profit statement. Instead, smaller firms are subject to a simplified tax regime. The tax files also include four-digit industry classification codes similar to the U.S. ISIC coding system and unique firm identifiers allowing to track firms over time. Firm-level employment figures are also provided and are especially reliable since cross-checked with information from employer labor tax reports. Since each firm can be active in several markets, we cross the fiscal data set with an extensive yearly survey by the Ministry of Industry ("Enquête Annuelle des Entreprises"). The survey is exhaustive for French firms with more than 20 workers and contains information on the different markets in which a firm operates. Many firms with less than 20 workers are sampled, but the survey does not cover the entire population. The data, then, include the vast majority of French firms and span over the period 1995-2004.

The identification of business group structures is based on a yearly survey by INSEE called "Enquête Liasons Financieres" (LIFI). It covers all economic activities but restricts its attention to firms which either employ more than 500 employees, or generate more than 60 Million Euros of revenues, or hold more than 1.2 Million Euros of traded shares. However since 1998 the survey is crossed with information from Bureau Van Dijk and thus covers almost the whole economy. The LIFI survey contains information which makes it a unique data set to study the effects of business group activity. First, besides providing information on direct financial links between firms, it also accounts for indirect stakes and cross-ownerships when identifying the head of the group. This is important as it allows to precisely reconstruct the group structure even in the presence of pyramids. Secondly, the LIFI survey allows to correctly account for the creation, merger and disappearance of business groups and avoids misclassifying as new a pre-existing business group whose group head has changed. This is done by looking at whether most of the activities of the pre-existing group (according to employment) keep existing under the new head of group.[19] These two features allow to obtain a reliable account of the structure of business groups in the French economy and, as a consequence, reliable measures of our key variable, the cash holdings of business groups.

Our data source (LIFI) defines a group as a set of firms controlled, directly or indirectly, by the same entity (the head of the group). The survey relies on a formal definition of *direct* control, requiring that a firm holds at least 50 percent of the voting rights in another firm's general assembly. This is in principle a very tight threshold, as in the presence of dispersed minority shareholders *real* control can be achieved with substantially lower equity stakes.[20] However, we do not expect this to be a major source of bias in our sample as most French firms are private and ownership concentration is strong even among listed firms.[21] Finally, let us stress again that since both indirect control and cross-ownerships are accounted for in the LIFI, a group firm need not be directly controlled with a majority stake by the head of the group.

Our product market definition coincides with the industry as defined by the four-digit classification code. This is the highest level of disaggregation allowed by the French Activity Classification (*1993 Nomenclatures d'Activitité Française*). Our geographical market definition is France. For each year and each market we identify entrants and incumbents. We focus on entry in the manufacturing industry, thereby excluding retailing and service industries,

[19]This is particularly important as in the LIFI dataset there are as much as 25,000 changes of the head of the group between 1995 and 2004.

[20]The literature reconstructing corporate ownership and control has used different definitions of real control, with thresholds ranging from 5 percent to 33 percent (which in most countries, included France, is the ownership stake that would spur a mandatory public offer). Indeed, as emphasized by Franks, Mayer and Rossi (2009) it is quite natural to have more than one definition of ownership, with differently defined groups having control over different actions. Note that if control is formally defined as ownership of a majority stake as in our dataset, it is quite reasonable to assume that resources can be reallocated from one firm to another without encountering the opposition of minority shareholders.

[21]In their overview of ownership structures and voting power in France, Bloch and Kremp (1999) show that ownership concentration is pervasive: for non-listed companies with more than 500 employees the main shareholder's ownership stake is 88%. The degree of ownership concentration is slightly lower for listed companies but still above 50 percent in most cases.

because firms active in these sectors typically compete on geographical markets which are narrower than the national one. Also, we exclude the financial sector from the sample, as well as regulated sectors. Finally, we delete as outliers firm-year observations whose financial ratios (Debt/Assets, ROA, Net Liquid Assets/Assets, Cash Flow/Assets) fall outside a multiple of five of the interquartile range. These restrictions leave us with a sample of approximately 70,000 firms per year that we collapse into 3083 market-year observations.

3.2 Definition of Variables

Entry Rates

We define as entrants in market i at time t all firms that appear at time t and were not active at time $t-1$. We measure entry in market i and year t ($Entry_{i,t}$) as the ratio of total sales of entrant firms to total sales in the market. Differently stated, in order to account for size, we weight entry rates (defined as number of entrants over total number of firms) by sales. Notice that we are able to accurately measure entry by multidivisional firms since the "*Enquête Annuelle des Entreprises*" includes detailed information on market dedicated sales for each segment of a firm.

Market Characteristics

We first identify all firms that operate in market i at time t. Among these, we define as incumbents those firms that are not entering the market in the given year. We then compute market shares in terms of sales of each incumbent firm and use those market shares as weights in the computation of market averages of the following variables.

The first variable, *Incumbent Total Cash* (TC^{INC}), is meant to reflect "the size of incumbents' pockets". We measure each incumbent's cash holdings as the sum of its net liquid assets (defined as current assets minus current liabilities minus inventories) and its operating cash flow corrected by changes in working capital. The first is a stock measure of all the assets that can be liquidated reasonably quickly, but it ignores all recent cash flow that is immediately invested and never shows up in the end-of-period stock variable. The addition of cash flow allows to account for changes in internal funds (see also Cleary, Povel and Raith, 1999). Note that we use cash flow from operations rather than free cash flow, so as to have a measure of additional internal resources accruing to the firm which is not affected by investment decisions. The market-level variable *Incumbent Total Cash* is (the log of) the weighted average of incumbents' cash holdings.[22]

The second variable, *BG Affiliation*, also refers to incumbent firms. It represents the market share of group-affiliated incumbents in the market. In the regression analysis this variable accounts for the (average) effect of business group presence on entry.

Finally, we measure *Efficiency* of incumbent firms in market i and year t as the weighted average of incumbents' Total Factor Productivity (TFP). TFP can be estimated as the deviation

[22]Saled-based weighted averages are meant to capture the idea that larger incumbents are more likely to affect market entry. Results are robust to alternative weighting schemes: for this, we refer the reader to the working paper version of this article (CEPR-Discussion Paper 7184).

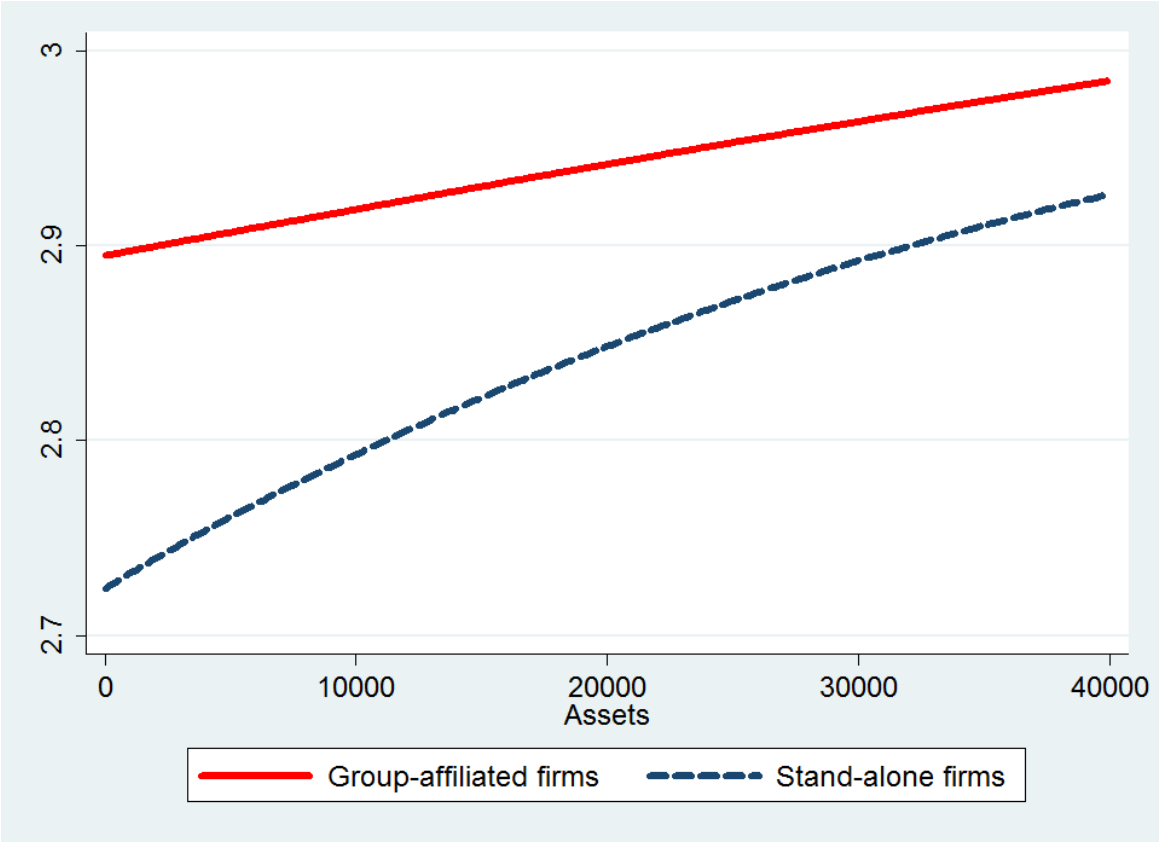

Figure 1: Olley and Pakes TFP estimates

between observed output and predicted output, where predicted output is obtained from the direct estimation of a production function. OLS estimates suffer from problems of simultaneity and selection, because productivity shocks affect not only output but also the firm's input choices and the decision to stay in the market. We therefore exploit a semi-parametric method introduced by Olley and Pakes (1996) which accounts for both problems, thereby allowing one to estimate the production function parameters consistently and to obtain reliable productivity estimates.[23] In estimating TFP we exploit the firm-level dimension of our dataset using more than 226000 firm-year observations for incumbent firms. We obtain a labour coefficient $\beta = 0.79$ (with standard error 0.0009) and a capital coefficient $\alpha = 0.18$ (with standard error 0.002).[24]

We also introduce a measure of dispersion of incumbents' efficiency in market i at year t, that we call *Relative Efficiency*. When making entry decisions, firms try to anticipate whether their efficiency level will be high enough to survive in the market. To form expectations on this, firms look not only at the average level of efficiency in the market but also at its dispersion. For a given average, the higher the dispersion of efficiency, the more likely that a low-efficiency entrant will be able to survive. Figure 1 shows that, in our data, efficiency is increasing in size (measured by assets) and, conditional on size, is larger for affiliated firms. Hence, we build our

[23] We refer to Appendix A.1 for a more detailed description of the procedure to estimate TFP.

[24] These estimates are in line with recent evidence from Cingano and Schivardi (2004) on Italian firms who, using the same methodology, estimate the contribution of labour and capital to be approximately 0.7 and 0.3 in most manufacturing industries. Similar to their study, our estimates are also indicative of constant return to scale. Pavcnik (2002) also estimates TFP using the Olley and Pakes methodology on a sample of Chilean manufacturing firms, finding 0.08 for the capital coefficient.

measure of relative efficiency by classifying as strong rivals the affiliated firms belonging to the top quartile of the distribution of affiliated firms' size, whereas weaker firms are the stand-alone firms belonging to the bottom quartile of the distribution of their size. Our *Relative Efficiency* measure is given by the ratio between the TFP of large affiliated incumbents and the TFP of small stand-alone incumbents.

The remaining variables refer to all firms in the market. We proxy technological characteristics of a given market in a given year by the weighted average of the capital intensity of all firms that operate in the market, where capital intensity is computed as the ratio of fixed assets over output (*Capital Intensity*). Profitability of market i in year t is the weighted average of the return on assets (ROA) of all firms present in market i and year t. We proxy access to credit in a given market/year using the weighted average of the ratio of tangible assets to total assets (*Tangibility*). The size of the market (*Size*) is measured as the (log of) total sales, and the growth rate of the market (Δ *Size*) as the change in market size from $t-1$ to t. Finally, concentration in a market is proxied by the Herfindahl index (HHI), while the age of industry i in year t (*Age*) is measured as the average age of the firms that operate in that industry. Firm age is computed on the basis of the date of firm creation reported in the balance sheet statement.

Business Group Characteristics

For each *incumbent* in market i and year t we identify the group the incumbent is affiliated with (if any). Even though we focus on entry in manufacturing industries, we reconstruct groups considering affiliated firms operating in *any* sector. Based on this, we measure business group characteristics among which group cash holdings. For each market, we average the characteristics of group affiliated firms using as weights their market shares.

BG Total Cash (TC^{BG}) is defined as the total cash held by an incumbent-affiliated group. This is computed by adding all the group subsidiaries' cash holdings, *excluding the cash held by the incumbent*.

As a proxy for the intensity of ICM activity, we consider the number of financial intermediaries owned by a group (*Financial Intermediaries*). Further group characteristics include *Loans of Inc. From BG*. This is computed as the weighted average of loans granted to incumbents by other members of the affiliated group, divided by the incumbents' total assets.

Finally, we identify the group each *entrant* in market i at year t is affiliated with. We compute *Entrant BG Total Cash* (TC^{BGE}) as the total cash held by all group units, excluding the entrant unit. Also, to take into account how the efficiency of established groups compares to that of entrant groups, we compute the ratio between the two: *Inc BG Eff./Entr. BG Eff.* ($Reff$).

3.3 Descriptive Statistics

Entry rates

Table 1 shows descriptive statistics on entry. The first three rows present the number of entrant firms. On average, 46.6 firms enter a market in a given year. However, consistent with

evidence by Dunne, Roberts and Samuelson (1988) we find that entrant firms account, most of the time, for only a small fraction of market sales. Indeed, entrants with market shares above 1 % are rare (on average only slightly more than 2), and entrants that cover more than 5 % of the market in the first year of their existence are even more infrequent (on average only about 0.5). The number of incumbents in a given market exhibits a similar pattern: high absolute number of firms, but only a small fraction with significant market shares.

The last four rows of Table 1 report entry rates into manufacturing activities weighted by sales. We find that despite the high heterogeneity in the size of entrants, (average) entry rates display relatively low dispersion around a median of 11.6%, the 25^{th} percentile being 5.6% and the 75^{th} percentile 19.9%. The magnitude of entry rates in the manufacturing sector is close to the figures reported by Aghion, Fally and Scarpetta (2007) and Dunne, Roberts and Samuelson (1988). We also observe that most of the entry rate is accounted for by group-backed entrants (11.6% out of 16%).

The table also shows that sectoral business cycles affect entry rates. On average, entry rates are close to 20% when sectors experience positive demand shocks, and decrease to 13.3% when sectors experience downturns. Our data (not reported in the Table) also indicate that entrants tend to be larger during sectoral booms than in recessions: the (unweighted) average of entrants' employment is 238 during booms while it decreases to 123 during recessions. A similar pattern emerges looking at assets. Additionally, during sectoral recessions our measure of *Relative Efficiency* appears to be lower than during sectoral booms: the mean value is 1.18 in the former case, whereas it is 1.21 in the latter.[25] This suggests that during sectoral recessions the least efficient firms are unable to survive, hence the dispersion of incumbents' efficiency tends to decrease.

Entry rates vary considerably across 4-digit sectors experiencing a boom (or a bust), as shown in Table 2. For each year the table displays the average entry rate in all sectors experiencing a boom (Panel A) and a bust (Panel B) within the two-digit aggregation indicated in each row. In booms, entry rates range from 5.4% in the manufacture of clocks and watches (2-digit code 33) in 1999, to 36.9% in the production of ships for civil purposes (2-digit code 35) in 2002, and to 53% in electricity distribution and control apparatus (2-digit code 31) in 2004. Similarly, in sectors experiencing a bust, entry rates range from tiny values - such as 0.1% in the production of lead, zinc and tin (2-digit code 27) in 2003, to 30% in computer media (2-digit code 22) in 2002. Such a variability is not surprising if one takes into account that we identify booms and busts as *deviations from each 4-digit sector own trend*. Finally, Table 3 shows that booms and busts occur in different years and different sectors. This confirms that our identification of booms and busts captures sector-specific cycles and not (only) aggregate shocks. We therefore turn our attention to investigating the characteristics of sectors displaying high entry rates (low-entry rates) during our sample period.

[25]The difference -0.03 has a standard error of 0.008 and is therefore different from zero at any conventional level of significance.

High-Entry versus Low-Entry Industries

In Table 4 we provide information about the industries displaying the highest (lowest) entry rates. Across the top 10 entry industries, the average entry rate over the sample period ranges between 25.6% and 39%,[26] yet for each of these sectors entry varies substantially from year to year as indicated by the high dispersion around the average (see standard deviations in parentheses). Indeed, unreported statistics suggest that the more dynamic sectors experience windows of opportunity lasting 1 to 3 years when new entrants may contribute up to 80 percent of industry sales, preceded or followed by less active periods when entry rates may drop to less than 1 percent. Conversely, for our 10 low-entry industries the entry rate displays less variability within the sample period, and on average ranges between 1% (manufacture of cast iron tubes) and 4.5% (manufacture of plaster).

Among high-entry industries we observe two different patterns of entry. For instance, the manufacture of bakery products is characterized by a large number of entrants (on average 95 each year), most of whom (91) account for a very small percentage of industry sales. This seems to be a common feature of dynamic sectors within the French food industry: the wine industry, with a 29% entry rate, has an average yearly number of 59 entrants, only 7 of whom hold a market share larger than 1% in their first year of existence. Instead in other high-entry industries, such as the manufacture and repair of warships, we observe much fewer but larger entrants – on average 3 yearly entrants account for a 25.6% entry rate.

Group-affiliated entrants in both high and low-entry industries account for a substantial part of the entry rate – 52% on average and as large as 81% in the manufacture and repair of warships, but on average represent a minority of the entrant firms (33%). New entry is thus made up by a small number of large affiliated entrants and several small, stand-alone entrants. This pattern is exemplified by the medical imaging equipment sector, where only 20% of the (average) 16 yearly entrant firms are group affiliated, yet they account for 63% of the entry rate – the remaining 80% are stand-alone entrants that operate on a much smaller scale.[27] A similar pattern emerges when looking at *incumbent* firms in both high-entry and low-entry sectors, as shown in the top panel of Table 5: many small stand-alone incumbents and few group-affiliated incumbents that are larger and account for most of the industry sales. The differences between business group entrants/incumbents and their stand-alone counterparts deserve thus some attention, and are explored further on in the paper.

Table 5 provides more information on entrants and incumbents in high and low entry industries. The picture emerging from the top 10 and bottom 10 industries as ranked by entry rates (rows 1 and 2) is confirmed once we describe industries in the top and bottom decile of the entry rate (rows 3 and 4). As expected, firms in high-entry industries are *younger* and more engaged in *innovation* (with patents growing on average at a yearly rate of 84%) than firms in low-entry industries.[28] High-entry industries are also less capital-intensive and less

[26] These figures are in line with those obtained by Dunne et al. (1988) for industries in the top decile of entry.

[27] Stand-alone entrants in the medical imaging equipment sector employed on average 10 employees in their first year of existence, as opposed to the 1927 employees of group-affiliated entrants.

[28] Among the top entry industries, the medical imaging equipment sector, with an average firm age of 15 years, has witnessed the steepest yearly increase in patents. This contrasts starkly with low-entry sectors in the

concentrated than low-entry industries.

Turning to group cash hoarding, we observe that in high-entry sectors, cash-richer groups fuel entry as opposed to groups entering low-entry sectors. Finally, incumbent groups are significantly cash-richer than entrant groups, a difference that seems to be more pronounced in low-entry sectors.

To dig into the relationship between cash and group or stand-alone entry, we now examine the characteristics of entrants in the sample and compare them to those of incumbents, distinguishing between business-group affiliated and stand-alone firms (Table 6). Table 7 presents an even finer disaggregation, distinguishing between sectors in which incumbents are affiliated with cash-rich and sectors in which incumbents are affiliated with cash-poor groups.

Entrants and Incumbents

Table 6 compares the characteristics of entrants and incumbent firms distinguishing between group-affiliated and stand-alone firms.

Columns (1) and (4) reveal that incumbent firms tend to own more assets and to employ more workers than entrants. Incumbents are slightly more productive in terms of value added per worker while total factor productivity is similar in the two groups.[29] In the first year of activity entrants hold little cash (indeed negative at the median), while incumbents' cash holdings are positive. Finally, the last rows of columns (2) and (5) shows that incumbents tend to be affiliated with wealthier business groups than entrants.

Columns (2)-(3) and (5)-(6) reveal that the differences between stand-alone and group-affiliated firms are even more pronounced. Affiliated firms are significantly larger than stand-alones both in terms of assets and employment. They produce more value added per worker than stand-alone firms and their TFP is larger (at least for entrants).[30] Finally, affiliated incumbents own a larger stock of liquid assets than their stand-alone counterparts. Interestingly, affiliated entrants display negative liquid wealth more than stand-alone entrants do; this seems to suggest that group affiliation favors entry into sectors where set up costs are large while investment projects take time to generate cash flows.

Overall, business group affiliation seems to be associated with competitive strength. To explore this idea, Table 7 compares markets where incumbents are affiliated with cash-rich and cash-poor groups. More precisely, we denote as *High BG Cash* those markets where incumbents are affiliated with groups whose liquid wealth is above the median; *Low BG Cash* denotes instead markets where incumbent groups' liquid wealth is below the median. The first part of Panel A shows that (unconditional) entry rates are similar across the two groups of markets

3-digit NAF code 265, such as plaster (265E) and lime (265C), where the average firm age is respectively 23 and 29 years, and patent growth has been null.

[29] As illustrated in Section 3.2 we estimate firm-level TFP using the methodology proposed by Olley and Pakes (1996). Such a methodology does not allow to estimate TFP of entrants, as it requires information on lagged values of inputs not available for the first year of a firm's activity. As a proxy for entrants' TFP we therefore consider TFP in the year posterior to entry, which is defined only for the entrants that are still active in the second year.

[30] The difference in (average) TFP between stand-alone and affiliated entrants is -0.025 with a standard error of 0.013 which implies significance at 7.7%.

at the median. However, the second part of Panel A shows that in High BG Cash markets, affiliated incumbents represent 82.3% of market sales, while in Low BG Cash markets the market share of affiliated incumbents is 62.9 %. A possible interpretation of this finding is that affiliation with cash-rich groups provides incumbents with a stronger competitive edge, thereby making the competitive environment tougher for non-affiliated firms. Consistently, the third part of Panel A shows that in High BG Cash markets a larger percentage of entrants is backed by a business group (68.8% as opposed to 49.7% in Low BG Cash markets).

Panel B of Table 7 compares group-affiliated and stand-alone entrants and incumbents in High BG Cash and Low BG Cash markets. In High BG Cash markets, *affiliated* incumbents and entrants are much larger, produce more value added per worker, and are more productive than their counterparts in Low BG Cash markets.[31] A similar pattern emerges for the other market participants, stand-alone incumbents and entrants.[32] The picture emerging from this table suggests that competition is more intense in High BG Cash markets, leading to the selection of larger and more efficient entrants and incumbents.

Portfolio of industries

Tables 8 and 9 describe the portfolio of industries in which French business groups operate. The overall picture is that French groups diversify their activity between services and manufacturing but, within manufacturing, they operate in very similar industries.[33]

Table 8 (panel A) indicates that in French groups, on average, 31.4% of units operate outside manufacturing. However, within each group most manufacturing units operate in the same 3-digit sector. For each group, we compute a HHI-type index – the sum of the squared values of the shares of (manufacturing) units active in each 3-digit sector. The average value of the index is extremely high (0.899) and increases by a modest amount when one measures concentration at the 2-digit level. We also compute the shares of (manufacturing) units within a group that are active in the same 3-digit sector. The average value turns out to be as high as 76.1%, while the average share of the units active in the same 2-digit but not same 3-digit sector amounts only to 7.25%. Hence, groups focus in closely related manufacturing industries, and mostly diversify outside manufacturing. For instance, we observe mixed (financial) services-manufacturing groups whose manufacturing units are mainly active in the dairy industry (fresh milk, cheese, butter, ice-creams), with only a few units in other food industries such as corn-based products or fruit-based products. This pattern suggests that groups tend to combine the benefits of diversification (insurance against idiosyncratic shocks, larger scope for ICM activity) with the ability to exploit skills that are common to closely related manufacturing activities.

[31]The difference in TFP of affiliated incumbents between High and Low BG cash markets is -0.245, and is different from zero at any conventional level of significance, the standard error being 0.018.

[32]The difference in TFP of stand-alone incumbents between High and Low-BG cash market is -0.244 with a standard error of 0.018. The figure for entrants is a very similar -0.248 with a standard error of 0.018. Both are different from zero at any conventional level of significance.

[33]This is in line with recent evidence by Hoberg and Phillips (2012) that US conglomerates tend to operate in industry pairs that are close to each other in the product space. Hoberg and Phillips' spatial representation of the product market is derived from a text-based analysis of business descriptions from 10-Ks filed yearly with the SEC, hence it accommodates changes that are not captured by existing industry classifications.

Groups affiliated to new entrants exhibit the same feature: on average, 32.8% of group units operate outside manufacturing; 74.2% of manufacturing units belong to the same 3-digit sector as the entrant, while only 7.6% belong to the same 2-digit but not to the same 3-digit sector as the entrant. This suggests again that groups tend to expand into manufacturing sectors that are close to those where they are already active. Interestingly, in entrant groups the units outside manufacturing represent slightly more than 30% of the total number of units, but account for 57% of the group's cash.

French groups tend to be homogeneous also along other dimensions. Panel B of table 8 shows that most of the (manufacturing) units in a group are active in industries of *similar age* – the average share of units active in sectors belonging to the same age decile is 75.6% and the average HHI (based on the shares of units within a group active in sectors belonging to each age decile) is 0.888. In line with this, we observe that *entrant* groups tend to enter into manufacturing industries of similar maturity as their core industry: on average, 72.8% of group units belong to the same age decile as the entrant. However, we should emphasize that in groups entering for the first time into young industries (i.e. industries belonging to the first age decile, which include the recycling of non-metal waste, the manufacture of electronic components, of medical and surgical equipment and of magnetic/optical readers and writers), 65% of affiliated units belong to the same age decile as the entrant, yet they only account for 44% of the total cash held in manufacturing (unreported statistics available upon request). This suggests that groups may use the cash hoarded within their older existing businesses to subsidize entry into young industries. We investigate this issue in section 4.3 (see Table 16).

On a similar note, Table 9 shows that in French groups manufacturing units tend to be clustered in similar industries in terms of growth opportunities (panel A) and innovation intensity (panel B). On average, 76.2% of manufacturing units in a group are active in industries belonging to the same decile in terms of long-run growth (78.9% when we classify industries based on innovation intensity). Consistently, for groups entering a given industry, 73.5% of (manufacturing) units operate in industries belonging to same long-run growth decile (77% when we consider innovation activity).

4 Results

4.1 Deep Pockets, Business Group Affiliation and Entry

Table 10 starts addressing the main question of the paper. We first investigate whether incumbents' affiliation with a business group per se affects entry in a given market. Table 10, column (1) presents results from our base regression where we relate entry rates to market characteristics and to the market share held by group-affiliated incumbents (*BG Affiliation*), not controlling yet for firms' or groups' liquidity.[34] The coefficient of *BG Affiliation* is negative

[34]In all regressions we cluster standard errors at the 3SIC sector level in order to account for potential intra-market correlation of the error term.

and statistically significant at standard levels, confirming previous evidence that the presence of business groups discourages market entry (see e.g., Lawrence, 1991).

Both our measures of efficiency, average and relative efficiency, instead turn out to be insignificant. We do not see this as evidence that efficiency is irrelevant for market entry. Rather, entry is likely to be mostly determined by the persistent, technologically driven component of efficiency, already absorbed by the sectoral fixed effects.

We now turn to the role of deep pockets. Column (2) adds the incumbents' cash holdings: we find that the latter are negatively correlated with entry of potential competitors. The effect is statistically significant. To quantify the economic effect, a 10 percent increase in the cash held by incumbent firms is associated with an average reduction in entry rates of 0.09 percentage points. Given that the average entry rate is 16 percent, this implies an average drop in entry rates of about 0.6 percent.

Column (3) of Table 10 separately controls for incumbent own liquidity and (rest of the) group cash holdings. Business group cash is negatively correlated with entry rates and is statistically significant. A 10 percent increase in group cash holdings is associated with a reduction of 0.07 percentage points in entry rates. Thus, according to our estimates, an increase of 10 percent in group cash entails a reduction of slightly more than 0.4 percent in entry rates. Note that, due to the presence of industry fixed effects, the estimation of the coefficients only exploits the within-sector time variation. Thus, the negative coefficient of *BG Total Cash* is generated by the fact that in years in which (lagged) group cash is high (low) entry rates go down (up).

Note also that business group liquidity is significant even though we control for both average and relative efficiency of incumbents firms. This result is robust to efficiency measures different from the Olley and Pakes (1996)'s TFP estimates,[35] to employment-weighted entry rates (see Table 23 in Appendix A.2),[36] and to the exclusion of all sectoral time-varying controls. This suggests that the negative correlation we find in the data cannot be completely ascribed to the higher efficiency of cash-rich incumbent groups discouraging new entry. Our results thus point to a financial constraint explanation whereby internal capital markets relax the financial constraints of group-affiliated incumbents, hence increasing their actual and perceived strength.

Efficiency seems to amplify the group deep pocket effect on entry. Column (4) adds the interaction between *BG Total Cash* and the (average) efficiency of *affiliated* incumbents. The interaction is negative and significant at 10%, suggesting that more efficient units derive larger strategic benefits from business group affiliation, probably because they are more likely to receive liquidity injections through the group's internal capital market. In this sense, our result is in line with Maksimovic and Phillips' (2002, 2008) empirical findings that conglomerate firms channel resources towards their most efficient segments, that as a consequence see their financial

[35] In unreported regressions (available upon request), we proxy efficiency using either labor productivity or TFP from the estimate of Cobb-Douglas and Translog production functions. The coefficient of group cash remains always negative and statistically significant.

[36] In our data-set employment figures are particularly reliable as they are cross-checked with information from employer labor tax reports. However, we do not have information on market dedicated employment for multidivisional firms. For this reason, we use employment-weighted entry rates only as a robustness exercise.

constraints mitigated.

Finally, comparing column (3) with column (2), we observe that once we control for group cash, the product market effect of individual firm liquidity is smaller. This again suggests that access to internal capital markets mitigates the credit rationing problems that make a firm's own cash holdings central to product market behavior, and is consistent with the finding in Hoshi, Kashyap and Scharfstein (1991) that membership in a conglomerate group reduces the sensitivity of a firm's investment to its own liquidity.

Table 24, columns (1)-(4), in Appendix A.2 presents the same regressions where we control also for the age of the industry. We do this to address the concern that cash holdings and entry rates might move in opposite directions along the life of an industry – cash hoarding is typically limited in young industries where the scope for entry is wide (see Table 5), whereas in mature industries with shrinking entry opportunities firms tend to hoard cash. Since French groups tend to operate in similar industries in terms of maturity, at least within manufacturing (see Table 8, panel B), this might mechanically lead to group cash being negatively correlated to entry rates. To the extent that the negative correlation between entry rates and *BG Total Cash* is driven by cross-sectoral differences in age, this concern is fully accounted for by the presence of industry fixed effects. Still, it might be the case that, as a given sector becomes older, entry rates decrease while incumbents and their affiliated groups accumulate more cash. In our sample only 20% of age variability is represented by within-sector variability; this means that sectoral age varies relatively little over-time and makes it unlikely that our results are driven by the above mechanism. However, to be safe in disregarding this alternative explanation, we control for the age of the industry in our regressions. As Table 24 shows, results do not change.[37]

Finally, as an additional robustness check, we consider different definitions of entrants. So far we have considered as entrants firms at their first year of activity. In their second year of activity they are treated as incumbents. However, one might argue that in their second or third year of activity firms are more similar to new entrants than to established competitors in the industry. We therefore extend the definition of entrants at time t considering as such not only new firms appearing at time t but also firms that entered at time $t-1$ and at time $t-2$. Accordingly, we re-define the incumbents and we re-compute the incumbent-related variables. Table 25 (Appendix A.2) shows that the qualitative results do not change.

4.2 Group Deep Pockets and External Capital Markets

In this Section we seek to better understand the economic mechanism underlying our finding that entry in a given market is negatively correlated with group liquidity hoarded by group units operating in other markets. For this purpose we explore whether the importance of group cash for entry is heterogeneous and varies in ways that are consistent with theoretical predictions. If financial phenomena in business groups are the source of the previous results, we expect group

[37] As a double check, in Table 24 columns (5)-(8) we control for sectoral trends. Also in this case, results are unchanged.

deep pockets to matter more for entry in environments where access to outside financing is more limited. Also, we expect the role of group cash to be more important in markets where the need for external funds is larger.

To this aim, we first split sectors in two subgroups according to the severity of financial market frictions and the degree of external dependence, using a number of proxies described in detail in the next section. Then, we run separate regressions for each subgroup.

4.2.1 Group Deep Pockets and Access to External Capital Markets

Tangibility

Table 11, columns 1 and 2, investigates whether the effect of group cash on entry is more important in industries where firms hold less tangible assets. For instance, in the *book and periodical publishing* industry, where soft assets make up for 54 percent of asset value, firms should find it harder to raise external funds as compared to the *iron and steel* manufacturing industry, where 96 percent of assets are tangible and can thus be pledged as collateral to raise capital externally.

In order to classify industries based on asset tangibility, we take the average over time of market *Tangibility*, as defined in Section 3.2, and we estimate our equations in the two sub-samples of markets below and above the median of the distribution of this time-invariant measure of tangibility. Our results support Prediction 2: the coefficient of *BG Total Cash* is larger in industries characterized by low asset tangibility, with the difference between the two coefficients being statistically significant almost at 5 percent (the p-value is 0.067). Results are even stronger when we split the sample considering industries belonging to the bottom quartile and to the top quartile of the distribution: while in very intangible industries the coefficient of *BG Total Cash* is -0.016***, in highly tangible industries the impact of group cash is null (-0.0004). The difference is statistically significant at 1 percent (the p-value is 0.007). Notice that the inclusion of the industry fixed effects allows us to control for any time-invariant sectoral characteristics, and thus to identify the coefficient of BG cash out of the within-sector time variation in each subgroup. Thus, the comparison of the results obtained for the two subgroups shows that the negative (positive) reaction of entry to periods of high (low) BG cash is stronger in the subgroup of sectors in which access to credit is more problematic.

Finally, we also find that in the subgroups of sectors where firms hold more tangible assets, entry seems to be more responsive to the time variation of incumbents' *own* liquidity. This result is consistent with recent ICM theories such as Cestone and Fumagalli (2005): incumbents with easier access to credit are the ones that receive less liquidity injections from the rest of the group, hence own financial resources rather than group cash are their main source of financial muscle.[38]

[38]Of course, besides this ICM effect, easier access to credit can be expected to have an additional, conflicting impact on the role of incumbent deep pockets, to the extent that internally generated liquidity matters *less* for entry in a setting where credit is easily available to firms. Although the overall effect is a priori undetermined, in our data the ICM effect seems to dominate, thus making incumbent own deep pockets *more* important for product market entry.

Sectoral Booms and Busts

Table 11, columns 3 and 4, investigates whether group cash has a differential effect on entry in markets experiencing an economic downturn as compared to markets undergoing an expansion period. The former should face more binding financial constraints.

We identify booms and busts from the fluctuations of real sectoral sales, where nominal sales are deflated by industry-specific price deflators, following the Braun and Larrain (2005) peak-to-trough criterion. Troughs occur when (the log of) real sales are below their trend by more than one standard deviation.[39] For each trough, we go back in time until we find a local peak, which is defined as the closest preceding year for which (detrended) real sales are higher than in the previous and posterior year. A bust goes from the year after the local peak to the year of the trough. The same procedure is used to identify sectoral booms. A peak occurs when current real sales are more than one standard deviation above their trend. Once a peak is identified, we go back in time until we find a local trough, i.e. the closest preceding year for which (detrended) real sales are lower than in the previous and posterior year. The years falling between a local trough and a peak are labelled as a boom.

We then run our regressions on the two sub-samples of markets-year observations experiencing a bust (column 3) and a boom (column 4). Our results support Prediction 2, as the coefficient of *BG Total Cash* is larger when estimated on the subgroup of industries experiencing an economic downturn and thus subject to tighter credit conditions. The difference between the two coefficients is statistically significant at 5 percent (the p-value is 0.051).

High-Growth and Innovative Industries

Table 12, columns 1 and 2, investigates whether business group cash has a stronger effect on entry in industries that grow more in the long-run.

We divide our (4 digit SIC) manufacturing industries in two groups: industries where the growth of the real value of sales during our sample period, 1995-2004, exceeds the median growth of all manufacturing industries, and industries where the growth of real sales is below the median. The real value of sales is computed using industry price deflators. Results indicate that entry is more responsive to the time variation of group cash in fast growing industries than in industries that grow less in the long-run. However, the difference between the two coefficients is significant at 10 percent only (the p-value is 0.1).

Results are more clear-cut when we classify industries based on innovation activity, as measured by patent growth. We have information on all the patents awarded by the European Patent Office (EPO) to French firms over the period 1995-2003, at the (4 digit) sectoral level. This allows us to split the sample into the industries where the growth of awarded patents is above the median and industries where patent growth lies below the median. The *waste management* and the *medical imaging equipment* in which industry patents more than doubled during our sample period belong to the first group, while the *textile* industry which displays very little patenting activity (and also very low sales growth) in most of its 4-SIC codes belongs

[39] We compute the trend using the Hodrick-Prescott filter with a smoothing parameter of 100.

to the second.

Columns (3) and (4) of Table 12 show that the coefficient of *BG Total Cash* is larger in the subgroup of more innovative industries, with the difference between the two coefficients being significant at 2 percent (the p-value is 0.022). In line with economic intuition, these results suggest that when the financing of R&D cannot be supported by hard assets or informational asymmetries with outside investors are severe, access to group liquidity relaxes financial constraints and thus represents a source of competitive strength (in line with Prediction 2).

4.2.2 Financial Dependence and Group Deep Pockets

Table 14, columns 1 and 2, explores whether financially dependent industries display a more pronounced group deep pocket effect (Prediction 3). In some industries, the amount of internally generated cash is not in line with the desired capital expenditures. In these environments, financially dependent incumbents who can draw upon additional sources of funding – such as group liquidity generated in *other sectors* – will be perceived as stronger competitors by equally financially dependent rivals. This in turn may negatively affect entry.

We measure the unobservable technological need for external finance relying on the index developed by Rajan and Zingales (1998) for U.S. sectors. Their indicator of a firm's reliance on external finance is the share of capital expenditures not financed with cash flow from operations. The external financial dependence of U.S. publicly listed companies over the '80s (from COMPUSTAT) is computed and then aggregated over time and across companies in a given industry (by using the industry median). The advantage of classifying industries based on the amount of external finance used by U.S. listed firms is that capital markets in the U.S. are among the most advanced in the world, and large publicly traded firms typically face the least frictions in accessing finance. Hence, the amount of external finance used by listed firms in the U.S. is likely to be a relatively pure measure of their (technologically driven) *demand* for external finance. Conversely, the actual amount of external funds used by (mostly private) French firms is likely to reflect factors that affect the *supply of external finance* such as the availability of hard, collateralizable assets. As long as the technological reasons why some industries depend more on external finance than others are persistent across countries, the Rajan and Zingales (1998) financial dependence ranking can be used to identify highly dependent industries in France.

Table 13 shows the external finance dependence index for the industries ranked by Rajan and Zingales (1998). The figures have been updated by Braun (2003) and refer to the period 1986-1995. Industries with low external financial dependence include tobacco, leather products, beverages and petroleum refineries; financially dependent industries include electrical machinery and professional and scientific equipment. As shown in the Table, to classify industries in our sample according to the Rajan and Zingales (1998) index we match the U.S. ISIC classification code with the French Activity Classification (NAF Code). This allows us to identify sectors whose external financial dependence is above/below the median of the distribution and to estimate our equations in the two sub-samples.

Results in Table 14 support Prediction 3: entry reacts to the time variation of business group cash in financially dependent industries, while it shows no reaction to group cash in less dependent industries. The difference between the two coefficients is significant at 10 percent. This shows that group cash disproportionately affects entry in financially dependent sectors, consistently with previous work by Klapper, Laeven and Rajan (2006) and Aghion, Fally and Scarpetta (2007) who show that financial development matters more for entry in more financially dependent industries.

4.3 Group-Backed Entry versus Stand-Alone Entry

In the previous sections we have explored the hypothesis that ICM activity in cash-rich groups, by mitigating financial constraints of affiliated incumbents, makes them stronger product market competitors, thereby discouraging entry of new firms. We now investigate the complementary hypothesis that firms backed by cash-rich groups are better equipped at *entering* new markets. Indeed, the descriptive statistics presented in Section 3.3 hint at this possibility: affiliated entrants tend to be larger and more efficient than stand-alone entrants. Furthermore, in markets dominated by cash-rich incumbent groups, a larger percentage of entrants is in turn group-affiliated.

We estimate the following system of three equations, where we distinguish the entry rates of stand-alone firms from the entry rates of group-affiliated firms:

$$\begin{aligned}
Entry^{sa}_{i,t} &= \gamma_1^{sa} TC^{BG}_{i,t-1} + \gamma_2^{sa} TC^{INC}_{i,t-1} + Z^{INC}_{i,t-1}\lambda^{sa} + X_{i,t-1}\beta^{sa} + \alpha_i^{sa} + \theta_t^{sa} + \varepsilon^{sa}_{i,t} \\
Entry^{bg}_{i,t} &= \gamma_1^{bg} TC^{BG}_{i,t-1} + \gamma_2^{bg} TC^{INC}_{i,t-1} + \gamma_3^{bg} TC^{BGE}_{i,t-1} + Reff_{i,t-1}\delta^{bg} + Z^{INC}_{i,t-1}\lambda^{bg} + X_{i,t-1}\beta^{bg} \\
&\quad + \alpha_i^{bg} + \theta_t^{bg} + \varepsilon^{bg}_{i,t} \\
Entry_{i,t} &= \gamma_1 TC^{BG}_{i,t-1} + \gamma_2 TC^{INC}_{i,t-1} + \gamma_3 TC^{BGE}_{i,t-1} + Reff_{i,t-1}\delta + Z^{INC}_{i,t-1}\lambda + X_{i,t-1}\beta + \\
&\quad \alpha_i + \theta_t + \varepsilon_{i,t} \qquad (2)
\end{aligned}$$

$Entry^{sa}_{i,t}$ measures the percentage of industry i's sales in year t accounted for by stand-alone entrants, while $Entry^{bg}_{i,t}$ is the percentage of industry sales accounted for by group-affiliated entrants. $Entry_{i,t}$ is the total entry rate, which is obviously equal to the sum of $Entry^{sa}_{i,t}$ and $Entry^{bg}_{i,t}$. The equations of the system contain the same variables as our baseline equation (1), including the industry fixed effects and a full set of year dummies. In the group-backed entry equation and in the total entry equation we also add the cash held by the groups affiliated with new entrants ($TC^{BGE}_{i,t-1}$) and the ratio of the efficiency of incumbent groups to the efficiency of entrant groups ($Reff_{i,t-1}$). The three equations are jointly estimated in a seemingly unrelated regression (SUR) system to account for possible cross-equation error correlation. Notice that, given that the set of controls varies across equations, the estimated coefficients are different from the ones that would be obtained estimating the equations separately.

Let us first focus on group-backed entry (Table 15, columns 1 and 4). Similarly to our results on overall entry, we find that – controlling for incumbent firms' efficiency – group-

backed entry is reduced when incumbent firms/groups hoard more cash. Furthermore, in line with Prediction 4, the coefficient of *Entrant BG Total Cash* is positive and significant: entry of groups in a market is facilitated when the former have piled large cash reserves in their originating markets. In column (4) we also interact incumbent group cash with entrant group cash: the interaction term is positive and significant, indicating that cash rich groups willing to enter a market are less likely to be deterred by the incumbent groups' deep pockets. While this suggests that relative financial muscle is a factor affecting group entry, groups planning entry into new markets also compare their level of efficiency to that of incumbent groups. To address this question, in columns 1 and 4 we also control for the ratio of the efficiency of established groups to the efficiency of the entrant groups (*Inc. BG Eff./Entr. BG Eff.*).[40] The estimated coefficient is significantly negative (and stable across specifications), suggesting that *relative* efficiency *and* financial strength considerations both play a role in business groups' entry decisions.[41]

The results in columns 2 and 5 refer instead to stand-alone entry. Stand alone entrants, whose scale of entry is on average much smaller with respect to group entrants,[42] do react negatively to group deep pockets, though to a lesser extent. Indeed, a one percent increase in incumbent group cash implies a 2.2 percent reduction in the stand-alone entry rate, as opposed to a 5.1 percent reduction in the group-backed entry rate.[43] The significantly smaller size of stand-alone firms as opposed to group-affiliated firms may suggest that in some industries stand-alone entrants try to exploit local market niches where they may be less affected by the strategic moves of big, group-affiliated players. This would explain a pattern common to various 4-digit sectors, where several small entrants, mostly stand-alone firms, challenge few large group-affiliated incumbents (e.g. bakery products, or wine in the food industry). However, as reported further on in Table 20, stand-alone entrants represent a good 3/4 of the entrants that exit the market within 5 years after entry. This would rather suggest that small entrepreneurial entrants have limited experience to gauge their post-entry productivity and their ability to withstand their rivals' financial muscle.[44] The next section, where we study the

[40]Table 8 suggests that in choosing their portfolio of manufacturing activities, groups tend to focus on closely related sectors, possibly in order to exploit common skills. Hence, our measure of relative efficiency compares the average efficiency of incumbent groups across the various manufacturing sectors where they operate to the average efficiency of entrant groups across the manufacturing sectors where they are already established.

[41]Results are qualitatively the same if we construct our measure of group efficiency considering only units that belong to the same 3-digit (as well as 2-digit) sector as the entrant.

[42]See Tables 6 and 7. If one considers unweighted figures, the small size of stand-alone entrants appears even more clearly. The median value of employment is 7 for stand-alone entrants, while it is 53 for affiliated entrants (the mean values are, respectively, 17 and 367). The median value of assets is 134 (in thousands of Euros) for stand-alone entrants and 2737 for affiliated entrants (the mean values being respectively 949 and 72436).

[43]Recall that the coefficient of (Inc.) BG Total Cash is a semi-elasticity, as we take the log of Total Cash while entry rates are simple shares. To compute elasticities, we refer to the average entry rates indicated in Table 1. Note that the entry rate by stand-alone firms amounts to 4.4%, thereby only accounting for 1/3 of the overall entry rate. Then, a 1% increase in (Inc.) BG Total Cash, by decreasing the stand-alone entry rate by 0.001 percentage points, produces a reduction of the stand-alone entry rate equal to (0.001/0.044)=2.2%. Similarly, the entry rate by affiliated firms amounts to 11.6%, hence a 1% increase in (Inc.) BG Total Cash, by decreasing the group-backed entry rate by 0.007 percentage points, produces a reduction of (0.007/0.116)=5.1%.

[44]The observed pattern of entry followed by immediate exit can be, for instance, reproduced by dynamic industry models à la Hopenhayn (1992), in which firms take entry decisions before observing the realization of their (ex-ante random) productivity level.

survival of stand-alone versus group entrants in the 3 to 5 year window post-entry, will provide more support to this idea.

The descriptive statistics presented in Section 3.3 show that groups entering into very young industries tend to hold most of their liquid reserves in units active in older sectors. This raises the question of whether groups use the cash hoarded in their older existing businesses to subsidize entry into new industries. We address this issue in the following way. We define a dummy variable which takes value one when the age of the industry where entry takes place is below the median (*Young Sector*) and a variable which measures the average age of the industries where the entrant group is already established (*Entrant Group Age*). We then add to the BG-entry equation a triple interaction among *Entrant Group Total Cash*, *Young Sector* and *Entrant Group Age*. As Table 16, column (1) shows, the coefficient of the interaction is positive and statistically significant; this indicates that entry into young industries is more facilitated by an entrant group's cash when the entering group is established in older sectors. This is in line with previous findings (see Maksimovic and Phillips 2008) that conglomerate segments in growth industries are more likely to expand within their industries if the conglomerate also has less productive divisions in a declining industry.

Group-Backed Entry in Financially Constrained and Financially Dependent Sectors
As argued in section 2, the financial flexibility guaranteed by cash-holdings is likely to have a more pronounced strategic role when access to external finance is costly. One would then expect that cash-rich established groups are better able to finance their way into high-growth innovative industries, industries with little tangible assets, as well as industries experiencing a downturn.

Table 17 displays estimates of our system of equations in the two sub-samples of high-growth and low-growth industries as defined in subsection 4.2.1. In line with Prediction 4, in the group-backed entry equation we find that the coefficient of *Entrant BG Total Cash* is larger in high-growth industries (column 4) than in low-growth industries (column 1). The coefficients are significantly different from each other at the 8% level. We also find that group-backed and stand-alone entry reacts to the time variation of incumbent group cash in high-growth industries (columns 4 and 5), but not in low-growth markets (columns 1 and 2). Interestingly, the relative efficiency of entrant groups with respect to established groups is a determinant of group-backed entry only in high-growth industries. When we classify industries based on innovation activity (columns 10, 7, 11 and 8), results are qualitatively similar.

We also obtain similar results when we split our sample into booming industries and industries experiencing a recession, and low- versus high-tangibility industries (Table 18). (Group-backed and stand-alone) entry is sensitive to the time variation of incumbent group cash only in low-tangibility sectors (columns 7 and 8 vs. 10 and 11). Group backed entry is facilitated by entrant group cash in both low-tangibility and high-tangibility sectors, but in low-tangibility sectors the effect of group cash is stronger (columns 7 and 10); the difference between coefficients of *Entrant BG Total Cash* is significant at 10%. A very similar pattern emerges from columns 1 and 2 versus 4 and 5, where we compare the impact of incumbent group cash and

entrant group cash in sectors experiencing a bust as opposed to sectors experiencing a boom.

Finally, we classify industries according to their level of external financial dependence (Low FD versus High FD) and estimate our system in the two sub-samples. Table 19 shows the results: as expected, group-backed entry shows a larger reaction to changes in entrant group cash in financially dependent industries, such as *professional scientific equipment*, than in the sub-group of industries in which external financial dependence is low, such as *tobacco* or *beverages*. In line with previous results, we find that only in financially dependent industries incumbent groups' cash has a negative impact on (group and stand-alone) entry.

4.4 Exit of Recent Entrants

We have investigated whether group cash affects the entry decision of new firms and the scale at which they decide to start their activity. We now explore the role of group cash for the survival/exit of recent entrants.

Recent entrants seem particularly vulnerable to exit. In our sample we observe that, on average, 68% of a cohort of new entrants abandons the industry in the 5 years after entry (see Table 20, Panel A). Dunne et al. (1988) find very similar figures for the US: on average, across the four-digit U.S. manufacturing industries, 61.5% of firms exit in the five years following the first census in which they are observed. Futhermore, Table 20 shows that stand-alone recent entrants are more likely to leave the market: indeed, almost 3/4 of the exiters are stand-alone firms.

If access to group liquidity is a source of competitive strength, then entrants should be less likely to survive when established rivals are affiliated with cash-rich groups. Conversely, entrants that are backed by cash-rich groups should be less vulnerable to exit. We test this hypothesis by estimating the following system of equations:

$$
\begin{aligned}
Exit^{sa}_{i,t} &= \gamma_1^{sa} TC^{BG}_{i,t-1} + \gamma_2^{sa} TC^{INC}_{i,t-1} + Z^{INC}_{i,t-1}\lambda^{sa} + X_{i,t-1}\beta^{sa} + \alpha_i^{sa} + \theta_t^{sa} + \varepsilon_{i,t}^{sa} \\
Exit^{bg}_{i,t} &= \gamma_1^{bg} TC^{BG}_{i,t-1} + \gamma_2^{bg} TC^{INC}_{i,t-1} + \gamma_3^{bg} TC^{BGE}_{i,t-1} + Reff_{i,t-1}\delta^{bg} + Z^{INC}_{i,t-1}\lambda^{bg} + X_{i,t-1}\beta^{bg} \\
&\quad + \alpha_i^{bg} + \theta_t^{bg} + \varepsilon_{i,t}^{bg} \\
Exit_{i,t} &= \gamma_1 TC^{BG}_{i,t-1} + \gamma_2 TC^{INC}_{i,t-1} + \gamma_3 TC^{BGE}_{i,t-1} + Reff_{i,t-1}\delta + Z^{INC}_{i,t-1}\lambda + X_{i,t-1}\beta + \alpha_i + \theta_t + \varepsilon_{i,t}
\end{aligned}
$$

We focus on exit of recent entrants in the 3 to 5 year window after entry. In particular, we measure exit of firms that entered in market i at time t ($Exit_{i,t}$) as the percentage of entrants' sales that is accounted for by entrants that exit from market i in the 3 to 5 years post entry. In the equations above we distinguish between the exit rate of stand-alone entrants and the exit rate of group-affiliated entrants. As for entry (see Equation (2)), also in this case we control for the characteristics of the market, of the incumbents and of the incumbent and entrant groups, including efficiency.

Table 20, Panel B provides some descriptive statistics on the exit rates. The first two rows of Panel B refer to unweighted exit rates, i.e. to the number of entrants that abandon the industry in the 3 to 5 year window after entry as a percentage of the total number of entrants in market

i at time t. The last two rows refer to weighted exit rates. We find that, on average, 13% of entrants in market i at time t leave the industry in the 3 to 5 years after entry. Group-backed entrants are less likely to exit, as they represent less than 1/3 of the entrants that decide to leave the market. However, affiliated exiters account for a larger proportion of the entrants' total sales as compared to stand-alone exiters, namely almost 2/3 of the recent entrants' total sales. This is due to the fact that affiliated entrants are larger than stand-alone entrants (see Table 6).

Our equations relate the exit of recent entrants to the (own or group) cash held by entrants and incumbents when entry is planned, controlling for the market characteristics at the time of entry, which allows us to control for entrants selection. Indeed, market characteristics and cash holdings when exit occurs (i.e., at $t+3$ to $t+5$), and exit decisions are likely to be jointly determined. Moreover, entrant (incumbent) group cash at the time of entry is not affected by any cash injections towards the entrant (the incumbent) that may occur after entry has taken place; this allows us to study the role of group deep pockets intended as potential resources *available for distribution*.

Table 21 shows the results. Firms that enter markets where incumbents are affiliated with cash rich groups tend to exit more in the 3 to 5 year window after entry. Thus, incumbent group deep pockets represent a threat even to those firms that are strong enough to enter industries dominated by cash-rich groups. The exit rate of stand-alone entrants in the 3 to 5 year window post-entry is particularly affected by the presence of deep-pocketed groups in the market. Indeed, a 1 percent increase in incumbent groups' cash increases the 3-to-5 year exit rate of stand-alone entrants by 7.8%, as opposed to a 5.8% increase in the exit rate of group-backed entrants. This confirms that incumbent groups' deep pockets pose an important challenge to small entrepreneurial firms. Finally, we find that entrants that are affiliated with cash-richer groups when entry is planned tend to exit less, possibly because they enter the market better equipped to survive.

4.5 Additional Evidence

Group Cash Holdings and Internal Capital Market Activity

If access to cash-rich groups' internal capital markets boosts firms' competitive strength by relaxing financial constraints, then we would expect the correlation between group liquidity and entry to be more pronounced when internal capital markets are more active. As a proxy for the intensity of Internal Capital Market activity, we use the number of within-group financial intermediaries. Indeed, financial intermediaries within a group are likely to facilitate the flow of resources across different subsidiaries, thus making a group's internal capital market more active. This view is supported by Hoshi, Kashyap, and Scharfstein (1991) and more recently by Samphantharak (2006), who finds that affiliation with financial intermediaries reduces the investment-cash flow sensitivity of group member firms. Hence, we classify our industries based on the number of financial intermediaries incumbents are affiliated with through a group structure. We expect group cash to exert a stronger effect on entry in sectors where incumbents

are affiliated with a number of financial intermediaries above the median.

Table 14, columns 3 and 4, shows the results. The coefficient of BG cash is negative and significantly different from zero only in industries dominated by groups including at least one financial intermediary. However, the difference between the coefficients of BG cash in the two sub-samples is not significantly different from zero (the p-value is 0.2).

Shocks to Group Cash

While theory suggests that product market competition is affected by the overall depth of group pockets (which include both the stock of net liquid assets held at a given time and current cash flows), it might be argued that changes in net liquid assets reflect a group's liquidity policy, that in turn may incorporate strategic considerations of entry deterrence. For this reason, we also study how entry in a market reacts to changes in group cash flows which are arguably less subject to manipulation. In doing this, we allow negative and positive shocks to affect asymmetrically an incumbent's competitive strength (and thus entry in its market). Table 22 reports results from the estimation of equation (1), where group liquidity is now replaced by two dummies ($Shock^{-}_{i,t}$ and $Shock^{+}_{i,t}$) capturing non-negligible year-to-year changes in group liquidity. $Shock^{-}_{i,t}$ indicates a negative shock to group liquidity in year t (for groups affiliated to incumbents in market i), and takes a value one if there is a fall in group cash flows of more than 10% in year t relative to the previous year and zero otherwise. $Shock^{+}_{i,t}$ is analogous to $Shock^{-}_{i,t}$ and takes a value one if there is an increase in group cash flows of more than 10% in year t relative to the previous year and zero otherwise.[45]

Column 1 indicates that when incumbent-affiliated groups experience a year-to-year fall in cash flows larger than 10%, market entry increases by 2.3 percentage points. By contrast, market entry does not seem to respond to positive shocks to group liquidity (see column 2). Interestingly, this asymmetric result carries over to unreported estimates, where we use alternative measures of shocks to group cash. A potential explanation for the strong pro-entry effect of negative shocks to group cash is that groups that are hit by a substantial reduction in cash flows may switch from a regime where they provide liquidity to affiliated firms even when these are faced with more intense competition, to a regime where they exit markets challenged by new entrants. As a consequence, a "Matsusaka and Nanda effect" may invite entry in those groups' markets. This change of regime would not occur for long-pursed groups experiencing a positive shock to their cash flows, which can explain why entry reacts mildly to such shocks.

Group loans actually received

In Section 4.2 we have explored the hypothesis that incumbents "backed" by cash-rich groups are perceived as stronger competitors by potential entrants as they are expected to face less stringent financial constraints. To this purpose, in our estimated equations we have controlled

[45]The year-to-year change represents a rough yet immediate measure of shocks to cash flows (see Bertrand and Mullainathan 2001 and Gopalan, Nanda and Seru 2007 for similar shock measures). Results are robust to different values of the threshold (5% and 20%). In additional unreported estimates available upon request, we focus on changes in cash flows held by units operating in *distant* markets, i.e. in markets outside the incumbent's *2SIC* market. We also experiment with an alternative measure of shocks to group liquidity defined as the residual of a regression of group cash flows on sector and year effects. Results are similar in both cases.

for the cash holdings of incumbent-affiliated groups – a measure of the resources *available for redistribution* in favor of the incumbents. Alternatively, potential rivals may give up entering a market because, at the time the entry decision is made, they observe that incumbents *have actually received* resources from the rest of the group.[46] We proxy such cash injection with the loans received by incumbents from the rest of the group (*Inc Loans from BG*) and we introduce this as an additional control in our entry equation. Column (3) in Table 22 shows that the magnitude and the precision of the coefficient of group cash is unaffected by the inclusion of intra-group loans received by incumbents: entrants are put off by incumbents' easy access to a source of internal finance (the group's cash reserves). Conversely, group loans do not have a significant impact on entry into product markets. Hence, we find no evidence that entry is being deterred by actual (strategic) liquidity injections in favor of incumbent firms.

5 Conclusion

This paper finds that entry rates in French manufacturing sectors are inversely related to the amount of liquidity hoarded by incumbent-affiliated groups, and positively related to entrant groups' cash. This is in line with the theoretical prediction (Cestone and Fumagalli, 2005) that cash-rich groups can be expected to shift liquidity in favor of units facing higher costs of external finance, hence providing the latter with a competitive edge over their rivals. Theory also suggests that entry should be more sensitive to (incumbent and entrant) group cash holdings in industries characterized by more severe financial constraints and by larger external financial needs. We find evidence consistent with these predictions.

To the best of our knowledge, this is the first work to investigate the link between product market dynamics and the (financial) characteristics of business groups. Our analysis is made possible by a unique dataset providing extensive information on the balance sheets as well as the ownership status of individual French firms.

A policy implication that can be drawn from our analysis is that, in environments where external finance is costly to raise, the presence in a market of incumbents affiliated with cash-rich groups should be seriously considered as a barrier to entry. In other words, an accurate assessment of competitive conditions in a given market requires to shift attention from the potential threat posed by incumbents' deep pockets to the threat posed by the deep pockets of *incumbent-affiliated groups*.

However, our findings do not support the view that group-membership is per se anti-competitive. First, to the extent that established groups rely on their deep pockets to subsidize large-scale entry into young, high growth industries, cash rich groups may as well exert a pro-competitive effect. Secondly, we do not provide evidence that internal capital market

[46] From a theoretical standpoint, both actual and expected cash injections – provided they are ex post optimal from the group perspective – have the potential to help market incumbents discourage entry. Of course, in a well-functioning internal capital market, cash injections that are not ex post optimal for the group suffer from a commitment problem and are thus unlikely to have any strategic effect.

activity facilitates predatory behavior by channelling resources from cash-rich subsidiaries enjoying a dominant position in one market towards units facing more intense competition.[47,48] In fact, our paper suggests that the financial slack provided to group members allows them to adopt product market strategies not available to (financially constrained) stand-alone rivals. This may well make the competitive environment tougher and, despite lower entry, benefit consumers (and total welfare) through lower prices, superior quality and the selection of more efficient product market players.[49] It is only in specific situations that access to group liquid wealth may facilitate predation. Whether the case at hand exhibits the factual characteristics that make predation a likely outcome should be assessed with care.

To conclude, in the present paper we have focused on the effect of internal capital markets on product market entry. Our results shed light on the claim that access to group liquidity, by alleviating financial constraints, may affect a firm's behavior along several dimensions, among which its employment policy, its propensity to engage in international trade and the intensity of its R&D activity. These are three issues we plan to investigate next.

[47]This is a long-standing concern in the anti-trust arena, that recently has been revived in Europe by the formation of large privatized multi-utilities and by the European Commission's recent stance that conglomerate mergers may create scope for anti-competitive spillovers. A prominent example is the EC's ban on the proposal to merge General Electric and Honeywell (Case No. COMP/M.2220): in motivating its decision, the Commission maintained that a merger with GE would allow Honeywell to rely on GE's deep pockets to fund predatory practices in its own markets. (This decision was upheld by the Court of First Instance, but the motivations for the predatory behavior have been considered insufficient.) Additionally, in the 2009 Guidance Paper on the enforcement of Article 82, the EC has expressed concerns about dominant firms subsidizing their non-dominant affiliates' exclusionary practices (Section C.62, page 20).

[48]In this respect, our paper does not provide a test to the argument that financially fit incumbents can engage in predatory practices in order to financially exhaust their rivals and drive them out of their markets (See Telser, 1966, Benoit, 1984, and Bolton and Scharfstein, 1990).

[49]Descriptive statistics in Table 7 are consistent with this argument.

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Table 1: **Entry Patterns Into Product Markets**

				Quartiles			
		Mean	St.Dev.	p25	p50	p75	N
# of Entrants	All	46.6	78.7	7	19	56	3083
	$>1\%$ Sales	2.32	2.15	1	2	3	3083
	$>5\%$ Sales	.53	.87	0	0	1	3083
# of Firms	All	249	437	35	99	301	3083
	$>1\%$ Sales	15.6	6.91	10	16	21	3083
Entry Rate (%)		16	17	5.6	11.5	19.9	3083
Entry Rate by BG (%)		11.6	17	1.8	5.5	13.2	3083
Entry Rate in Booms (%)		19.6	16.5	8.9	15.1	25.8	614
Entry Rate in Busts (%)		13.3	12.3	5.24	10.7	17.3	754

Note: Sectoral-level data between 1995 and 2004. We define as *Entrants* in market i at time t all firms that appear at time t and were not active at time $t-1$. *Entry Rates* in sector i year t is the ratio of sales of entrant firms over total sales in sector i year t. *Sectoral booms* and *busts* are identified from the fluctuations of real sectoral sales (where nominal sales are deflated by industry price deflators) using a peak-to-trough criterion.

Table 2: **Entry rates in 4-digit sectors experiencing booms and busts**

PANEL A: BOOMS

2-digit code	Name	Average entry rate in 4-digit sectors in boom								
		1997	1998	1999	2000	2001	2002	2003	2004	Over time
15	Food	0.202	0.232	0.181	0.163	0.151	0.377	0.176	0.321	0.236
17	Textile	0.158	0.116	0.075	0.089	0.194	0.247			0.135
18	Apparel	0.341	0.203	0.120	0.200	0.171	0.184		0.332	0.194
19	Leather and leather products	0.081	0.077	0.073	0.111	0.063	0.125			0.091
20	Wood and lumber	0.141	0.085	0.095	0.064		0.371			0.136
21	Paper and allied products	0.096	0.112	0.058	0.064	0.309	0.240			0.112
22	Printing and publishing	0.157	0.327	0.162	0.171	0.168	0.296	0.048		0.208
24	Chemicals and allied products	0.199	0.175	0.114	0.093	0.216	0.472	0.147	0.224	0.202
25	Rubber and plastics	0.174	0.151	0.138	0.435		0.165			0.184
26	Stone, clay, glass (and other nonmetallic mineral products)	0.150	0.208	0.199	0.241	0.172	0.186			0.197
27	Primary metal industries	0.062	0.134	0.269	0.174	0.293	0.754			0.248
28	Fabricated metal products	0.177	0.127	0.133	0.182	0.026	0.204		0.079	0.152
29	Machinery and equipment (industrial and household)	0.132	0.250	0.207	0.156	0.148	0.217	0.176	0.230	0.194
30	Computer and office equipment	0.354			0.288					0.321
31	Electrical equipments and supplies	0.052	0.133	0.124	0.117		0.337		0.530	0.166
32	Radio, TV and communications equipments	0.211	0.187	0.195	0.106					0.165
33	Instruments and related products	0.130		0.054	0.153		0.348	0.115		0.211
34	Motor vehicles	0.133	0.126	0.225	0.224					0.177
35	Other transportation equipment	0.110	0.128	0.079	0.059	0.039	0.369			0.115
36	Furniture and miscellaneous industries (e.g. jewelry, musical instruments, toys and sporting goods)	0.187	0.142	0.108	0.145	0.161	0.142			0.144
37	Recycling				0.168				0.140	0.154

PANEL B: BUSTS

2-digit code	Name	Average entry rate in 4-digit sectors in bust								
		1997	1998	1999	2000	2001	2002	2003	2004	Over time
15	Food	0.108	0.072	0.110	0.107	0.118	0.195	0.124	0.137	0.115
17	Textile	0.266	0.062	0.114	0.041	0.098	0.205	0.107	0.157	0.132
18	Apparel	0.168	0.163	0.115	0.108	0.137	0.176	0.075		0.138
19	Leather and leather products	0.066	0.086	0.123	0.100	0.088	0.125	0.087	0.082	0.092
20	Wood and lumber	0.101	0.137		0.119	0.146	0.108	0.063	0.100	0.108
21	Paper and allied products	0.054	0.022	0.035	0.196	0.166	0.054		0.074	0.113
22	Printing and publishing	0.211	0.022	0.086	0.158	0.168	0.303	0.116	0.103	0.157
24	Chemicals and allied products		0.260	0.057	0.087	0.156			0.017	0.122
25	Rubber and plastics	0.131		0.003	0.124	0.181		0.100	0.075	0.124
26	Stone, clay, glass (and other nonmetallic mineral products)	0.236		0.058	0.054	0.102		0.065	0.009	0.089
27	Primary metal industries		0.030	0.060	0.054	0.162	0.102	0.001		0.107
28	Fabricated metal products	0.191	0.141	0.144	0.048	0.112	0.000	0.046	0.081	0.082
29	Machinery and equipment (industrial and household)	0.170	0.132	0.070	0.111	0.133	0.048	0.078	0.089	0.117
30	Computer and office equipment				0.023	0.275		0.054		0.118
31	Electric equipments and supplies	0.205	0.012	0.451	0.119	0.256				0.233
32	Radio, TV and communications equipments				0.058	0.230	0.276	0.081		0.205
33	Instruments and related products			0.055	0.199	0.199	0.103			0.172
34	Motor vehicles		0.014		0.049	0.081	0.143	0.148	0.126	0.086
35	Other transportation equipment	0.082	0.121	0.162	0.268	0.176	0.089	0.030		0.155
36	Furniture and miscellaneous industries (e.g. jewelry, musical instruments, toys and sporting goods)	0.110	0.100	0.075	0.068	0.143	0.087	0.087	0.087	0.096
37	Recycling		0.127	0.149		0.169				0.148

Note: *Sectoral booms* and *busts* are identified from the fluctuations of real sectoral sales (where nominal sales are deflated by industry price deflators) using a peak-to-trough criterion. For each year, indicated at the head of the columns, Panel A (Panel B) displays the average entry rate in the four-digit sectors in boom (in bust) that year and that belong to the two-digit aggregation indicated at the beginning of the raw. The last column displays the average over the sample period of the entry rate in all of the four-digit sectors in boom (in bust) that belong to the two-digit aggregation indicated at the beginning of the raw. The regression sample starts from 1997 because the right-hand side variables in our entry equation are one-period lagged. Further, we estimate firms' TFP using the Olley and Pakes (1996) methodology, which requires information on lagged values of inputs.

Table 3: **4-digit sectors experiencing booms and busts**

PANEL A: BOOMS

2-digit code	Name	Number of 4-digit sectors in boom								Total	Number of different 4-digit sectors in boom	Number of years a 4-digit sector is in boom
		1997	1998	1999	2000	2001	2002	2003	2004			
15	Food (46)	6	7	11	6	1	8	2	4	45	26	1.7
17	Textile (24)	9	12	10	5	5	5	0	0	46	19	2.4
18	Apparel (8)	1	4	4	2	1	1	0	1	14	7	2
19	Leather and leather products (3)	1	1	1	2	1	1	0	0	7	2	3.5
20	Wood and lumber (7)	3	4	5	1	0	2	0	0	15	7	2.1
21	Paper and allied products (9)	1	3	4	2	1	1	0	0	12	5	2.4
22	Printing and publishing (13)	3	5	5	4	2	2	1	0	22	8	2.7
24	Chemicals and allied products (22)	5	5	5	2	1	3	1	2	24	9	2.6
25	Rubber and plastics (9)	3	5	6	2	0	2	0	0	18	7	2.5
26	Stone, clay, glass (28) (and other nonmetallic mineral products)	6	8	5	5	1	1	0	0	26	12	2.2
27	Primary metal industries (20)	3	7	4	5	3	3	0	0	25	12	2
28	Fabricated metal products (29)	13	14	13	13	1	2	0	1	57	21	2.7
29	Machinery and equipment (42) (industrial and household)	7	16	15	13	6	3	1	2	63	27	2.3
30	Computer and office equipment (2)	1	0	0	1	0	0	0	0	2	1	2
31	Electrical equipments and supplies (13)	3	3	4	2	0	2	0	1	15	6	2.5
32	Radio, TV and communications equipments (7)	3	3	3	5	0	0	0	0	14	5	2.8
33	Instruments and related products (8)	1	0	1	2	0	4	2	0	10	6	1.6
34	Motor vehicles (4)	1	2	2	1	0	0	0	0	6	2	3
35	Other transportation equipment (12)	1	1	2	2	1	1	0	0	8	3	2.6
36	Furniture and miscellaneous industries (16) (e.g. jewelry, musical instruments, toys and sporting goods)	5	9	8	9	5	2	0	0	38	12	3.2
37	Recycling (2)	0	0	0	1	0	0	0	1	2	2	1
Total		76	109	108	85	29	43	7	12	469	199	2.4

PANEL B: BUSTS

2-digit code	Name	Number of 4-digit sectors in bust								Total	Number of different 4-digit sectors in bust	Number of years a 4-digit sector is in bust
		1997	1998	1999	2000	2001	2002	2003	2004			
15	Food (46)	1	1	10	21	34	1	6	2	76	39	1.9
17	Textile (24)	4	3	5	5	7	7	8	5	44	21	2.1
18	Apparel (8)	4	2	1	2	6	3	3	0	21	8	2.6
19	Leather and leather products (3)	1	1	1	1	2	1	2	2	11	3	3.6
20	Wood and lumber (7)	1	1	0	4	5	2	5	4	22	7	3.1
21	Paper and allied products (9)	1	2	2	4	3	1	0	1	14	7	2
22	Printing and publishing (13)	4	2	2	3	5	3	3	3	25	12	2.1
24	Chemicals and allied products (22)	0	1	2	10	16	0	0	2	31	18	1.7
25	Rubber and plastics (9)	1	0	1	4	5	0	1	3	15	7	2.1
26	Stone, clay, glass (28) (and other nonmetallic mineral products)	3	0	2	9	15	0	1	3	33	21	1.6
27	Primary metal industries (20)	0	1	2	5	10	2	1	0	21	13	1.6
28	Fabricated metal products (29)	1	1	1	5	11	3	4	6	32	19	1.7
29	Machinery and equipment (42) (industrial and household)	10	2	2	3	12	6	4	2	41	23	1.8
30	Computer and office equipment (2)	0	0	0	1	1	0	1	0	3	2	1.5
31	Electric equipments and supplies (13)	1	1	3	6	12	0	0	0	23	12	1.9
32	Radio, TV and communications equipments (7)	0	0	0	1	5	2	1	0	9	5	1.8
33	Instruments and related products (8)	0	0	2	3	8	1	0	0	14	8	1.7
34	Motor vehicles (4)	0	1	0	2	2	1	1	1	8	4	2
35	Other transportation equipment (12)	2	2	1	3	3	1	1	0	13	9	1.4
36	Furniture and miscellaneous industries (16) (e.g. jewelry, musical instruments, toys and sporting goods)	5	2	4	5	5	2	4	4	31	13	2.4
37	Recycling (2)	0	1	1	0	1	0	0	0	3	2	1.5
Total		39	24	42	97	168	36	46	38	490	253	1.9

PANEL C

Total number of 4-digit sectors neither in boom nor in bust	214	196	179	147	132	250	276	279	

Note: *Sectoral booms* and *busts* are identified from the fluctuations of real sectoral sales (where nominal sales are deflated by industry price deflators) using a peak-to-trough criterion. For each year, indicated at the head of the columns, Panel A (Panel B) displays the number of four-digit sectors in boom (in bust) that year and that belong to the two-digit aggregation indicated at the beginning of the raw. The second column reports in parenthesis the total number of four-digit sectors that belong to that two-digit aggregation indicated at the beginning of the raw. The regression sample starts from 1997 because the right-hand side variables in our entry equation are one-period lagged. Further, we estimate firms' TFP using the Olley and Pakes (1996) methodology, which requires information on lagged values of inputs.

Table 4: **Top/Bottom Entry Sectors**

4 digit Code	Name	Rank	Entry rate	Number of entrants	% of affiliated entrants	Affiliated entrants' share of entry rate
TOP 10 ENTRY SECTORS						
351B	Ships for civil purposes	1	0.389 (0.34)	16.2 (3.27)	0.32	0.77
331A	Medical imaging equipment	2	0.346 (0.349)	16.6 (5.15)	0.20	0.63
158B	Bakery products	3	0.323 (0.10)	95.3 (28.5)	0.07	0.30
283B	Reactors and related material for the nuclear industry	4	0.322 (0.25)	12 (6.7)	0.46	0.75
159G	Wines	5	0.291 (0.11)	59 (17.8)	0.20	0.30
262J	Other ceramic products not elsewhere classified	6	0.269 (0.17)	3.7 (1.73)	0.35	0.36
262E	Ceramic insulators and insulating fittings	7	0.263 (0.30)	2.3 (1.87)	0.50	0.59
264C	Construction products in baked clay (excluding bricks and tiles)	8	0.258 (0.218)	3.4 (2.7)	0.31	0.50
223E	Reproduction of computer media	9	0.257 (0.26)	7.56 (3.32)	0.09	0.39
351A	Building, repair and maintenance of of warships	10	0.256 (0.35)	3 (2.06)	0.55	0.81
BOTTOM 10 ENTRY SECTORS						
265E	Plaster	302	0.045 (0.075)	1.55 (0.88)	0.29	0.41
274G	Primary processing of lead, zinc and tin	303	0.044 (0.038)	3.33 (2.06)	0.39	0.43
159B	Distilled alcoholic beverages	304	0.044 (0.031)	12.9 (3.85)	0.28	0.55
265A	Cement	305	0.037 (0.053)	2.9 (1.45)	0.34	0.61
261E	Flat glass	306	0.036 (0.029)	16.9 (5.25)	0.18	0.53
265C	Lime	307	0.035 (0.036)	2.55 (1.4)	0.58	0.60
261K	Glass insulators	308	0.031 (0.05)	1.2 (1.3)	0.50	0.61
153A	Milled, dehydrated and frozen potato products	309	0.029 (0.04)	3.1 (2.5)	0.35	0.53
287J	Chains	310	0.028 (0.06)	0.44 (0.72)	0.66	0.67
272A	Cast iron tubes	311	0.010 (0.02)	1 (0.86)	0.08	0.05

Note: The table displays the ten sectors with the highest (lowest) entry rates over the sample period. We define as *Entrant* in market i at time t all firms that appear at time t and were not active at time $t-1$. *Entry Rates* in sector i year t is the ratio of sales of entrant firms over total sales in sector i year t. For each sector we report the average over time of the variables indicated at the head of the columns. Standard deviations are reported in parenthesis.

Table 5: **Characteristics of Top 10/Bottom 10 Entry Sectors**

	Entry rate	**Number of entrants**	**Number of entrants > 1%**	**% of affiliated entrants**	**Affiliated entrants' share of entry rate**	**Number of incumbents**	**Number of incumbents > 1%**	**% of affiliated incumbents**
Top 10	0.298 (0.247)	21.90 (7.32)	3.133	0.308	0.540	52.80	9.61	0.307
Bottom 10	0.034 (0.045)	4.59 (2.03)	0.722	0.367	0.499	23.94	8.26	0.507
Top decile	0.251 (0.213)	24.67 (8.02)	2.76	0.348	0.645	69	9.63	0.366
Bottom decile	0.056 (0.061)	12.86 (4.48)	1.02	0.343	0.53	72.89	11.4	0.475
	Affiliated incumbents' market share	**Age**	**Growth of patents**	**Capital Intensity**	**HHI**	**Financial Dependence**	**Incumbent BG cash**	**Entrant BG Cash**
Top 10	0.50	15.6	0.840	0.672	0.284	0.179	2542375	1854603
Bottom 10	0.81	23.6	0.283	1.410	0.432	0.147	1836353	937535
Top decile	0.569	16.4	1.209	0.683	0.246	0.279	2561101	1721116
Bottom decile	0.786	21.7	0.329	1.029	0.304	0.193	2145231	1467390

Note: The top panel of the table displays the average value over the sample period for the top ten and bottom ten sectors of the variables indicated at the head of the columns. We define as *Entrants* in market i at time t all firms that appear at time t and were not active at time $t-1$. *Entry Rates* in sector i year t is the ratio of sales of entrant firms over total sales in sector i year t. We define as incumbents in market i at time t all the firms that are active at time t and were active at time $t-1$. *Age* of industry i in year t is measured as the average age of the firms that operate in that industry. *Patent Growth* in market i at time t measures the average growth of patents awarded by the European Patent Office to the firms active in that market over the period 1995-2003. *Capital Intensity* in industry i in year t is measured as the ratio of fixed assets over output. *HHI* in market i at time t is the value of the Herfindahl index. *Financial dependence* is the share of capital expenditures not financed with cash flow from operations. This is computed for US publicly listed companies in the period 1986-1995 and then aggregated over time and across companies in a given industry (using the industry median). For affiliated incumbents and affiliated entrants in market i at time t, *BG Cash* measures the average total cash held by the firm-affiliated groups. This is computed by adding all the group subsidiaries' Total Cash excluding the cash held by the firm (incumbent/entrant). Firms' total cash measures the sum of firms' Net Liquid Assets and Operating Cash Flow. Nominal variables expressed in thousands of Euros have been deflated using sectoral prices indexes.

Table 6: **Entrants and Incumbents**

		Entrants			Incumbents		
		All	BG Aff.	SA	All	BG Aff.	SA
		(1)	(2)	(3)	(4)	(5)	(6)
Assets	Mean	154223	184781	6046	210078	234367	7491
	Sd	797848	895565	62731	714309	739676	30695
	p50	11642	20290	1044	42777	55811	2454
	N	2995	2777	2883	3082	3064	3035
Employment	Mean	790	974	55.5	936	1073	68.8
	Sd	3570	4027	150	2589	2696	90.2
	p50	144	227	30.5	341	434	47.5
	N	2995	2777	2883	3082	3064	3035
VA/worker	Mean	87	88.3	58.6	108	124	54.9
	Sd	863	942	545	884	1183	65.6
	p50	48.7	50.8	42.3	55.9	58.1	47.8
	N	2988	2756	2861	3082	3063	3026
TFP	Mean	3.05	3.07	3.04	3.05	3.05	3.05
	Sd	0.462	0.46	0.458	0.459	0.459	0.458
	p50	3.05	3.07	3.05	3.05	3.06	3.05
	N	2347	2101	2221	2427	2419	2402
Own Total Cash	Mean	165	-347	-290	69531	79155	4534
	Sd	99484	108465	6799	174241	183075	16079
	p50	-541	-1089	-78.2	22197	28704	1984
	N	2995	2777	2883	3082	3064	3035
BG Total Cash	Mean	-	1904221	-	-	2595051	-
	Sd	-	8822740	-	-	7211362	-
	p50	-	121979	-	-	544934	-
	N	-	2777	-	-	3064	-

Note: The table presents market-level variables. Nominal variables expressed in thousands of Euros have been deflated using sectoral prices indexes. All variables are based on sales-weighted averages. *TFP* is estimated using the methodology proposed by Olley and Pakes (1996). *Own Total Cash* measures the sum of firms' Net Liquid Assets and Operating Cash Flow. For affiliated firms, *BG Total Cash* measures the total cash held by the firm-affiliated group. This is computed by adding all the group subsidiaries' Total Cash, excluding the cash held by the firm.

Table 7: **Entrants and Incumbents in High and Low BG-Cash Markets**

PANEL A		**High BG Cash** (1)	**Low BG Cash** (2)
Entry Rates	Mean	17.5	14.8
	St. Dev.	19.5	13.6
	Median	11.5	11.7
	N	1547	1536
Market Shares of Affiliated Incumbents	Mean	82.3	62.9
	St. Dev.	16.4	25.3
	Median	86.8	67.5
	N	1546	1536
Percentage of Affiliated Entrants	Mean	68.8	49.7
	St. Dev.	30.7	32.9
	Median	79.7	51.5
	N	1507	1488

PANEL B		*Affiliated Incumbents*		*Stand-Alone Incumbents*		*Affiliated Entrants*		*Stand-Alone Entrants*	
		High BG Cash (1)	**Low BG Cash** (2)	**High BG Cash** (3)	**Low BG Cash** (4)	**High BG Cash** (5)	**Low BG Cash** (6)	**High BG Cash** (7)	**Low BG Cash** (8)
Assets	Mean	402333	64416	10650	4342	309849	52769	9523	2596
	St. Dev.	1003807	155110	42318	8780	1219984	210273	88463	7280
	Median	114962	27775	2916	2096	37295	10083	1254	857
	N	1541	1523	1515	1520	1426	1351	1436	1447
Employment	Mean	1661	478	76.4	61.2	1488	431	65.3	45.8
	Sd	3568	1021	114	56.1	5393	1438	203	60.5
	p50	686	295	50.1	45.2	345	158	33	28.5
	N	1541	1523	1515	1520	1426	1351	1436	1447
VA/Worker	Mean	158	90.2	61.1	48.7	121	54.2	74.8	42.7
	Sd	1640	305	87.8	29.3	1312	68.3	759	145
	p50	64.3	52.9	50.5	45.5	57	45.5	43.8	41.3
	N	1540	1523	1507	1519	1416	1340	1420	1441
TFP	Mean	3.17	2.93	3.17	2.93	3.18	2.94	3.17	2.92
	Sd	.451	.434	.449	.435	.45	.432	.451	.436
	p50	3.16	2.92	3.16	2.92	3.17	2.92	3.17	2.91
	N	1202	1217	1194	1208	1142	1077	1138	1150

Note: Nominal variables expressed in thousands of Euros have been deflated using sectoral price indexes. All variables are based on sales-weighted averages. *High BG Cash* Markets are markets where the Total Cash of incumbent-affiliated groups is above the median value.

Table 8: **Business Groups: Portfolio of Industries**

PANEL A: Sector relatedness (based on industry classification)							
All groups	*Mean*	*p5*	*p25*	*p50*	*p75*	*p95*	*N*
# of firms in the group	4.42	1	1	2	4	11	69614
% of firms outside manufacturing	31.4	0	0	33.3	50	80	69614
% of group cash held outside manuf.	42.5	0	0	48.6	68.8	100	69609
Within manufacturing:							
Concentration within 3 digit sector (HHI)	0.899	0.44	1	1	1	1	69615
Concentration within 2 digit sector (HHI)	0.933	0.50	1	1	1	1	69615
% of firms in same 3-digit sector	76.1	12.5	50	100	100	100	91454
% of firms in same 2-digit but not same 3-digit sector	7.25	0	0	0	0	50	91454
Entrant groups							
# of firms in the group	8.28	1	2	3	6	24	16542
% of firms outside manufacturing	32.8	0	0	33.3	50	83.3	16542
% of group cash held outside manuf.	57.1	-6.13	0	51.1	81.8	118	16540
Within manufacturing:							
% of firms in same 3-digit sector as the entrant	74.2	11.1	50	100	100	100	18926
% of firms in same 2-digit sector as the entrant but not same 3 digit sector	7.63	0	0	0	0	50	18926

PANEL B: Maturity of Industries							
All groups	*Mean*	*p5*	*p25*	*p50*	*p75*	*p95*	*N*
Within manufacturing:							
Concentration within age decile (HHI)	0.888	0.417	1	1	1	1	69535
% of firms in sectors belonging to the same age decile	75.6	16.7	50	100	100	100	91969
% of group cash from firms in sectors belonging to the same age decile	75.6	0	50.6	100	100	100	91955
Entrant groups							
Within manufacturing:							
% of firms in sectors belonging to the same age decile as the entrant	72.8	14.3	50	100	100	100	18921
% of group cash from firms belonging to the same age decile as the entrant	64.3	-13.4	16.6	100	100	100	18921

Note: The table displays selected characteristics of all groups in the sample and of all entrant groups. For each group in any given year, Panel A computes concentration as the sum of the squared values of the shares of manufacturing units active in each 3-digit/2-digit sector. For each group in any given year, Panel B computes concentration as the sum of the squared values of the shares of manufacturing units active in sectors belonging to each age decile. Group Cash measures the total cash held by the firm-affiliated group. This is computed by adding all the group subsidiaries' Total Cash. Firms' total cash measures the sum of firms' Net Liquid Assets and Operating Cash Flow. Some of the units in a group may have negative cash-holdings. This explains why the ratio between group cash in a given subset of sectors and group total cash may turn out to be either negative or larger than one. Nominal variables expressed in thousands of Euros have been deflated using sectoral prices indexes.

Table 9: **Business Groups: Portfolio of Industries**

PANEL A: Long-run growth							
All groups	*Mean*	*p5*	*p25*	*p50*	*p75*	*p95*	*N*
Within manufacturing:							
Concentration within long-run growth decile (HHI)	0.892	0.44	1	1	1	1	69617
% of firms in sectors belonging to the same long-run growth decile	76.2	16.7	50	100	100	100	91360
% of group cash from firms in sectors belonging to the same long-run growth decile	76.1	0	54	100	100	100	91308
Entrant groups							
Within manufacturing:							
% of firms in sectors belonging to the same long-run growth decile as the entrant	73.5	14.3	50	100	100	100	18931
% of group cash from firms in sectors belonging to the same long-run growth decile as the entrant	68.1	-13.3	19.7	100	100	100	18907

PANEL B: Innovation intensity							
All groups	*Mean*	*p5*	*p25*	*p50*	*p75*	*p95*	*N*
Within manufacturing:							
Concentration within patent growth decile (HHI)	0.908	0.5	1	1	1	1	69617
% of firms in sectors belonging to the same patent growth decile	78.9	16.7	50	100	100	100	88179
% of group cash from firms in sectors belonging to the same patent growth decile	78.9	0	70.4	100	100	100	88165
Entrant groups							
Within manufacturing:							
% of firms in sectors belonging to the same patent growth decile as the entrant	77	15.4	50	100	100	100	18575
% of group cash from firms belonging to the same patent growth decile as the entrant	70.4	-10.1	40.1	100	100	100	18566

Note: The table displays selected characteristics of all groups in the sample and of all entrant groups. For each group in any given year, Panel A computes concentration as the sum of the squared values of the shares of manufacturing units active in each 3-digit/2-digit sector. For each group in any given year, Panel B computes concentration as the sum of the squared values of the shares of manufacturing units active in sectors belonging to each patent growth decile. Group Cash measures the total cash held by the firm-affiliated group. This is computed by adding all the group subsidiaries' Total Cash. Firms' total cash measures the sum of firms' Net Liquid Assets and Operating Cash Flow. Some of the units in a group may have negative cash-holdings. This explains why the ratio between group cash in a given subset of sectors and group total cash may turn out to be either negative or larger than one. Nominal variables expressed in thousands of Euros have been deflated using sectoral prices indexes.

Table 10: **Business Group Liquidity And Entry**

	(1)	(2)	(3)	(4)
Size	-0.276***	-0.260***	-0.255***	-0.254***
	(0.025)	(0.023)	(0.024)	(0.024)
Δ Size	-0.038***	-0.053***	-0.054***	-0.053***
	(0.012)	(0.015)	(0.014)	(0.014)
ROA	0.084***	0.095***	0.087**	0.087**
	(0.031)	(0.033)	(0.036)	(0.037)
Capital Intensity	-0.008	-0.006	-0.008	-0.009
	(0.010)	(0.010)	(0.012)	(0.012)
HHI	0.121	0.149**	0.173**	0.169**
	(0.075)	(0.075)	(0.076)	(0.075)
Tangibility	0.019	0.014	0.019	0.013
	(0.060)	(0.063)	(0.065)	(0.066)
Average Efficiency	0.013	0.006	0.006	0.049
	(0.026)	(0.026)	(0.026)	(0.031)
Relative Efficiency	-0.036	-0.015	-0.012	-0.010
	(0.048)	(0.050)	(0.050)	(0.049)
BG Affiliation	-0.020**	-0.026***	-0.026***	-0.025***
	(0.008)	(0.008)	(0.008)	(0.008)
Inc. Total Cash		-0.009***	-0.005	-0.005
		(0.003)	(0.004)	(0.003)
BG Total Cash			-0.007**	-0.008***
			(0.003)	(0.003)
BG Total Cash × Average Efficiency				-0.003*
				(0.002)
Market & Year FE	YES	YES	YES	YES
R-squared	0.583	0.598	0.600	0.602
N	2239	2100	2050	2050

Note: Sectoral-level data between 1995 and 2004. Entry in sector i year t is the ratio of sales of entrant firms over total sales in sector i year t. *Size* is the (log of) total sales; Δ *Size* is the change in market size from $t-1$ to t; *ROA* is the ratio of operating profits to total assets in a given market; *Capital intensity* is the ratio of fixed assets over output; *HHI* is the Herfindhal index (firms' market shares computed in terms of sales); *Tangibility* is ratio of tangible assets to total assets; *Average Efficiency* is the (weighted) average of incumbents' TFP; *Relative Efficiency* is the ratio of TFP of large affiliated firms to TFP of small stand-alone firms; *BG Affiliation* is the market share of group-affiliated incumbents; *Inc. Total Cash* is the incumbent firms' total cash. *BG Total Cash* is the total cash held by an incumbent-affiliated group. This is computed by adding all the group subsidiaries' cash holdings, excluding the cash held by the incumbent. *Average Efficiency* is normalised to have zero mean. This allows to interpret the coefficient of *BG Total Cash* in Column 4 as the effect on the entry rate when *Average Efficiency* is at its mean value. All market characteristics are computed as weighted averages. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level.

Table 11: **Group Liquidity and Entry: Access to External Capital**

	Tangibility		**Sectoral demand shocks**	
	Low tang.	**High tang.**	**Busts**	**Booms**
	(1)	(2)	(3)	(4)
Size	-0.242***	-0.264***	-0.304***	-0.467***
	(0.028)	(0.031)	(0.101)	(0.074)
Δ Size	-0.040**	-0.087***	0.138	0.090
	(0.017)	(0.019)	(0.084)	(0.061)
ROA	0.107**	0.074	-0.179***	0.212**
	(0.048)	(0.049)	(0.066)	(0.092)
Capital Intensity	-0.013	-0.007	-0.040***	-0.002
	(0.028)	(0.014)	(0.011)	(0.068)
HHI	0.143*	0.225	0.096	0.420*
	(0.076)	(0.177)	(0.133)	(0.241)
Tangibility	0.043	-0.051	-0.269	-0.381
	(0.072)	(0.144)	(0.230)	(0.218)
Average efficiency	-0.002	0.038	0.015	0.197**
	(0.024)	(0.060)	(0.053)	(0.093)
Relative efficiency	0.001	-0.037	0.065	-0.139
	(0.067)	(0.068)	(0.081)	(0.177)
BG Affiliation	-0.026**	-0.032**	-0.032	0.011
	(0.012)	(0.013)	(0.035)	(0.019)
Inc. Total Cash	0.000	-0.011**	0.001	0.006
	(0.006)	(0.005)	(0.010)	(0.009)
BG Total Cash	-0.009**	-0.002	-0.013***	0.001
	(0.004)	(0.003)	(0.005)	(0.007)
Market & Year FE	YES	YES	YES	YES
R-squared	0.659	0.517	0.349	0.367
N	1013	1037	490	469

Note: We take the average over time of market *Tangibility* and we define as *High-tangibility* markets as those markets where this time-invariant measure of tangibility is above the median value. We identify *booms* and *busts* from the fluctuations of real sectoral sales, where nominal sales are deflated by *industry* price deflators. We follow a peak-to-trough criterion, where a trough occurs when the (log) of real sales deviates from its trend level by more than one standard deviation. For each trough, we go back in time until we find a local peak, which is defined as the closest proceding year for which cyclical real sales (the difference between actual and trend values) are higher than during the previous and posterior year. A bust goes from the year after the local peak to the year of the trough. The same procedure is used to identify sectoral booms. A peak occurs when current real sales are more than one standard deviation above their trend. Once identified a peak, we go back in time until we find a local trough. The years falling between a local trough and a peak are labeled as a boom. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level. The p-values on the difference between the two coefficients of BG Total Cash being different from zero are 0.067 and 0.051.

Table 12: **Group Liquidity and Entry: Access to External Capital**

	Long-run growth		**Patents growth**	
	High growth	**Low growth**	**High growth**	**Low growth**
	(1)	(2)	(3)	(4)
Size	-0.271***	-0.300***	-0.216***	-0.302***
	(0.027)	(0.044)	(0.025)	(0.037)
Δ Size	-0.038**	-0.045*	-0.065***	-0.064**
	(0.017)	(0.026)	(0.015)	(0.028)
ROA	0.082	0.090*	0.143***	0.071
	(0.064)	(0.051)	(0.048)	(0.050)
Capital Intensity	0.008	-0.014	-0.031	0.025
	(0.030)	(0.010)	(0.039)	(0.033)
HHI	0.163*	0.150	0.166**	0.194
	(0.094)	(0.114)	(0.081)	(0.164)
Tangibility	-0.081	0.101	0.031	0.008
	(0.086)	(0.088)	(0.071)	(0.076)
Average efficiency	-0.023	0.036	0.028	-0.028
	(0.027)	(0.044)	(0.027)	(0.028)
Relative efficiency	0.011	-0.019	-0.076	0.075
	(0.071)	(0.069)	(0.077)	(0.082)
BG Affiliation	-0.016	-0.032***	-0.038***	-0.007
	(0.013)	(0.011)	(0.011)	(0.011)
Inc. Total Cash	-0.005	-0.002	-0.008*	-0.002
	(0.005)	(0.006)	(0.004)	(0.006)
BG Total Cash	-0.009***	-0.0035	-0.014***	-0.001
	(0.003)	(0.004)	(0.003)	(0.004)
Market & Year FE	YES	YES	YES	YES
R-squared	0.658	0.547	0.680	0.500
N	1026	1024	921	962

Note: Columns (1) and (2) classify industries based on the growth of the real value of sales during our sample period, 1995-2004. The real value of sales is computed using industry price deflators. *High-growth* industries are those where the growth of real sales exceeds the median growth of all manufacturing industries. Columns (3) and (4) classify sectors based on the number of patents awarded by the European Patent Office to French firms over the period 1995-2003, at the (4 digit) sectoral level. *High growth* industries are those where the growth of awarded patents is above the median. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level. The p-values on the difference between the two coefficients of BG Total Cash being different from zero are 0.108 and 0.005.

Table 13: **External Financial Dependence**

ISIC Code	NAF Code	Industrial Sector	External dependence
311	15.1-15.8	Food products	0.1368
313	15.9	Beverages	0.0772
314	16	Tobacco	-0.4512
321	17	Textiles	0.4005
322	18.1/18.2	Wearing apparel, except footwear	0.0286
323	19.1/19.2/18.3	Leather products	-0.1400
324	19.3	Footwear	-0.078
331	20	Wood products, except furniture	0.2840
332	36.1	Furniture except metal	0.2357
341	21	Paper and products	0.1756
342	22	Printing and publishing	0.2038
352	24.2-24.7	Other chemicals	0.2187
353	23.2	Petroleum refining	0.0420
354	23.1	Misc. petroleum and coal products	0.3341
355	25.1	Rubber products	0.2265
356	25.2	Plastic products	1.1401
361	26.2-26.4	Pottery, china, earthenware	-0.1459
362	26.1	Glass and glass products	0.5285
369	26.5-26.8	Other non-metallic products	0.0620
371	27.1-27.3/27.5	Iron and steel	0.0871
372	27.4	Non-ferrous metals	0.0055
381	28	Fabricated metal products	0.2371
382	29/30	Machinery, except electrical	0.4453
383	31/32	Machinery, electrical	0.7675
384	34/35	Transport equipment	0.3069
385	33	Prof and scient equipment	0.9610
390	36.2-36.6	Other manufactured products	0.4702
3511	24.1	Industrial chemicals	0.2050

Note: *External financial dependence* is the share of capital expenditures not financed with cash flow from operations; this is computed for U.S. publicly listed companies in the period 1986-1995 and then aggregated over time and across companies in a given industry (using the industry median).

Table 14: **Group Liquidity and Entry: Needs for External Funds and ICM activity**

	External Dependence		**Number of Fin. Interm.**	
	High FD	**Low FD**	**High FI**	**Low FI**
	(1)	(2)	(3)	(4)
Size	-0.213***	-0.330***	-0.266***	-0.215***
	(0.027)	(0.023)	(0.026)	(0.037)
Δ Size	-0.055**	-0.034*	-0.052***	-0.59**
	(0.021)	(0.019)	(0.013)	(0.024)
ROA	0.113**	0.029	0.161**	0.053
	(0.051)	(0.060)	(0.072)	(0.042)
Capital Intensity	-0.048*	-0.026**	-0.018	0.009
	(0.025)	(0.011)	(0.012)	(0.036)
HHI	0.044	0.254**	0.079	0.211
	(0.101)	(0.119)	(0.080)	(0.154)
Tangibility	0.098	0.017	0.013	0.038
	(0.095)	(0.075)	(0.079)	(0.104)
Financial Intermediaries			0.001	0.001
			(0.001)	(0.002)
Average efficiency	0.005	0.018	0.011	0.028
	(0.026)	(0.056)	(0.029)	(0.046)
Relative efficiency	-0.050	0.004	-0.091	0.034
	(0.073)	(0.064)	(0.092)	(0.055)
BG Affiliation	-0.017	-0.038***	-0.040***	-0.003
	(0.012)	(0.012)	(0.013)	(0.014)
Inc. Total Cash	-0.004	-0.008	-0.002	-0.002
	(0.005)	(0.005)	(0.004)	(0.007)
BG Total Cash	-0.009**	-0.004	-0.008**	-0.004
	(0.0036)	(0.0026)	(0.003)	(0.004)
Market & Year FE	YES	YES	YES	YES
R-squared	0.578	0.652	0.751	0.346
N	1134	916	1026	1023

Note: *High-FD* industries are those where external financial dependence is above the median value. Columns (3) and (4) classify industries based on the number of financial intermediaries of incumbents-affiliated groups. *High-FI* industries are those where incumbents are affiliated with groups whose number of financial intermediaries is above the median value. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level. The p-values on the difference between the two coefficients of BG Total Cash being different from zero are 0.107 and 0.20.

Table 15: **BG affiliated vs. Stand-alone Entry (3-eq. SURE)**

	$Entry^{BG}_{i,t}$ (1)	$Entry^{SA}_{i,t}$ (2)	$Entry_{i,t}$ (3)	$Entry^{BG}_{i,t}$ (4)	$Entry^{SA}_{i,t}$ (5)	$Entry_{i,t}$ (6)
Size	-0.227***	-0.023***	-0.251***	-0.226***	-0.023***	-0.249***
	(0.015)	(0.005)	(0.015)	(0.015)	(0.005)	(0.015)
Δ Size	-0.071***	0.001	-0.069***	-0.071***	0.001	-0.070***
	(0.012)	(0.004)	(0.012)	(0.012)	(0.004)	(0.012)
ROA	0.154***	0.001	0.155***	0.158***	0.001	0.159***
	(0.031)	(0.010)	(0.031)	(0.031)	(0.010)	(0.031)
Capital Intensity	0.023	-0.003	0.020	0.023	-0.003	0.020
	(0.015)	(0.005)	(0.015)	(0.015)	(0.005)	(0.015)
HHI	0.007	0.047***	0.054	0.007	0.047***	0.054
	(0.057)	(0.018)	(0.056)	(0.057)	(0.018)	(0.056)
Tangibility	0.093*	-0.044***	0.049	0.097*	-0.044***	0.054
	(0.053)	(0.017)	(0.053)	(0.053)	(0.017)	(0.053)
Average Efficiency	-0.032*	-0.008	-0.040*	-0.033*	-0.008	-0.040*
	(0.017)	(0.005)	(0.017)	(0.017)	(0.005)	(0.017)
Relative Efficiency	0.082**	0.013	0.095**	0.083**	0.013	0.095**
	(0.040)	(0.013)	(0.040)	(0.040)	(0.013)	(0.040)
BG Affiliation	-0.021**	0.000	-0.021**	-0.022**	0.000	-0.022**
	(0.009)	(0.003)	(0.009)	(0.009)	(0.003)	(0.009)
Inc. Total Cash	-0.009**	0.000	-0.009**	-0.009**	0.000	-0.009**
	(0.004)	(0.001)	(0.004)	(0.004)	(0.001)	(0.004)
(Inc.) BG Total Cash	-0.006**	-0.001*	-0.007***	-0.006**	-0.001*	-0.007***
	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Entrant BG Total Cash	0.005***		0.005***	0.004***		0.004***
	(0.001)		(0.001)	(0.001)		(0.001)
Inc.BG Eff./Entr.BG Eff	-0.003**		-0.003**	-0.003**		-0.003**
	(0.001)		(0.001)	(0.001)		(0.001)
(Inc.) BG TC × Entr. BG TC				0.001*		0.001*
				(0.000)		(0.000)
Market & Year FE	YES	YES	YES	YES	YES	YES
R-squared	0.768	0.702	0.759	0.768	0.702	0.759
N	1383			1383		

Note: $Entry^{bg}_{i,t}$ ($Entry^{sa}_{i,t}$) is the ratio of sales of affiliated entrants (stand-alone entrants) over total sales in sector i year t. $Entry_{i,t}$ is the total entry rate in sector i year t. *Entrant BG Total Cash* is the total cash of the group entrant firms are affiliated with. It is computed adding the total cash held by all the group-affiliated units. In the regressions we use the lagged value, i.e. the total cash of the group an entrant is affiliated with measured in the year prior to entry. *Inc. BG Eff./Entr. BG Eff.* is the ratio of the efficiency of established business groups to that of the entrant business groups. Group efficiency is computed by averaging the TFP of units active in manufacturing using as weights each unit's share of sales over the group total sales. *(Inc.) BG Total Cash* and *Entrant BG Total Cash* are normalised to have zero mean. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level.

Table 16: **BG affiliated vs. Stand-alone Entry (3-eq. SURE)**

	$Entry^{BG}_{i,t}$ (1)	$Entry^{SA}_{i,t}$ (2)	$Entry_{i,t}$ (3)
Size	-0.225***	-0.023***	-0.249***
	(0.015)	(0.005)	(0.015)
Δ Size	-0.074***	0.001	-0.073***
	(0.012)	(0.004)	(0.012)
ROA	0.150***	0.001	0.151***
	(0.031)	(0.010)	(0.031)
Capital Intensity	0.021	-0.003	0.018
	(0.016)	(0.005)	(0.015)
HHI	0.006	0.048***	0.054
	(0.057)	(0.018)	(0.057)
Tangibility	0.094*	-0.044***	0.050
	(0.053)	(0.017)	(0.053)
Average Efficiency	-0.032*	-0.008	-0.040*
	(0.017)	(0.005)	(0.017)
Relative Efficiency	0.079*	0.012	0.091**
	(0.040)	(0.013)	(0.040)
BG Affiliation	-0.020**	-0.000	-0.020**
	(0.009)	(0.003)	(0.009)
Inc. Total Cash	-0.009**	0.000	-0.009**
	(0.004)	(0.001)	(0.004)
(Inc.) BG Total Cash	-0.006***	-0.001*	-0.007***
	(0.002)	(0.001)	(0.002)
Entrant BG Total Cash	0.007***		0.007***
	(0.002)		(0.002)
Inc.BG Eff./Entr.BG Eff	-0.003**		-0.003**
	(0.001)		(0.001)
Young Sector	0.006		0.006
	(0.031)		(0.031)
Entrant BG Age	0.073		0.073
	(0.155)		(0.155)
Entrant BG Cash × Entrant BG Age	-0.010		-0.010
	(0.011)		(0.011)
Entrant BG Cash × Young Sector	-0.001		-0.001
	(0.002)		(0.002)
Young Sector × Entrant BG Age	-0.503**		-0.503**
	(0.204)		(0.204)
Entrant BG Cash × Young Sector	0.037**		0.037**
× Entrant BG Age	(0.015)		(0.015)
Market & Year FE	YES	YES	YES
R-squared	0.770	0.692	0.761
N	1370		

Note: $Entry^{bg}_{i,t}$ ($Entry^{sa}_{i,t}$) is the ratio of sales of affiliated entrants (stand-alone entrants) over total sales in sector i year t. $Entry_{i,t}$ is the total entry rate in sector i year t. *Sectoral Age* is the average age of all of the firms active in market i at time t. *Young Sector* is a dummy variable which takes value one when the age of the sector where entry takes place is below the median value. *Entrant BG Age* is the (weighted) average age of the industries where entrants' affiliated units are active, using as weights the share of each unit's sales over total group sales. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level.

Table 17: **BG Affiliated vs. Stand-Alone Entry: Long-run growth and Patent growth**

	Long-run growth						Patent growth					
	Low growth			High growth			Low growth			High growth		
	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Size	-0.244***	-0.016*	-0.260***	-0.268***	-0.026***	-0.294***	-0.258***	-0.026***	-0.284***	-0.203***	-0.023***	-0.226***
	(0.027)	(0.008)	(0.027)	(0.020)	(0.007)	(0.020)	(0.026)	(0.008)	(0.026)	(0.019)	(0.006)	(0.018)
Δ Size	-0.082***	-0.012*	-0.093***	-0.039***	0.007	-0.032**	-0.119***	0.002	-0.117***	-0.057***	0.002	-0.055***
	(0.022)	(0.007)	(0.021)	(0.014)	(0.005)	(0.014)	(0.022)	(0.007)	(0.022)	(0.014)	(0.005)	(0.013)
ROA	0.148***	0.008	0.157***	0.153***	-0.007	0.145***	0.164***	-0.002	0.162***	0.136***	0.007	0.143***
	(0.049)	(0.015)	(0.049)	(0.039)	(0.013)	(0.039)	(0.040)	(0.012)	(0.040)	(0.048)	(0.016)	(0.047)
Capital Intensity	-0.049	-0.013	-0.062**	0.032*	-0.001	0.030*	-0.009	0.005	-0.005	-0.043**	-0.008	-0.051**
	(0.031)	(0.010)	(0.031)	(0.018)	(0.006)	(0.018)	(0.024)	(0.007)	(0.024)	(0.020)	(0.007)	(0.019)
HHI	-0.224**	0.027	-0.197*	0.096	0.044**	0.140**	0.126	0.043	0.169*	-0.082	0.052**	-0.030
	(0.104)	(0.032)	(0.103)	(0.068)	(0.022)	(0.068)	(0.098)	(0.030)	(0.099)	(0.069)	(0.023)	(0.068)
Tangibility	0.152*	-0.071***	0.080	-0.016	-0.026	-0.042	0.015	-0.030	-0.015	0.149**	-0.055**	0.094
	(0.081)	(0.025)	(0.080)	(0.068)	(0.022)	(0.068)	(0.081)	(0.025)	(0.082)	(0.069)	(0.023)	(0.067)
Average efficiency	-0.085***	-0.012	-0.097***	0.005	-0.010	-0.005	0.007	-0.019**	-0.012	-0.053**	-0.002	-0.055**
	(0.032)	(0.010)	(0.031)	(0.021)	(0.007)	(0.021)	(0.028)	(0.009)	(0.028)	(0.021)	(0.007)	(0.021)
Relative efficiency	-0.072	0.002	-0.069	-0.066	0.020	-0.046	0.116*	0.057***	0.173**	0.071	0.011	0.082*
	(0.056)	(0.017)	(0.056)	(0.056)	(0.018)	(0.056)	(0.069)	(0.021)	(0.070)	(0.049)	(0.016)	(0.048)
BG Affiliation	-0.006	-0.000	-0.006	-0.035***	0.001	-0.034***	-0.015	0.003	-0.011	-0.029**	-0.003	-0.032***
	(0.013)	(0.004)	(0.013)	(0.013)	(0.004)	(0.013)	(0.014)	(0.004)	(0.014)	(0.012)	(0.004)	(0.012)
Inc. Total Cash	-0.004	-0.001	-0.005	-0.009**	0.001	-0.008*	-0.008*	-0.000	-0.009*	-0.008	0.001	-0.007
	(0.006)	(0.002)	(0.006)	(0.004)	(0.001)	(0.004)	(0.005)	(0.001)	(0.005)	(0.005)	(0.002)	(0.005)
(Inc.) BG Total Cash	0.001	0.000	0.001	-0.010***	-0.002**	-0.012***	0.004	-0.001	0.003	-0.014***	-0.003**	-0.017***
	(0.003)	(0.001)	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)	(0.001)	(0.003)
Entrant BG Total Cash	0.004***		0.004***	0.006***		0.006***	0.003*		0.003*	0.006***		0.006***
	(0.001)		(0.001)	(0.001)		(0.001)	(0.002)		(0.002)	(0.001)		(0.001)
Inc. BG Eff./Entr. BG Eff.	-0.001		-0.001	-0.003**		-0.003**	-0.001		-0.001	-0.005**		-0.005**
	(0.004)		(0.004)	(0.001)		(0.001)	(0.001)		(0.001)	(0.003)		(0.003)
(Inc.) BG TC × Entr. BG TC	0.000		0.000	0.002***		0.002***	0.001		0.001	0.001		0.001
	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)
Market & Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.704	0.647	0.700	0.819	0.743	0.809	0.737	0.710	0.719	0.803	0.702	0.802
N	650			733			649			734		

Note: Columns (1) to (6) classify industries based on the growth of the real value of sales during our sample period, 1995-2004. The real value of sales is computed using industry price deflators. *High-growth* industries are those where the growth of real sales exceeds the median growth of all manufacturing industries. Columns (7) to (12) classify sectors based on the number of patents awarded by the European Patent Office to French firms over the period 1995-2003, at the (4 digit) sectoral level. *High growth* industries are those where the growth of awarded patents is above the median. *(Inc.) BG Total Cash* and *Entrant BG Total Cash* are normalised to have zero mean. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level. The p-values on the difference between the coefficients of Entrants' BG Total Cash being different from zero are 0.08 and 0.09. The p-values on the difference between the coefficients of Incumbents' BG Total Cash are 0.005 and 0.0001 for BG affiliated entrants, and 0.08 and 0.08 for SA entrants.

Table 18: **BG Affiliated vs. Stand-Alone Entry: Booms and busts and Tangibility**

	Booms and busts						**Tangibility**					
	Busts			**Booms**			**Low tangibility**			**High tangibility**		
	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Size	-0.200***	0.003	-0.198***	-0.227***	-0.050***	-0.276***	-0.211***	-0.019***	-0.230***	-0.242***	-0.031***	-0.273***
	(0.033)	(0.012)	(0.030)	(0.034)	(0.010)	(0.034)	(0.021)	(0.006)	(0.021)	(0.022)	(0.009)	(0.022)
Δ Size	0.128***	-0.036***	0.093***	-0.072**	-0.001	-0.073**	-0.051***	0.000	-0.051***	-0.109***	0.004	-0.105***
	(0.029)	(0.011)	(0.027)	(0.031)	(0.009)	(0.030)	(0.016)	(0.004)	(0.016)	(0.018)	(0.007)	(0.018)
ROA	0.007	0.005	0.012	0.208***	-0.005	0.202***	0.161***	0.014	0.176***	0.181***	-0.034*	0.147***
	(0.051)	(0.019)	(0.046)	(0.056)	(0.016)	(0.054)	(0.043)	(0.011)	(0.042)	(0.045)	(0.018)	(0.045)
Capital Intensity	-0.088*	-0.016	-0.105**	-0.077*	-0.029**	-0.106**	-0.005	-0.001	-0.006	0.033*	-0.004	0.029*
	(0.045)	(0.017)	(0.042)	(0.045)	(0.013)	(0.044)	(0.026)	(0.007)	(0.026)	(0.017)	(0.007)	(0.018)
HHI	-0.257*	-0.031	-0.288**	-0.547***	0.152***	-0.395***	-0.004	0.050**	0.046	0.014	0.027	0.041
	(0.140)	(0.053)	(0.129)	(0.156)	(0.043)	(0.152)	(0.077)	(0.020)	(0.076)	(0.090)	(0.036)	(0.091)
Tangibility	-0.376***	-0.127**	-0.504***	0.013	-0.082***	-0.070	0.109	-0.033*	0.076	0.001	-0.027	-0.026
	(0.135)	(0.051)	(0.124)	(0.106)	(0.029)	(0.103)	(0.073)	(0.019)	(0.072)	(0.094)	(0.037)	(0.095)
Average efficiency	-0.067**	-0.030***	-0.097***	-0.113***	-0.021*	-0.134***	0.027	-0.001	0.026	-0.070**	-0.025**	-0.095***
	(0.029)	(0.011)	(0.027)	(0.041)	(0.011)	(0.040)	(0.022)	(0.006)	(0.022)	(0.030)	(0.012)	(0.030)
Relative efficiency	0.230***	0.106***	0.336***	0.190***	0.033	0.223***	-0.076	0.004	-0.072	0.141**	0.034	0.175**
	(0.062)	(0.023)	(0.057)	(0.074)	(0.021)	(0.072)	(0.057)	(0.015)	(0.057)	(0.056)	(0.022)	(0.056)
BG Affiliation	0.007	-0.004	0.003	-0.002	-0.010**	-0.012	-0.024*	-0.002	-0.026*	-0.019	0.003	-0.016
	(0.017)	(0.007)	(0.016)	(0.016)	(0.004)	(0.015)	(0.014)	(0.004)	(0.014)	(0.012)	(0.005)	(0.012)
Inc. Total Cash	-0.013**	-0.002	-0.015**	0.005	-0.003*	0.002	-0.000	-0.001	-0.001	-0.018***	0.002	-0.016***
	(0.006)	(0.002)	(0.006)	(0.005)	(0.002)	(0.005)	(0.005)	(0.001)	(0.005)	(0.004)	(0.002)	(0.004)
(Inc.) BG Total Cash	-0.009**	-0.003*	-0.012***	0.001	0.001	0.003	-0.009**	-0.003***	-0.012***	0.001	-0.001	-0.000
	(0.004)	(0.002)	(0.004)	(0.004)	(0.001)	(0.004)	(0.004)	(0.001)	(0.003)	(0.003)	(0.001)	(0.003)
Entrant BG Total Cash	0.009***		0.009***	0.006***		0.006***	0.006***		0.006***	0.003***		0.003***
	(0.002)		(0.002)	(0.002)		(0.002)	(0.002)		(0.002)	(0.001)		(0.001)
Inc. BG Eff./Entr. BG Eff.	-0.021***		-0.021***	-0.002		-0.002	-0.003**		-0.003**	0.002		0.002
	(0.002)		(0.002)	(0.001)		(0.001)	(0.001)		(0.001)	(0.002)		(0.002)
(Inc.) BG TC × Entr. BG TC	0.001		0.001	0.001		0.001	0.001*		0.001*	0.000		0.000
	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.000)		(0.000)
Market & Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.754	0.857	0.812	0.850	0.882	0.847	0.787	0.746	0.781	0.743	0.669	0.732
N	358			454			683			700		

Note: We identify *busts* and *booms* from the fluctuations of real sectoral sales, where nominal sales are deflated by *industry* price deflators. See Table 11 for a description of the methodology. We take the average over time of market *Tangibility* and we define as *High-tangibility* markets as those markets where this time-invariant measure of tangibility is above the median value. *(Inc.) BG Total Cash* and *Entrant BG Total Cash* are normalised to have zero mean. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level. The p-values on the difference between the coefficients of Entrants' BG Total Cash being different from zero are 0.13 and 0.1. The p-values on the difference between the coefficients of Incumbents' BG Total Cash are 0.04 and 0.02 for BG affiliated entrants, and 0.04 and 0.07 for SA entrants.

Table 19: **BG Affiliated vs. Stand-Alone Entry: Financial Dependence**

	Low FD			**High FD**		
	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$	$Entry^{BG}_{i,t}$	$Entry^{SA}_{i,t}$	$Entry_{i,t}$
	(1)	(2)	(3)	(4)	(5)	(6)
Size	-0.295***	-0.018**	-0.313***	-0.197***	-0.024***	-0.221***
	(0.027)	(0.009)	(0.027)	(0.018)	(0.006)	(0.018)
Δ Size	-0.094***	0.001	-0.093***	-0.045***	0.001	-0.044***
	(0.020)	(0.007)	(0.020)	(0.014)	(0.004)	(0.014)
ROA	0.059	0.005	0.064	0.200***	0.002	0.201***
	(0.053)	(0.017)	(0.052)	(0.037)	(0.012)	(0.038)
Capital Intensity	-0.016	-0.011	-0.027	-0.040**	-0.006	-0.046**
	(0.024)	(0.008)	(0.023)	(0.020)	(0.006)	(0.020)
HHI	0.107	0.027	0.134	-0.180**	0.057**	-0.123
	(0.087)	(0.029)	(0.085)	(0.075)	(0.023)	(0.075)
Tangibility	0.161**	-0.055**	0.106	0.015	-0.028	-0.012
	(0.077)	(0.025)	(0.075)	(0.071)	(0.022)	(0.072)
Average efficiency	-0.025***	-0.023**	-0.057***	0.005	-0.003	0.002
	(0.006)	(0.010)	(0.017)	(0.021)	(0.007)	(0.021)
Relative efficiency	0.110**	0.020	0.130**	0.052	0.005	0.057
	(0.051)	(0.017)	(0.050)	(0.062)	(0.020)	(0.063)
BG Affiliation	-0.020	-0.001	-0.021*	-0.019	0.000	-0.020
	(0.013)	(0.004)	(0.012)	(0.013)	(0.004)	(0.013)
Inc. Total Cash	-0.009	-0.001	-0.010*	-0.006	0.001	-0.005
	(0.006)	(0.002)	(0.006)	(0.004)	(0.001)	(0.004)
(Inc.) BG Total Cash	-0.003	-0.001	-0.004	-0.006***	-0.002**	-0.008***
	(0.002)	(0.001)	(0.003)	(0.002)	(0.0008)	(0.003)
Entrant BG Total Cash	0.004***		0.004***	0.006***		0.006***
	(0.001)		(0.001)	(0.001)		(0.001)
Inc. BG Eff./Entr. BG Eff.	-0.001		-0.001	-0.013***		-0.013***
	(0.001)		(0.001)	(0.003)		(0.003)
(Inc.) BG TC× Entr. BG TC	0.001		0.001	0.000		0.000
	(0.001)		(0.001)	(0.000)		(0.000)
Market & Year FE	YES	YES	YES	YES	YES	YES
R-squared	0.784	0.763	0.780	0.780	0.632	0.767
N	616			767		

Note: *High-FD* industries are those where external financial dependence is above the median value. *External financial dependence* is the share of capital expenditures not financed with cash flow from operations. *(Inc.) BG Total Cash* and *Entrant BG Total Cash* are normalised to have zero mean. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level. The p-values on the difference between the coefficients of Entrants' BG Total Cash being different from zero is 0.08. The p-values on the difference between the coefficients of Incumbents' BG Total Cash are 0.1 for BG affiliated entrants, and 0.12 for SA entrants.

Table 20: **Exit of Recent Entrants**

PANEL A				
% of Entrants at time t that leave	All	BG	SA	N
the industry within 5 years after entry	68.7	19.3	49.4	2778

PANEL B						
			Quartiles			
	Mean	St.Dev.	p25	p50	p75	N
Exit rate of entrants in 3 to 5 years (unweigthed)	13.0	12.8	3.7	11.8	17.9	1851
Exit rate of BG entrants in 3 to 5 years (unweigthed)	4.0	8.9	0	0	4.5	1851
Exit rate of entrants in 3 to 5 years (weigthed)	16.6	23.1	0.2	7.6	21.9	1851
Exit rate of BG entrants in 3 to 5 years (weigthed)	10.2	21.1	0	0	9.0	1851

Note: Sectoral-level data between 1995 and 2004. We define as *Entrants* in market i at time t all firms that appear at time t and were not active at time $t-1$. An entrant at time t exits from the market at time $t+x$ if it is active at time $t+x$ but is no longer active at time $t+x+1$. The (unweighted) *Exit Rate* of entrants measures the percentage of entrants in market i at time t that exit from market i in the 3 to 5 years after entry. The (weighted) *Exit Rate* of entrants measures the percentage of entrants' sales in market i at time t that is accounted for by those entrants that exit from market i in the 3 to 5 years after entry.

Table 21: **Exit of Recent Entrants (3-eq. SURE)**

	$Exit^{BG}_{i,t}$	$Exit^{SA}_{i,t}$	$Exit_{i,t}$
Size	-0.082***	-0.035	-0.117***
	(0.024)	(0.022)	(0.032)
Δ Size	0.031	-0.002	0.029
	(0.020)	(0.018)	(0.026)
ROA	0.021	-0.000	0.021
	(0.035)	(0.032)	(0.046)
Capital Intensity	0.014	-0.040***	-0.026
	(0.017)	(0.015)	(0.022)
HHI	0.326***	0.010	0.335***
	(0.072)	(0.065)	(0.094)
Tangibility	-0.173***	0.019	-0.154*
	(0.063)	(0.057)	(0.082)
Average Efficiency	-0.012	0.004	-0.009
	(0.020)	(0.018)	(0.025)
Relative Efficiency	0.011	-0.009	0.002
	(0.044)	(0.039)	(0.057)
BG Affiliation	-0.014	-0.002	-0.015
	(0.010)	(0.009)	(0.013)
Inc. Total Cash	0.005	-0.008**	-0.004
	(0.004)	(0.004)	(0.006)
(Inc.) BG Total Cash	0.006**	0.005**	0.011***
	(0.003)	(0.002)	(0.003)
(Entrant) BG Total Cash	-0.002*		-0.002*
	(0.001)		(0.001)
Inc. BG Eff/Entr. BG Eff.	0.000		0.000
	(0.001)		(0.001)
Market & Year FE	YES	YES	YES
R-squared	0.500	0.620	0.561
	716		

Note: $Exit^{bg}_{i,t}$ ($Exit^{sa}_{i,t}$) measures the percentage of entrants' sales in market i at time t that is accounted for by those affiliated (stand-alone)entrants that exit from market i in the 3 to 5 years after entry. $Exit_{i,t}$ is the total exit rate in the 3 to 5 years after entry of entrants in sector i year t. *Entrant BG Total Cash* is the total cash of the group entrant firms are affiliated with. It is computed adding the total cash held by all the group-affiliated units. In the regressions we use the lagged value, i.e. the total cash of the group an entrant is affiliated with measured in the year prior to entry. *Inc. BG Eff./Entr. BG Eff.* is the ratio of the efficiency of established business groups to that of the entrant business groups. Group efficiency is computed by averaging the TFP of units active in manufacturing using as weights each unit's share of sales over the group total sales. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level.

Table 22: **Business Group Liquidity And Entry: Additional Evidence**

	(1)	(2)	(3)
Size	-0.268***	-0.270***	-0.255***
	(0.026)	(0.026)	(0.024)
Δ Size	-0.039**	-0.044***	-0.054***
	(0.015)	(0.015)	(0.014)
ROA	0.076*	0.077*	0.086**
	(0.041)	(0.041)	(0.037)
Capital Intensity	-0.010	-0.011	-0.008
	(0.010)	(0.011)	(0.012)
HHI	0.134*	0.142*	0.172**
	(0.073)	(0.074)	(0.076)
Tangibility	0.039	0.035	0.019
	(0.070)	(0.071)	(0.066)
Average Efficiency	0.007	0.009	0.006
	(0.025)	(0.025)	(0.025)
Relative Efficiency	-0.013	-0.016	-0.012
	(0.048)	(0.049)	(0.050)
BG Affiliation	-0.030***	-0.030***	-0.026***
	(0.008)	(0.008)	(0.008)
Incumbent Total Cash	-0.006	-0.007*	-0.005
	(0.004)	(0.004)	(0.003)
BG Cash $Shock^{-}_{i,t}$	0.023***		
	(0.008)		
BG Cash $Shock^{+}_{i,t}$		-0.006	
		(0.006)	
BG Total Cash			-0.007**
			(0.003)
Incumbent Loans from BG			-0.005
			(0.034)
Market & Year FE	YES	YES	YES
R-squared	0.612	0.610	0.600
N	1957	1957	2050

Note: $Shock^{-}_{i,t}$ indicates a negative shock to group liquidity in year t and takes a value one if there is a fall in group cash flows of more than 10% year t relative to the previous year, and zero otherwise. $Shock^{+}_{i,t}$ indicates a positive shock and takes a value one if there is an increase in group cash flows of more than 10% in year t relative to the previous year and zero otherwise. *Incumbent Loans from BG* measures loans granted to incumbents by other members of the affiliated group, divided by incumbents' total assets in the market. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level.

A Appendix

A.1 Variable Description

Unweighted variables:

- *Size:* Log of total sales in the market;
- Δ *Size:* Difference between the log of total sales in t and the log of total sales in $t-1$;
- *HHI:* Herfindahl index of the market. HHI is computed as the sum of the squares of the market shares of all firms in the market;
- *BG Affiliation:* Total market share of BG-affiliated incumbents in the market;
- *Age:* Average age of all the firms active in market i at year t.

The following variables have been computed as weighted averages of firm-level variables using all firms in the market. Weights are the individual market shares in terms of sales. The firm-level variables are defined as follows:

- *ROA:* Firms' operating cash flow divided by total assets in the market;
- *Capital Intensity:* Firms' fixed assets divided by their total sales in the market;
- *Tangibility:* Firms' tangible assets divided by their total assets in the market;

The following variables have been computed as weighted averages of *incumbent* firms variables or of variables referred to the *group* firms are affiliated with, using as weights the market shares. The firm- or group-level variables are defined below:

- *Inc. Total Cash:* incumbent firms' total cash. *Total Cash* is defined as the sum of Net Liquid Assets and Operating Cash Flow. Net Liquid Assets is computed as current assets (cash and cash equivalents, marketable securities, accounts receivable, inventories) minus current liabilities (debt due within one year, payables) minus inventories. Operating cash flow is computed as the difference between a firms' EBIDTA and variation in working capital;
- *Average Efficiency.* We measure *Efficiency* of incumbent firms j in market i at year t using estimates of firm-level total factor productivity (TFP). To compute TFP we use the semi-parametric method first introduced by Olley and Pakes (1996). This methodology allows us to tackle both simultaneity and selection issues involved when trying to consistently estimate the parameters of the production function. To implement the procedure we deflate nominal variables at the two-digit SIC level using price deflators provided by *INSEE*. The Olley and Pakes (1996) methodology estimates the production function in three steps. As a first step we regress log value added on labor and a polynomial of third

degree in investment and capital. The resulting estimate for labor is consistent and can be used to construct residuals of log value added. The second step then accounts for selection using a Heckman-type control function. We thus estimate the probability of survival by estimating a probit model of the exit decision on a power series of order three in investment and capital. This allows us to define the estimated probability of exiting and to include it in the final step to correct for the selection bias due to attrition. In the final step we obtain the capital coefficient in the production function by approximating the unobserved productivity shock with a nonparametric function of investment, current capital stock and the probability of survival. This last step addresses the simultaneity bias assuming that the investment function can be inverted. Consistent estimation of labor and capital then allows us to construct our firm-level productivity measures.

- *Relative Efficiency:* Ratio between TFP of large affiliated incumbents and TFP of small stand-alone incumbents. Large affiliated incumbents are those belonging to the top quartile of the distribution of affiliated firms' size. Small stand-alone incumbents are those belonging to the bottom quartile of the distribution of stand-alone firms' size.

- *(Inc.) BG Total Cash:* total cash held by incumbent-affiliated groups. For each group, this is computed by adding all the group subsidiaries' cash holdings, excluding the cash held by the incumbent;

- *Financial Intermediaries:* Total number of financial intermediaries owned by the group;

- *Loans of Inc. From BG:* Loans granted to incumbents by other members of the affiliated group, divided by incumbents' total assets in the market.

- *Entrant BG Total Cash:* total cash held by entrant-affiliated groups. For each group, this is computed by adding the cash holdings of all the group subsidiaries. In the regressions we use the lagged value, i.e. the total cash of the group an entrant is affiliated with, measured in the year prior to entry.

- *Inc BG Eff./Entr. BG Eff.:* Ratio between the efficiency of the incumbent-affiliated groups and the efficiency of the entrant-affiliated groups. Group efficiency is computed by averaging the TFP of units active in manufacturing (excluding the incumbent/entrant) using as weights each unit's share of sales over the group total sales.

A.2 Robustness Checks

Table 23: **Business Group Liquidity And Entry: Employment-weighted Entry Rates**

	(1)	(2)	(3)	(4)
Size	-0.225***	-0.199***	-0.191***	-0.190***
	(0.026)	(0.026)	(0.026)	(0.026)
Δ Size	-0.032**	-0.048***	-0.050***	-0.049***
	(0.013)	(0.015)	(0.015)	(0.015)
ROA	0.109***	0.119***	0.112***	0.111***
	(0.039)	(0.040)	(0.035)	(0.037)
Capital Intensity	-0.016	-0.010	-0.016	-0.017
	(0.011)	(0.013)	(0.015)	(0.014)
HHI	0.168*	0.182**	0.202**	0.198**
	(0.086)	(0.082)	(0.084)	(0.084)
Tangibility	0.018	0.009	-0.007	-0.016
	(0.066)	(0.074)	(0.077)	(0.078)
Average Efficiency	-0.009	-0.015	-0.014	0.052
	(0.026)	(0.026)	(0.025)	(0.034)
Relative Efficiency	-0.054	-0.045	-0.041	-0.044
	(0.059)	(0.060)	(0.061)	(0.056)
BG Affiliation	-0.020*	-0.026**	-0.026**	-0.024**
	(0.011)	(0.012)	(0.012)	(0.012)
Inc. Total Cash		-0.017***	-0.014**	-0.014**
		(0.006)	(0.007)	(0.007)
BG Total Cash			-0.010***	-0.011***
			(0.003)	(0.003)
BG Total Cash $\times$ Average Efficiency				-0.004*
				(0.002)
Market & Year FE	YES	YES	YES	YES
R-squared	0.431	0.442	0.449	0.450
N	2239	2100	2050	2050

Note: Sectoral-level data between 1995 and 2004. Entry in sector i year t is the ratio of employment of entrant firms over total employment in sector i year t. See appendix A.1 for a detailed description of the variables. *Average Efficiency* is normalised to have zero mean. This allows to interpret the coefficient of *BG Total Cash* in Column 4 as the effect on the entry rate when *Average Efficiency* is at its mean value. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level.

Table 24: **BG Liquidity And Entry: Age of the industry and sectoral trends**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Size	-0.276***	-0.260***	-0.254***	-0.255***	-0.041***	-0.095***	-0.089***	-0.087***
	(0.024)	(0.022)	(0.023)	(0.023)	(0.008)	(0.012)	(0.012)	(0.012)
Δ Size	-0.039***	-0.053***	-0.054***	-0.053***	-0.037***	-0.015**	0.013**	-0.014**
	(0.012)	(0.015)	(0.014)	(0.014)	(0.006)	(0.006)	(0.006)	(0.006)
ROA	0.084***	0.095***	0.087**	0.087**	0.004	0.048	0.030	0.031
	(0.031)	(0.033)	(0.036)	(0.037)	(0.054)	(0.057)	(0.061)	(0.061)
Capital Intensity	-0.009	-0.006	-0.008	-0.009	-0.020	-0.017	-0.023	-0.024
	(0.010)	(0.010)	(0.012)	(0.012)	(0.015)	(0.015)	(0.016)	(0.016)
HHI	0.124*	0.151**	0.174**	0.171**	-0.295*	-0.408**	-0.394**	-0.392**
	(0.074)	(0.074)	(0.075)	(0.075)	(0.151)	(0.158)	(0.160)	(0.160)
Tangibility	0.017	0.013	0.018	0.011	0.489***	0.519***	0.510***	0.500***
	(0.061)	(0.063)	(0.066)	(0.066)	(0.118)	(0.118)	(0.117)	(0.117)
Average efficiency	0.011	0.007	0.007	0.102	-0.027	-0.055*	-0.051	0.050
	(0.023)	(0.023)	(0.023)	(0.064)	(0.035)	(0.032)	(0.032)	(0.051)
Relative efficiency	-0.039	0.018	-0.017	-0.016	0.107*	0.091	0.095*	0.086
	(0.052)	(0.054)	(0.054)	(0.053)	(0.057)	(0.055)	(0.055)	(0.054)
Age	0.002	0.001	0.001	0.001				
	(0.002)	(0.002)	(0.002)	(0.002)				
BG Affiliation	-0.019**	-0.025***	-0.026***	-0.025***	-0.013	-0.020	-0.022	-0.022
	(0.008)	(0.008)	(0.008)	(0.008)	(0.015)	(0.014)	(0.015)	(0.015)
Inc. Total Cash		-0.009***	-0.005	-0.005		-0.032***	-0.037***	-0.037***
		(0.003)	(0.004)	(0.003)		(0.004)	(0.005)	(0.005)
BG Total Cash			-0.007**	-0.008***			-0.010***	-0.011***
			(0.003)	(0.003)			(0.004)	(0.012)
BG Total Cash × Average Efficiency				-0.006*				-0.005
				(0.003)				(0.003)
Market & Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Sectoral trend	NO	NO	NO	NO	YES	YES	YES	YES
R-squared	0.584	0.599	0.602	0.602	0.417	0.457	0.467	0.468
N	2238	2099	2049	2049	2238	2099	2049	2049

Note: *Age* is the average age of all the firms active in market i at year t. See appendix A.1 for a detailed description of the variables. *Average Efficiency* is normalised to have zero mean. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level.

Table 25: **Business Group Liquidity And Entry: Alternative entry definitions**

	Entrants = New firms + firms at second year of activity		Entrants = New firms + firms at second and third year of activity	
	(1)	(2)	(3)	(4)
Size	-0.395***	-0.396***	-0.195***	-0.197***
	(0.036)	(0.035)	(0.028)	(0.029)
Δ Size	0.194***	0.197***	0.098***	0.101***
	(0.020)	(0.020)	(0.018)	(0.018)
ROA	0.094**	0.102**	0.100**	0.111***
	(0.044)	(0.044)	(0.042)	(0.042)
Capital Intensity	-0.013	-0.013	0.017	0.017
	(0.018)	(0.018)	(0.015)	(0.014)
HHI	0.043	0.036	0.267***	0.259***
	(0.082)	(0.083)	(0.097)	(0.097)
Tangibility	-0.056	-0.070	-0.049	-0.074
	(0.072)	(0.075)	(0.082)	(0.083)
Average Efficiency	-0.027	0.044	0.002	-0.110**
	(0.017)	(0.034)	(0.016)	(0.037)
Relative Efficiency	-0.003	0.003	-0.012	-0.005
	(0.071)	(0.071)	(0.078)	(0.079)
BG Affiliation	-0.125***	-0.123***	-0.408***	-0.403***
	(0.046)	(0.045)	(0.050)	(0.049)
Inc. Total Cash	-0.002	-0.002	-0.029***	-0.028***
	(0.005)	(0.005)	(0.008)	(0.008)
BG Total Cash	-0.008**	-0.009***	-0.011***	-0.012***
	(0.003)	(0.003)	(0.003)	(0.003)
BG Total Cash × Average Efficiency		-0.005***		-0.007***
		(0.002)		(0.002)
Market & Year FE	YES	YES	YES	YES
R-squared	0.515	0.518	0.397	0.404
N	2004	2004	1992	1992

Note: This table re-estimates our basic entry equation using different definitions of entrants. In columns 1 and 2, entrants are defined as firms that appear at time t plus all firms that appeared at time $t-1$ and that are active at time t. In columns 3 and 4 we define as entrants also firms that appeared at time $t-2$ and are active at time t. Incumbent firms are re-defined accordingly. Based on the new definitions of entrants and incumbents we have re-computed entry rates and the variables *BG Affiliation*, *Average Efficiency*, *Relative Efficiency*, *Incumbent Total Cash*, *BG Total Cash*. In the estimations displayed in this table we use the same observations that were used for the baseline specification of Table 10. Results are qualitatively the same when we estimate our entry equation without imposing such a restriction. *Average Efficiency* is normalised to have zero mean. See appendix A.1 for a detailed description of the variables. Robust standard errors clustered at the 3SIC sector level in parentheses. One star denotes significance at the 10% level, two stars denote significance at the 5% level, and three stars denote significance at the 1% level.