Corporate income taxation, leverage, and entrepreneurial firm's growth

Marco Da Rin[*]
Tilburg University

Marina Di Giacomo
Università di Torino

Alessandro Sembenelli
Università di Torino and Collegio Carlo Alberto

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Abstract

In this paper we ask whether tax policy affects, through corporate financial decisions, the growth of new entrepreneurial companies. We first document how taxation affects the capital structure choices of newly incorporated firms. Second, we analyze the long-term effects of tax policy on these firms' growth through their effect on capital structure at entry. We find a statistically and economically relevant effect of corporate income taxation on capital structure at entry, on capital structure over time, and on firm survival and conditional growth over up to nine years after entry.

Preliminary – Do not quote or circulate

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1 Introduction

Taxation is a very important determinant of corporate choices, but one that is relatively under-researched (Graham, 2013). In this paper we ask whether tax policy affects the financial policies of newly incorporated companies. We subsequently ask what long-term effects tax policy has and we focus on the survival and growth of these companies over nine years. Previous work, including our own, shows that taxation affects several decisions of entrepreneurial companies at the time of their incorporation. In this paper we bring the analysis further and study the initial effect of taxation on firms' financial policy and its real effects on firm survival and growth over time.

It is widely recognized that the birth and growth of new firms constitute an important determinant for productivity and aggregate growth (Schumpeter, 1911, 1942; Aghion and Howitt, 1992; and Hause and du Rietz 1984). The cross-country empirical literature also shows that entrepreneurial companies' demography is significantly different between countries with respect to birth rates, survival rates, and growth. These demographic patterns are influenced by country-specific policies and institutions (Ciccone and Papaioannou, 2007; Demirguc-Kunt et al., 2006; Djankov et al., 2002, 2010; Klapper et al., 2006).

We have contributed to this literature by analyzing how corporate taxation affects entry rates (the "extensive margin", Da Rin et al., 2011) and the size of entrants (the "intensive margin", Da Rin et al. 2010). Both effects are relevant for policy making. The effect on the extensive margin influences an economy's ability to induce entrepreneurial experimentation. The effect on the intensive margin influences both the quality and the speed of growth. This study further contributes to the literature by looking at how taxation affects the financial policy dynamics of newly incorporated firms, and whether this reflects into different growth patterns.

We specify the research question into two objectives. First, we study how taxation affects the financial policy of newly incorporated firms, and specifically their choice of capital structure. The empirical literature on the determinants of leverage is large and still growing. A number of recent papers document the effect of taxes on capital structure (Graham, 1996 and 2013; Desai, Foley and Hines, 2004; Faccio and Xu, 2012). Our contribution consists of testing for standard determinants of leverage (firm characteristics, bankruptcy costs, taxation) while controlling for a set of institutional variables, in a cross-country setting. In particular our analysis provides empirical evidence on the determinants of firms' *initial* capital structure and on its dynamics over time (DeAngelo and Roll, 2013; Lemmon, et al., 2008). Second, we study the effects of taxation, through corporate financial policy, on new firms' investment policy and growth.

Our contribution is novel and relevant in at least three respects. First, we want to stress the value of examining the behavior of new companies, as we know very little about the capital structure of entrepreneurial companies, as opposed to listed ones (Robb and Robinson, 2014). The literature has so far relied almost only on data about listed companies. To the best of our knowledge, we provide the first study of the dynamics of leverage of newly incorporated private companies. The determinants of these firms' financial policy might well differ from those relevant for listed companies; so we provide a novel, complementary perspective on firms' leverage decisions.

Second, our approach also enables us to advance the literature on leverage dynamics by comparing firms at the same life cycle point. Recent leverage literature on capital structure stability (e.g., Lemmon, et al., 2008) often suffers from the lack of "a comparable relative position in leverage cross sections" (DeAngelo and Roll, 2013). The comparability of our set of companies is ensured by the common life cycle age.

Third, we address the issue of the "correct" tax measures as a leverage determinant. As Faccio and Xu (2012) point out, it is important to consider all taxes, both corporate and personal tax rates, when studying capital structure. For this, we build the "effective average tax rate" (EATR) using the methodology proposed by Devereux and Griffith (1998). The EATR is a nonlinear function of: (i) the statutory corporate tax rate, that varies across countries and time, (ii) the expected rate of return, that varies across industries and time, and (iii) personal taxation on capital gains, on dividends and on interests income.

We find that corporate taxation has an effect on leverage levels at entry that is statistically significant and economically relevant. This evidence is consistently robust across a variety of leverage definitions. Second, we show that the initial leverage choice is persistent over time, up to a full decade. Third, we show that, given initial size, higher initial leverage affects the probability of being alive nine years from incorporation. Conditional on survival, it is also associated to lower corporate growth after nine years. A 10% increase in taxation causes initial leverage to increase by 0.63-3.65 percentage points. An increase in leverage at entry, in turn, affects long-run growth: when controlling for endogeneity issues, a 1 percentage point increase in leverage at entry causes lower size (measured by assets) nine years after incorporation by slightly more than 0.75%.

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 shows some descriptive evidence. Section 4 sets forth the empirical strategy. Section 5 presents our results and is followed by a brief conclusion.

2 Data

2.1 Data Sources

Our first data source is the Amadeus database by Bureau van Dijk (BvD). Amadeus is updated monthly and contains accounting data, legal form, industry activity codes, ownership structure and incorporation dates for a large set of public and private companies in Europe. We base our analysis on the 2009 and 2011 December issues of the Amadeus database. We select 38 two-digit (NACE) industries in the manufacturing and industry-related services.[1] We include companies from twelve countries: Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden and UK.

[1] We include the following NACE rev. 1.1 industry codes: 15-36 (manufacturing), 40-41 (utilities), 45 (construction), and 50-52, 55,60-64, 70-74 (services).

We include in the dataset those firms that incorporated in the years from 1998 to 2001, and follow them for nine years, including the incorporation year. Table 1 illustrates how we build our sample. We start with a sample of about 1.1 million companies, evenly distributed across the four years of incorporation, with just a slight increase over time. Unavailability of data on initial capital size, measured by total assets one year after incorporation, almost halves this initial sample; this is due to companies often not being required to file complete financial accounts. We also exclude smaller companies, which are more likely to exit the database because of failure or because they drop below the size set by reporting requirements. For this we choose to exclude companies whose initial size is below the sample median (i.e. total assets below around 100,000 euros). We end up with a sample of just over 250,000 firms.

Table 2 reports the country composition of the sample. The first two columns of Table 2 report the total number of firms by country in the initial sample of about 1.1 million companies. As expected, the five larger EU economies (France, Germany, Italy, Spain and UK) account for a large fraction (80.56%) of our full sample of entrants, with the UK being the largest (26.80%) followed by Spain (17.27%), Germany (13.25%), Italy (12.37%) and France (10.77%).

Our second data source is the "Worldwide Corporate Tax Guide" published annually by Ernst & Young, a leading multinational tax consulting firm. We take from the Guides information on statutory corporate tax rates and on statutory depreciation rates, at both national and local level. We then include information on personal taxation from "The Global Executive" guide, also by Ernst & Young. These yearly publications are compiled by Ernst&Young's local offices in over 140 countries following common criteria, ensuring high professional standards and consistency both over time and across countries.

2.2 Variables

2.2.1 Accounting measures

Our key leverage variable is Financial Leverage (FinLev), computed as:

$$FinLev = \frac{(NonCurrentLiabilities + Loans)}{(NonCurrentLiabilities + Loans + TotalShareholdersFunds)}$$

which is a standard measure in the literature on capital structure. We measure leverage in the first year after incorporation (FinLev(1)). Computing leverage leads to a further loss of observations, as shown in the bottom part of Table 1. Our baseline sample is therefore composed of about 209,000 firms.

The second part of Table 2 shows how accounting data requirements affect the composition of the sample. Data unavailability on initial capital size and financial leverage, together with the requirement that firms have initial capital above the sample median, has some clear effects on the geographical distribution of entrants. The total share of the five large economies remains virtually unaltered (78.44% versus 80.56%). However, when compared with the full initial sample, we observe a large decline for Italy (6.44% versus 12.37%) and especially for Germany (0.45% versus 13.35%). Symmetrically, we observe an increase for the other three large economies: France (19.53% versus 10.77%), Spain (23.16% versus 17.27%), and UK (28.86% versus 26.80%). This result is mainly driven by the fact that German and Italian entrants are more likely not to have their balance sheet data reported in the first few years after birth, because of the reporting rules for private companies.

We also compute two alternative measures of leverage at entry to test the robustness of our results. The first is a broader measure of Leverage (Lev), given by:

$$Lev = \frac{(NonCurrentLiabilities + CurrentLiabilities)}{(NonCurrentLiabilities + CurrentLiabilities + TotalShareholdersFunds)}$$

where we substitute Current Liabilities to Loans. This measure aims to capture the effect of taxation on the broader financial structure of the firm, including non-financial debt. Table 1 shows that the number of observations for Lev(1) is only marginally lower than for FinLev(1). It also shows that, irrespective of the measure of leverage, we lose some observations compared to the set of companies that have information on initial size available.

The second alternative measure is a more restrictive version of FinLev (FinLev(1)–restricted) that excludes companies which report a zero value for *both* the accounting item "Loans" (financial short term liabilities) and for the accounting item "Creditors" (commercial short term liabilities). The motivation for this variable comes from the distribution of FinLev(1), which is characterized by many zeros, as can be seen in the first row of Table 3; so we conservatively exclude companies whose zero value of FinLev(1) might not be genuine but due to the fact that the aggregation of data into a 'European' format done by Amadeus leads to the aggregation of financial debt with non-financial liabilities. In the Appendix we report the balance sheet structure available in Amadeus. This additional restrictions results in losing over half of the observations, as reported in the last two rows of Table 1.

The other key accounting variable is firm size nine years after foundation: Size(9). This variable consists of total assets as reported in the 9th year after incorporation. It is expressed in logarithm to account for the presence of extreme observations. We also include other accounting variables as controls throughout the analysis. First, we include a measure of initial size, Size(1). This is measured by total assets as reported in the first year after incorporation, expressed in logarithm. Second, we include two measures that have been shown by the empirical literature on capital structure to have important effects on leverage: profitability and tangibility. Profitability(1) is measured by the ratio of operating profits (losses) to total assets in the first year after incorporation. Tangibility(1) is measured by the ratio of tangible fixed assets to total assets in the first year after incorporation.

Finally, we build a variable that we use as exclusion restriction in our growth equation. Active Ratio(9) is a measure of "accounting survival" of companies in the Amadeus database. In Amadeus the legal status of a company is reported as "active" if the company is not bankrupt, dissolved or in liquidation. We compute Active Ratio as the ratio between the number of firms active (according to the Amadeus legal status definition) and with no data for Size(9) in country j and year of incorporation t to the number of firms active in country j and year of incorporation t. We expect this variable to affect the probability of observing Size(9) at the firm level (the selection equation), but not to affect the conditional expectation of Size(9) conditional on observability (the outcome equation).

2.2.2 Tax measures

Our aim is to obtain an accurate measure of actual corporate taxation. The statutory corporate tax rate is not a satisfactory measure as it does not include any information on the tax base. Another possible measure, the ratio of tax payments to taxable income, reflects the effect of taxation on past corporate decisions. More convincing "effective" tax measures have therefore been proposed as forward-looking measures that overcome the above limitations (King and Fullerton (1984)). Devereux and Griffith (1998) propose a methodology to build the effective average tax rate (EATR) relevant in corporate decision making. Let R^* and R be the pre-tax and post-tax net present value of the project, respectively. EATR is then defined as the fall in the rate of return of an investment created by corporate taxation:

$$EATR = \frac{R^* - R}{R^*}$$

The size and distribution of EATR depend on several assumptions about the characteristics of the project and the national tax systems. We adopt a baseline definition for EATR that encompasses a domestic investment in plant and machinery by a resident company. In particular R^* incorporates the (forward-looking) rate of return of the investment which is assumed to be industry and year specific but common across all European countries.[2] We conjecture that the industry profitability rate in the U.S. constitutes a "natural" rate of return on investments in a particular industry, because of fewer regulations and restrictions to competition and entry, and therefore a more competitive environment. We measure the profitability rate as the difference between a US industry's total value added and its total cost of labor as a percentage of total value added: (Total Value Added–Total Labor Cost)/ Total Value Added, in the year before incorporation. We obtain data to compute yearly profit rates for US industries from the OECD STAN database.

The after-tax value of the project (R) incorporates the after-tax rate of return of the investment, after the statutory corporate tax rate, depreciation rates and tax allowances on assets are applied. An increase in the corporate tax rate, lowering the after-tax rate of return to the investment, raises EATR, all else equal. However the change in EATR is less than proportional, because of the presence of tax allowances on capital assets: higher allowances lower EATR. In our baseline specification we present results based on

[2] $R^* = \frac{p-r}{1+r}$ where p is the rate of return on the investment (in our case the industry profitability rate), and r is the real interest rate (see Devereux and Griffith, 1998).

the maximum statutory corporate tax rate, the maximum fiscal depreciation rate for plant and machinery and on the maximum capital allowances observed in the year before incorporation. More details on the construction of the EATR variable can be found in Da Rin et al. (2011).

3 Descriptive Evidence

Table 3 provides summary statistics for our variables. FinLev(1) has fairly similar mean and median values, with the median firm having book leverage of about 0.38 at entry; it is also interesting to note that there is substantial but not extreme variation in this variable. FinLev(1) is substantially lower than Lev(1), which includes a much wider set of liabilities in the numerator. Also, FinLev(1) is lower than FinLev(1)–restricted, which excludes firms with zero reported leverage. Size(1), by contrast, is much more volatile; its median value of 358,000 euros points to many sample firms being relatively small, considering that we only consider firms with more than 100,000 euros of assets. After nine years, the median firm nearly doubles its size, and the same happens to the average firm. We lose just over a third of the sample firms over the nine years we cover. Effective corporate taxation is very close to 30% in both mean and median terms, and the inter-quartile rage is 5.6 percentage points. Tangibility(1) shows substantial variation across firms, as natural when looking at a sample that includes a wide variety of industries, spanning both manufacturing and services. Profitability(1) is also quite dispersed; moreover, we notice that this variable is available for only about 60% of the sample.

Table 4 reports the distribution of FinLev(1), Lev(1), and FinLev(1)–restricted across the four years of incorporation. The sample is fairly evenly split across the four years we look at, with a slight increase of coverage over time. For each measure we see that the distribution is remarkably similar across years. As already noted the relations between these three measures are as expected. In particular, FinLev(1) is substantially lower than both Lev(1) and FinLev(1)–restricted across all four years.

Next, we look into the dynamics of leverage over time in Figures 1 to 3. Figure 1 looks at our main measure, FinLev(1), and Figures 2 and 3 at Lev(1) and FinLev(1)–restricted respectively. In all figures we consider only 'survivors,' that is firms that report the relevant leverage variable for nine years after incorporation. For instance, Figure 1 is based on 87,246 firms, slightly over 40% of those for which we have FinLev(1). For each Figure we report the distribution of the variable of interest for the full sample and for the two sub-samples of firms that have FinLev(1) above and below the median, respectively. In Figure 1 we see that the distribution tends to decline over time at all quartiles except the first one, which remains very close to zero. As a consequence there is a reduction of the inter-quartile range over time which points to a 'converge from above only' pattern.

By looking separately at the two sub-samples we also see that the decline in leverage is largely due to firms that start above the median; firms that start below the median retain a low leverage, except for those in the upper part of this distribution. Figures 2 and 3 broadly tell similar stories since we observe a decline across the distribution of the full sample also for Lev(1) and FinLev(1)–restricted. The (partial) convergence from above that we observe in Figure 1 is confirmed in Figure 3 but not in Figure 2. Overall, therefore there is not striking evidence of convergence over time, is sharp contrast to the case of listed firms (see Lemmon et al., 2008).

Table 3 and Figures 1 to 3 allow us to compare the leverage levels of entrepreneurial companies to those found in other studies. The closest comparison is with the data on US start-ups gathered by the Kaufman Foundation Survey and reported by Robb and Robinson (2014); they report mean leverage at entry of around 0.47, slightly higher then in our sample. Asker, Farre-Mensa, and Ljungqvist (2011) report financial data for a sample of 88,000 US private companies; these have a mean (median) leverage of 0.31 (0.16). Our sample therefore exhibits leverage that is somewhat intermediate between that of these two samples.

We then look at persistence from a different angle by considering how many firms remain below (above) the sample median of our leverage variables over time. Table 5 reports data on this. Looking first at FinLev, almost two thirds of the companies with FinLev(1) below the sample median still report a value of FinLev below the sample median nine years after incorporation. This proportion also applies to the other two definitions of leverage: it is 64.6% for Lev and 62.4% for FinLev-restricted. This pattern contrasts with that of US listed firms, less than half of which do the same over a ten-year span (DeAngelo and Roll, 2013, table 5). This evidence implies that–regardless of the chosen measure–leverage at entry tends to be strongly correlated to leverage in future years. This in turn makes the analysis of the determinants of leverage at entry–including corporate taxation–of great interest, since this initial choice does not look easily reversible and therefore might be expected to affect long-run company growth.

4 Empirical strategy

In order to address our two research objectives we first model the determinants of initial leverage. Leverage is a "fractional" variable taking any value in the $[0, 1]$ interval with positive probability. Following Papke and Wooldrige (1996), we propose the estimation of the following relationship:

$$E(FinLev(1)_{icjt}) = \mathbf{\Phi}(\beta_0 + \beta_1 EATR_{cjt} + \mathbf{x}'_{icjt}\gamma + \\ + DCountry'_c\delta_1 + DIndustry'_j\delta_2 + DIncorp - Year'_t\delta_3) \qquad (1)$$

where the expected value for the initial (computed in the first year after incorporation) financial leverage ratio ($E(FinLev(1))$) for firm i is modeled as a function of the country-industry specific taxation measure ($EATR$), and a set of firm-specific explanatory variables, contained in the vector $\mathbf{x}$, that have been previously identified by the literature as being relevant determinants of capital structure (e.g., Titman and Wessels (1988), Rajan and Zingales (1995), Mackay and Phillips (2005), among others): initial size, profitability, and tangibility. We also include three sets of dummy variables to control for the country

($DCountry$), the industry ($DIndustry$) and the incorporation year ($DIncorp-Year$) of firm i. These fixed effects account for any possible systematic differences in leverage across countries, across industries, and over time. The function $\mathbf{\Phi}(.)$ is chosen to be a standard normal cumulative distribution function, so to ensure that the predicted values from equation (1) lie in the unit interval.

Ideally, the parameters β_1 and $\boldsymbol{\gamma}$ are consistently estimated using the Bernoulli quasi-ML estimator proposed by Papke and Wooldridge (1996), conditional on equation (1) being correctly specified. We use robust inference by computing standard errors clustered at the country-industry level. However we also need to take into account the potential existence of endogeneity of our regressors. It is well known that endogeneity is generally difficult to handle in nonlinear models, because the probabilistic nature the endogenous variables (whether they are continuous, discrete, or some combination) plays a critical role (Wooldridge, 2012).

In the estimation of the model in equation (1) we assume that unobserved heterogeneity at the firm level is orthogonal to all explanatory variables, including our country-industry specific taxation measure. Although this does not seem an unreasonable assumption to make, it may not hold if policy makers react to a country-industry clustered increase (decrease) in leverage by altering the effective tax rate. This might happen for instance if policy makers are induced to increase (decrease) the tax rate or the tax base in response to the entry of under-capitalized (over-capitalized) firms. In this case taxation and leverage may be simultaneously determined and taxation should be considered as endogenous in our model of leverage determinants. Note, however, that under this scenario our chosen estimator is likely to underestimate β_1 and this in turn suggest that our estimates should be considered as lower bounds of the true effect.

Once we have explored the determinants of initial choice on financial leverage, through model (1), we further investigate the role of this initial choice on some long run measures of growth. In particular, we follow the sample of entrants over time and take to the data the following relationship:

$$\begin{aligned} Size(9)_{icjt} &= \alpha_0 + \mathbf{z}'_{icjt}\boldsymbol{\alpha} + \\ &+ DCountry'_c\lambda_1 + DIndustry'_j\lambda_2 + DIncorp-Year'_t\lambda_3 + \varepsilon_{icjt} \qquad (2) \end{aligned}$$

where firm size nine years after incorporation of firm i (Size(9)) is explained by the variables contained in the vector $\mathbf{z}_i$, all observed at the year of incorporation: financial leverage, initial size, tangibility and profitability. We also include the three sets of dummies for country ($DCountry$), industry ($DIndustry$) and year of incorporation ($DIncorp-Year$) fixed effects. The model in equation (2) is a simple growth equation, where we aim at documenting the long term effect of capital structure choice at entry.

Two potential problems may arise when estimating equation (2) that may affect the consistent estimation of the parameters of interest: sample selection and unobserved heterogeneity capturing firm quality.

Selection issues arise because of survivorship bias. We are able to observe accounting data nine years after incorporation for about 65% our initial sample of entrants. There may be many reasons for this: companies may go bankrupt, dissolve or liquidate, but there can also be delays in reporting more recent accounting data. According to the data on legal status in the Amadeus database, about 89% of the original sample of entrants are still active at the end of 2009. We therefore conjecture that the unreported data on size at nine years after incorporation are mainly explained by delays in reporting accounting information.[3]

We account for selection issues by estimating a two-step Heckman selection model (Heckman, 1979). The selection equation comprises the selection mechanism, i.e. the variable of interest Size(9) is only observed if the selection indicator $SELECT_i$ is equal to one:

$$
\begin{aligned}
SELECT_{icjt} = \mathbf{\Phi}(\theta_0 + \mathbf{w}'_{icjt}\boldsymbol{\theta} + \\
+ DCountry'_c\pi_1 + DIndustry'_j\pi_2 + DIncorp - Year'_t\pi_3)
\end{aligned}
\tag{3}
$$

where $SELECT$ is a binary variable indicating whether firm i has accounting data nine years after incorporation, and $\mathbf{w}$ collects the explanatory variables for the selection equation, i.e. the vector of initial variables collected in $\mathbf{z}$ and the Active Ratio variable indicating the share of active firms with no accounting data over the total number of active firms in a particular country-year couple. Active Ratio, which appears only in the selection equation, ensures the exclusion restriction serving to contribute to the identification of the parameters of the main equation. We additionally control for country, industry and year of incorporation fixed effects.[4]

The second issue we need to tackle in the estimation of equation (2) is the potential endogeneity of the initial leverage. The error term ε_i captures unobserved firms' heterogeneity that is potentially correlated to initial leverage. The potential bias in the estimated effects of initial leverage on long run growth may be either upward or downward. Risk averse entrepreneurs, who are expected to enter with low leverage, may be characterized by lower levels of growth because of the unobserved risk aversion. The bias may also be upward if ex-ante higher quality firms obtain higher equity financing resources, and the observed relationship between lower leverage and high growth may therefore be spurious, due to unobserved firm quality. While including some proxies of firm quality, i.e. size, tangibility and profitability at entry, that may weaken concerns for endogeneity, we argue that a more satisfactory approach to deal with the endogeneity of initial leverage is still needed. By exploiting the exclusion restriction that taxation at entry affects survival and

[3] This is supported by the fact that the amount of missing data increases in more recent years. E.g., about 9% of the missing data on size refers to the year 2007, while about 40% of the missing data is for the year 2010.

[4] A legitimate alternative option would be to estimate our two equation system jointly by maximum likelihood under a joint normality assumption of the error terms in the main and in the selection equation. Indeed, if we do so the results we present in Table 8 are virtually unaltered. However we focus on the two-step approach in order to make the results fully comparable with those obtained by allowing initial leverage to be endogenous. In this case the FIML approach is in general hard to apply. More specifically, models estimated with FIML fail to converge in our application.

growth only though initial leverage, we implement a control function approach where the generalized residuals from equation (1) are inserted in the primary equation in (2) and, in some specifications, in the selection equation in (3).[5]

5 Results

Table 6 reports the results from estimating equation (1). This model carefully controls for both country and industry fixed effects in order to account for any differences in initial leverage due to a firm being located in a specific country or operating in a specific industry. We also control for time effects by including year of incorporation dummies. Our time period also includes the 'dot.com' bubble years, when external finance was more easily accessible for new companies. Standard errors are clustered at industry-country level.

Corporate taxation enters either linearly (columns (1) and (2)) or quadratically (columns (3) and (4)) in the underlying latent specification. The latter allows for the marginal effects to change sign over the distribution, unlike the linear specification that imposes a constant sign over the whole distribution.

Columns (ii) and (iv) include canonical explanatory variables for leverage, which are found to be significant and with the expected sign: tangibility(1) enters with a positive and profitability(1) with a negative sign; their inclusion reduces the coefficient of EATR(1) and EATR(1)-SQ in absolute value but these remain highly significant and retain economic relevance.

The first result is that initial size has a strong, significant, and positive effect on FinLev(1): larger firms choose to finance themselves with more debt than smaller firms. Second, and more importantly for our purposes, EATR also has a meaningful effect on FinLev(1), in both the linear and the quadratic specifications in the underlying latent variable model. Depending on the chosen model, we find that a 10% increase in taxation—corresponding approximately to a one standard deviation—causes initial leverage to increase by a minimum of 0.63 percentage points (column (4)) to a maximum of 3.65 percentage points (column (1). Table 6 also reports the distribution of the marginal effects from all models. The effects of EATR on FinLev(1) are strong and persistent across the distributions based on the linear specification, with evidence of negative marginal effects in the lower tail of the distributions in columns (3) and (4).

Columns (5) and (6) in Table 6 repeat the analysis of Column (4) using the two alternative measures of leverage: Lev(1) and FinLev(1)–restricted in order to verify that our results are not driven by the definition of leverage or by the presence of many zero-leverage firms that may not be such in reality. Comfortingly, the effects on Lev(1) are still positive and even larger in size compared to what found for FinLev(1). On the contrary

[5] Generalised residuals can be written as $\frac{[y_i - \widehat{\Phi(.)}]\widehat{\phi(.)}}{\widehat{\Phi(.)}[1-\widehat{\Phi(.)}]}$ whereas the more standard Pearson residuals are defined as $\frac{y_i - \widehat{\Phi(.)}}{\sqrt{\widehat{\Phi(.)}[1-\widehat{\Phi(.)}]}}$. The two expressions, therefore, only differ by a "standardization" factor. Rather unsurprisingly, replacing the generalized residuals with the Pearson residuals does not alter the results presented in section 5.

the average effect on FinLev(1)–restricted is found to be negligible even if it is still positive and larger when computed at the median or at the third quartile.

Table 7 builds on the results of Table 6 and allows for the possibility that both the coefficients on EATR and the implied marginal effects differ according to the degree of creditor rights protection of firms' host country. Columns (1) and (2) show the results for the linear and the quadratic model, respectively, with FinLev(1) as dependent variable. Columns (3) and (4) maintain the quadratic specification but have Lev(1) and FinLev(1)–restricted, respectively, as alternative dependent variables. In all specifications, the interacted variables are not significantly different from zero at conventional statistical levels, this in turn pointing out to the absence of a differential effect between countries which differ according to the degree of creditor rights protection.

Finally, Table 8 reports results for our growth model, corresponding to equations (2) and (3). We report three specifications: OLS (columns (1) and (2)), two-step Heckman (column (3)), and two-step IV Heckman (columns (4) and (5)). OLS estimates are reported both with and without the tangibility and profitability variables, which results in a large loss of observations.[6] Since the OLS coefficients on FinLev(1) turn out to be stable across specifications, we only report the Heckman results for the extended model, which includes both tangibility and profitability.

Since we are interested in the long-run effect of taxation and entry on company growth, our dependent variable is Size(9). The fact that leverage has been found to be persistent over time makes the specification of a fully fledged dynamic model for leverage, taxation and growth less compelling.

Our OLS results point to a negative correlation between FinLev(1) and Size(9), after controlling for Size(1) and, in some specifications, also for Tangibility(1) and Profitability(1). These findings are confirmed when we address potential selection problems by estimating a two-step Heckman selection model (column (3)). FinLev(1) now enters both the outcome and the selection equations with a negative sign. This in turn implies that taxation affects—through the transmission channel of initial leverage—both the probability of survival and the expected size after nine years, conditional on surviving. The Active Ratio enters, as expected, with a negative sign.

Finally, we address the endogeneity problems potentially arising from the unobservability of firm quality by applying the control function approach to the two-step Heckman selection model. Generalized residuals are recovered from the estimates reported in columns (4) of Table 6. These residuals are included only in the primary equation (columns (4)) or both in the primary and in the selection equation (columns (5)).[7] This additional variable turns out to be highly significant in both the outcome equation and the

[6] In addition, since both Tangibility and Profitability could also be endogenous, it cannot be taken for granted that the addition of these variables would contribute to the solution of the issue of endogeneity of leverage.

[7] In the specifications reported in columns (4) and (5) we have eliminated observations with generalized residuals below the 1st and above the 99th percentiles.When compared to the number of observations in column (3), this implies a reduction in total observations from 153,7442 to 150,373 and a reduction in censored observations from 54,196 to 53,093.

selection equation. Also, and more importantly, the estimated coefficients on FinLev(1) are larger in absolute values when compared to those reported in previous columns. More precisely, the punctual estimate of the coefficient of main interest in the primary equation increases from -0.221 (column(3)) to -0.765/-0.769 (columns (4) and (5)). At face value, this in turn implies that, after controlling for endogeneity, a 1 percentage point increase in leverage at entry causes lower size (measured by assets) nine years after incorporation by slightly more than 0.75%. Analogously, in the equation where the generalized residuals are introduced in the selection equation (column (5)), the average partial effects on survival probabilities increase substantially in absolute value (from -0.005 (column (4)) to -0.237 (column 5)). Overall our findings point out therefore to the possibility that both OLS and two-step Heckman estimation methods provide upward biases of the true effects.

6 Concluding Remarks

In this paper we document a strong negative effect of corporate income taxation on the long-term growth of newly incorporated entrepreneurial companies. We first show that what we know about the capital structure dynamics of US listed companies does not fully hold for entrepreneurial companies. In particular, we show that the initial choices of privately held newly incorporated companies are much less conducive to convergence than in the case of public companies. We also show that corporate taxation has a significant effect on initial capital structure. We then ask whether these two facts matter for long-term corporate growth. Using an approach devised to take in consideration several econometric challenges, in particular selection and endogeneity, we find that corporate taxation does affect survival probabilities and corporate growth in the nine years after incorporation. We believe this result is quite important for both policy makers and entrepreneurs.

Appendix: Amadeus Database Balance Sheet Structure

Amadeus format for balance sheet liabilities items is the following:

1. Total Shareholders Funds: Total equity (Capital + Other shareholders funds)

2. Non Current Liabilities: Long term liabilities of the company, whose sub-items are:

   - Long Term Debt: Long term financial debts (e.g. to credit institutions, loans and credits, bonds)
   - Other Non Current Liabilities: Other long term liabilities (trade debts, group companies, pension loans, etc.)

3. Current Liabilities: Current liabilities of the company, whose sub-items are:

   - Loans: Short term financial debts (e.g. to credit institutions + part of Long term financial debts payable within the year, bonds, etc.)
   - Creditors: Debts to suppliers and contractors (trade creditors)
   - Other Current Liabilities: Other current liabilities such as pension, personnel costs, taxes, intra-group debts, accounts received in advance, etc.

References

[1] Aghion, Philippe, and Peter Howitt, 1992. A model of growth through creative destruction. *Econometrica*, 60 (2), 323–351.

[2] Agrawal, Anup and Nandu Nagarajan, 1990, Corporate Capital Structure, Agency Costs, and Ownership Control: The Case of All-Equity Firms. *The Journal of Finance,* 45(4), 1325–1331.

[3] Asker, John, Joaon Farre-Mensa, and Alexander Ljungqvist (2011). Comparing the Investment Behavior of Public and Private Firms. NBER WOkring Paper 17394.

[4] Ciccone, Antonio, and Elias Papaioannou, 2007. Red Tape and Delayed Entry. *Journal of the European Economic Association,* 5(2-3), 444–458.

[5] Da Rin, Marco, Marina Di Giacomo, and Alessandro Sembenelli, 2011. Entrepreneurship, firm entry, and the taxation of corporate income: Evidence from Europe. *Journal of Public Economics,* 95(9-10), 1048–1066.

[6] Da Rin, Marco, Marina Di Giacomo, and Alessandro Sembenelli, 2010. Corporate Taxation and the Size of New Firms: Evidence from Europe. *Journal of the European Economic Association,* vol. 8(2-3), 606–616.

[7] DeAngelo, Harry and Richard Roll, 2013. How Stable are Corporate Capital Structures?, *Journal of Finance*, forthcoming.

[8] Demirgu-Kunt, Asli, Inessa Love, and Vojislav Maksimovic, 2006. Business Environment and the Incorporation Decision. *Journal of Banking and Finance,* 30(5), 2967–2993.

[9] Desai, Mihir, Fritz Foley, and James Hines, 2004. A Multinational Perspective on Capital Structure Choice and Internal Capital Markets. *Journal of Finance,* 59(6), 2451–2487.

[10] Devereux, Michael, and Rachel Griffith, 1998. Taxes and the Location of Production: Evidence from a Panel of US Multinationals, *Journal of Public Economics*, vol. 68(3), 335–367.

[11] Dittmar, Amy, 2004. Capital Structure in Corporate Spin-offs, *Journal of Business*, 77, 9–43.

[12] Djankov, Simeon, Tim Ganser, Caralee McLiesh, Rita Ramalho, and Andrei Shleifer, 2010. The Effect of Corporate Taxes on Investment and Entrepreneurship. *American Economic Journal*, 2(3), 31–64.

[13] Djankov, Simeon, Rafael Laporta, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2002. The Regulation of Entry. *Quarterly Journal of Economics*, 117(1), 1–37.

[14] Faccio, Mara and Jin Xu, 2012. Taxes and Capital Structure, *Journal of Financial and Quantitative Analysis,* forthcoming.

[15] Graham, John, 1996. Debt and the marginal tax rate. *Journal of Financial Economics*, 41.1 (1996): 41–73.

[16] Graham, John., 2003. Taxes and corporate finance: a review. *The Review of Financial Studies*, 16,1075–1129.

[17] Graham, John., 2013. Do Taxes Affect Corporate Decisions? A Review. Chapter 3 in George Constantinides, Milton Harris, and Reneé Stulz (eds) *Handbook of the Economics of Finance*, Amsterdam, Elsevier, 123–210.

The Review of Financial Studies, 16,1075–1129.

[18] Hause, John, du Rietz, Gunnar, 1984. Entry, industry growth, and the microdynamics of industry supply. *Journal of Political Economy*, 92, 733–757.

[19] Heckman, James., 1979. Sample Selection Bias as a Specification Error. *Econometrica*, 47(1), 153–161.

[20] King, Mervyn, and Don Fullerton, 1984. *The Taxation of Income from Capital*. University of Chicago Press, Chicago.

[21] Klapper, Leora, Luc Laeven, Raghuram Rajan, 2006. Entry Regulation as a Barrier to Entrepreneurship. *Journal of Financial Economics*, 82(3), 591–629.

[22] Lemmon, Michael, Michael Roberts, and Jaime Zender, 2008. Back to the Beginning: Persistence and the Cross-section of Corporate Capital Structure. *Journal of Finance*, 63(4), 1575–1608.

[23] Mackay, Peter, and Gordon Phillips, 2005. How Does Industry Affect Firm Financial Structure? *Review of Financial Studies*, 18(4), 1433–1466.

[24] Papke, Leslie , and Jeffrey Wooldridge, 1996. Econometric Methods for Fractional Response Variables with an Application to 401(K) Plan Participation Rates. *Journal of Applied Econometrics,*,11(6), 619–32.

[25] Rajan, Raghuram, and Luigi Zingales, 1995. What Do we Know about Capital Structure: Some Evidence from International Data. *Journal of Finance*, vol. 50(5), 1421–1460.

[26] Robb, Alicia, and David Robinson (2014). The Capital Structure Decision of New firms. *Review of Financial Studies*, 27(1), 153–179.

[27] Schumpeter, Joseph, 1911. *The Theory of Economic Development*. Transition Books, Edison, NJ.

[28] Schumpeter, Joseph, 1942. *Capitalism, Socialism, and Democracy.* NY Harper, New York.

[29] Titman, Sheridan, and Roberto Wessels, 1988. The Determinants of Capital Structure. *Journal of Finance*, 43(1), 1–19.

[30] Wooldridge, Jeffrey, 2012. Quasi-Maximum Likelihood Estimation and Testing for Nonlinear Models with Endogenous Explanatory Variables. Working Paper Department of Economics, Michigan State University.

Table 1. Sample Construction

This Table shows the count of companies at different steps in the sample construction, as described in Section 2. Variables are defined in Section 2.2. For each measure of leverage the Table also shows the count of firms with data in the year after incorporation (1) and nine years after incorporation (9), for the three measures of leverage we employ in the paper.

	1998	1999	2000	2001	Total
Number of Firms	248,596	277,064	318,145	324,741	1,168,546
Firms with Initial Size missing	143,327	144,988	157,871	154,408	600,594
Firms with Initial Size > median	48,181	59,566	71,431	76,630	255,808
FinLev(1)	38,927	48,669	58,657	63,265	209,518
FinLev(9)	20,752	21,737	24,151	20,606	87,246
Lev(1)	38,181	47,594	57,134	61,518	204,427
Lev(9)	20,863	21,538	23,902	20,424	86,727
FinLev(1)–restricted	18,994	24,710	28,698	28,311	100,713
FinLev(9)–restricted	8,575	8,432	9,006	7,105	33,118

Table 2. Country coverage

This Table shows the count of companies by country of incorporation for the whole sample of entrants and for the final subsample of firms with data on initial financial leverage (FinLev(1)).

	All Entrants		Final Sample	
Country	Firms	%	Firms	%
Belgium	55,750	*4.77*	19,100	*9.12*
Finland	14,432	*1.24*	227	*0.11*
France	125,830	*10.77*	40,919	*19.53*
Germany	156,044	*13.35*	938	*0.45*
Greece	4,184	*0.36*	2,900	*1.38*
Ireland	23,361	*2.00*	3,342	*1.60*
Italy	144,501	*12.37*	13,483	*6.44*
Netherlands	40,919	*3.45*	7,133	*3.40*
Portugal	57,923	*4.96*	2,890	*1.38*
Spain	201,808	*17.27*	48,514	*23.16*
Sweden	30,625	*2.562*	9,608	*4.59*
UK	313,169	*26.80*	60,464	*28.86*
Total	1,168,546	*100.00*	209,518	*100.00*

Table 3. Summary statistics

This Table reports summary statistics for the final sample of entrants over the 1998-2001 time period. Variables are defined in Section 2.2. Size(1) and Size(9) are measured in thousand euros. Size(1), Size(9) and EATR(1) enter the estimated equations in logarithmic form.

	Mean	St.Dev.	Q1	Median	Q3	Obs.
FinLev(1)	.416	.380	0	.377	.802	209,518
Lev(1)	.760	.252	.660	.852	.946	204,427
FinLev(1)-restricted	.509	.363	.112	.576	.853	100,714
Size(1)	12,926	654,037	197	358	847	209,518
Size(9)	25,336	3,065,855	262	639	1,716	138,097
EATR(1)	31.5	3.28	29.0	30.7	34.6	209,518
Tangibility(1)	.258	.303	.026	.121	.402	200,403
Profitability(1)	.088	.183	.004	.049	.135	157,025
Active Ratio(9)	27.7	21.2	11.7	21.2	35.2	209,518

Table 4. Distribution of initial leverage

This table reports summary statistics for the distribution of our main measure of leverage (FinLev(1)), as well as for two measures we employ to assess the consistency of our results (Lev(1) and FinLev(1)–restricted). Leverage measures are defined in Section 2.2.1 and are computed at the first year after incorporation. We split the sample of entrants (Total) according to the year of incorporation (1998-2001).

	Mean	St.Dev.	Q1	Median	Q3	Obs.
FinLev(1)						
1998	.415	.376	0	.379	.793	38,927
1999	.424	.380	0	.400	.807	48,669
2000	.407	.381	0	.351	.797	58,657
2001	.419	.382	0	.379	.810	63,265
Total	.416	.380	0	.377	.802	209,518
Lev(1)						
1998	.753	.254	.648	.844	.942	38,181
1999	.758	.253	.657	.851	.944	47,594
2000	.754	.256	.649	.848	.945	57,134
2001	.772	.245	.679	.863	.952	61,518
Total	.760	.252	.660	.852	.946	204,427
FinLev(1) – restricted						
1998	.501	.359	.117	.559	.842	18,994
1999	.513	.361	.122	.584	.853	24,710
2000	.499	.366	.085	.562	.849	28,698
2001	.519	.363	.131	.593	.862	28,311
Total	.509	.363	.112	.576	.853	100,713

Table 5. Persistence in Leverage ratio levels over time

This table reports the number of firms and the share of firms (%) that report a value of Leverage below the sample median after two or more years from incorporation. We limit the analysis to the subset of firms that report information on Leverage ratio for all nine years after incorporation.

Years from	FinLev		Lev		FinLev–Restricted	
incorporation	Firms	%	Firms	%	Firms	%
1	43,639	100	43,364	100	13,520	100
2	37,169	85.2	36,569	84.3	11,290	83.5
3	34,640	79.4	34,104	78.6	10,443	77.2
4	32,963	75.5	32,336	74.6	9,937	73.5
5	31,564	72.3	31,024	71.5	9,494	70.2
6	30,378	69.6	30,046	69.3	9,050	66.9
7	29,522	67.7	29,183	67.3	8,818	65.2
8	28,952	66.3	28,562	65.9	8,612	63.7
9	28,500	65.3	27,999	64.6	8,439	62.4

Table 6. Determinants of Financial Leverage: Fractional probit estimation

This table reports results of the estimation of equation (1). The dependent variable is FinLev(1) in columns (1)-(4), Lev(1) in Column (5) and FinLev(1)–restricted in column (6). All variables are defined in Section 2.2. In columns (1) and (2) EATR(1) enters linearly, while in columns (3) to (6) EATR(1) enters also squared (EATR(1)-SQ). AIC is the Akaike information criterion, BIC is the Bayesian information criterion, Overall Deviance generalizes the sum of squared errors and a model with too large a deviance doesn't fit the data well. Marginal effects are computed for each observation in the sample following the formulas in Papke and Wooldrige (1996). Standard errors are clustered at country-industry level. Estimates are performed using the `glm` command for Stata 12.

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Variable:	FinLev(1)				Lev(1)	FinLev(1)–Restr.
Size(1)	0.102***	0.043***	0.102***	0.042***	-0.067***	0.035***
	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
EATR(1)	0.979**	0.772*	26.153***	25.735***	15.787**	19.617***
	(0.43)	(0.46)	(7.52)	(6.61)	(6.79)	(6.79)
EATR(1)-SQ			-3.710***	-3.688***	-2.109**	-2.865***
			(1.10)	(0.96)	(1.00)	(1.01)
Tangibility(1)		0.628***		0.625***	-0.136	0.880***
		(0.20)		(0.20)	(0.17)	(0.08)
Profitability(1)		-0.789***		-0.795***	-0.786***	-0.889***
		(0.09)		(0.09)	(0.12)	(0.11)
Constant	-4.464***	-2.979**	-47.154***	-45.212***	-28.143**	-33.789***
	(1.43)	(1.55)	(12.90)	(11.38)	(11.70)	(11.46)
Observations	209,518	153,442	209,518	153,442	150,866	89,910
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Incorp. Year Dum.	Yes	Yes	Yes	Yes	Yes	Yes
AIC	232,464	166,463	232,324	166,341	122,892	93,456
BIC	233,039	167,040	232,908	166,928	123,478	94,011
Deviance	146,045	96,071	145,902	95,947	44,223	48,052
	Distribution of Marginal Effects for EATR					
Mean	0.365	0.287	0.212	0.063	0.344	0.002
Std. Dev.	0.031	0.027	0.287	0.299	0.158	0.238
Q1	0.350	0.279	-0.054	-0.174	0.235	-0.115
Median	0.376	0.297	0.264	-0.043	0.312	0.036
Q3	0.387	0.305	0.423	0.287	0.425	0.128

Table 7. Determinants of Initial Financial Leverage:
Fractional probit estimation

This Table reports results of the estimation of equation (1). Panel A reports coefficients. The dependent variable is FinLev(1) in columns (1) and (2), Lev(1) in Column (3) and FinLev(1)–restricted in column (4). All variables are defined in Section 2.2. In column (1) EATR(1) enters linearly, while in columns (2) - (4) EATR(1) enters also squared (EATR(1)-SQ). AIC is the Akaike information criterion, BIC is the Bayesian information criterion, Overall Deviance generalizes the sum of squared errors. In Panel B marginal effects are computed for each observation in the sample following the formulas in Papke and Wooldrige (1996). Standard errors are clustered at country-industry level. Estimates are performed using the `glm` command for Stata 12.

Panel A: Regression Estimates

	(1)	(2)	(3)	(4)
Dep. Var	FinLev(1)		Lev(1)	FinLev(1) - restr
Size(1)	0.043***	0.042***	-0.068***	0.035***
	(0.01)	(0.01)	(0.01)	(0.01)
EATR(1)	0.787	26.703***	16.913**	19.810***
	(0.51)	(7.20)	(7.31)	(7.57)
EATR(1)-CREDIT-RIGHT	-0.086	-8.113	-0.704	-5.763
	(0.66)	(9.80)	(13.79)	(10.81)
EATR(1)-SQ		-3.840***	-2.301**	-2.890**
		(1.06)	(1.09)	(1.13)
EATR(1)-SQ-CREDIT-RIGHT		1.227	0.238	0.808
		(1.42)	(1.94)	(1.61)
Tangibility(1)	0.628***	0.625***	-0.139	0.881***
	(0.20)	(0.20)	(0.17)	(0.08)
Profitability(1)	-0.789***	-0.795***	-0.785***	-0.890***
	(0.09)	(0.09)	(0.12)	(0.11)
Constant	-2.742	-33.341	-30.095	-23.914*
	(1.910)	(12.79)	(22.77)	(13.73)
N.obs	153,442	153,442	150,866	89,910
Country Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
Incorp. Year Dummies	Yes	Yes	Yes	Yes
AIC	166,465	166,343	122,885	93,459
BIC	167,052	166,950	123,490	94,032
Deviance	96,071	95,945	44211	48,051

Table 8. Growth equation

This table shows estimation results for equations (2) and (3). The dependent variable is Size(9). All variables are defined in Section 2.2. Columns (1) and (2) estimate an OLS model. Column (3) estimates a standard Heckman selection model. Columns (4) and (5) estimate a standard Heckman 2 step IV selection models using Generalized residuals obtained from the fractional probit of specification (4) in Table 6. Standard errors are clustered by country-industry in columns (1) and (2), and bbotstrapped with 1,000 replications in colums (3) to (5).

Panel A: Regression Estimates

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	Heckman	IV–Heckman	IV–Heckman
FinLev(1)	-0.163***	-0.222***	-0.221***	-0.765***	-0.769***
	(0.04)	(0.02)	(0.01)	(0.21)	(0.23)
Size(1)	0.840***	0.850***	0.850***	0.859***	0.859***
	(0.02)	(0.01)	(0.00)	(0.01)	(0.01)
Profitability(1)		0.175***	0.173***	0.033	0.032
		(0.05)	(0.03)	(0.07)	(0.07)
Tangibility(1)		0.083***	0.082***	0.216***	0.217***
		(0.03)	(0.02)	(0.05)	(0.06)
Generalized residuals(1)				0.336**	0.339**
				(0.13)	(0.14)
Constant	1.021	1.626***	1.021***	1.196***	1.199***
	(n.a.)	(0.36)	(0.06)	(0.10)	(0.10)
SELECTION EQUATION					
Active Ratio(9)			-0.024***	-0.023***	-0.023***
			(0.00)	(0.00)	(0.00)
FinLev(1)			-0.043***	-0.026**	-0.776***
			(0.01)	(0.01)	(0.22)
Size(1)			0.012***	0.011***	0.023***
			(0.00)	(0.00)	(0.00)
Profitability(1)			0.508***	0.533***	0.322***
			(0.02)	(0.02)	(0.07)
Tangibility(1)			0.266***	0.253***	0.430***
			(0.01)	(0.01)	(0.05)
Generalized residuals(1)					0.464***
					(0.14)
Constant			0.419***	0.406***	0.671***
			(0.04)	(0.04)	(0.09)
Mill's λ			-0.009	0.012	0.011
			(0.05)	(0.05)	(0.05)
sigma			1.104	1.100	1.100
rho			-0.008	0.011	0.010
R^2	0.49	0.54			
N. Obs	137,183	99,246	153,442	150,373	150,373
N. Obs. Cens.			54,196	53,093	53,093
Country Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Incorp. Year Dummies	Yes	Yes	Yes	Yes	Yes

Panel B: Distribution of Marginal Effects for FinLev(1) in the selection equation

	(3)	(4)	(5)
Mean	-0.013	-0.008	-0.237
Std. Dev.	0.004	0.002	0.069
Q1	-0.017	-0.010	-0.296
Median	-0.015	-0.009	-0.263
Q3	-0.010	-0.006	-0.187
N. Obs	153,442	150,373	150,373

Figure 1. Distribution of FinLev over time and across subsamples

The figure shows the distribution over time of FinLev. The first panel shows the distribution of financial leverage (FinLev) over the whole sample over time, from the year of incorporation to the ninth year after it. The second panel shows the distribution of FinLev over time for the subsample of firms that have FinLev(1) above the median. The third panel shows the distribution of FinLev over time for the subsample of firms that have FinLev(1) below the median.

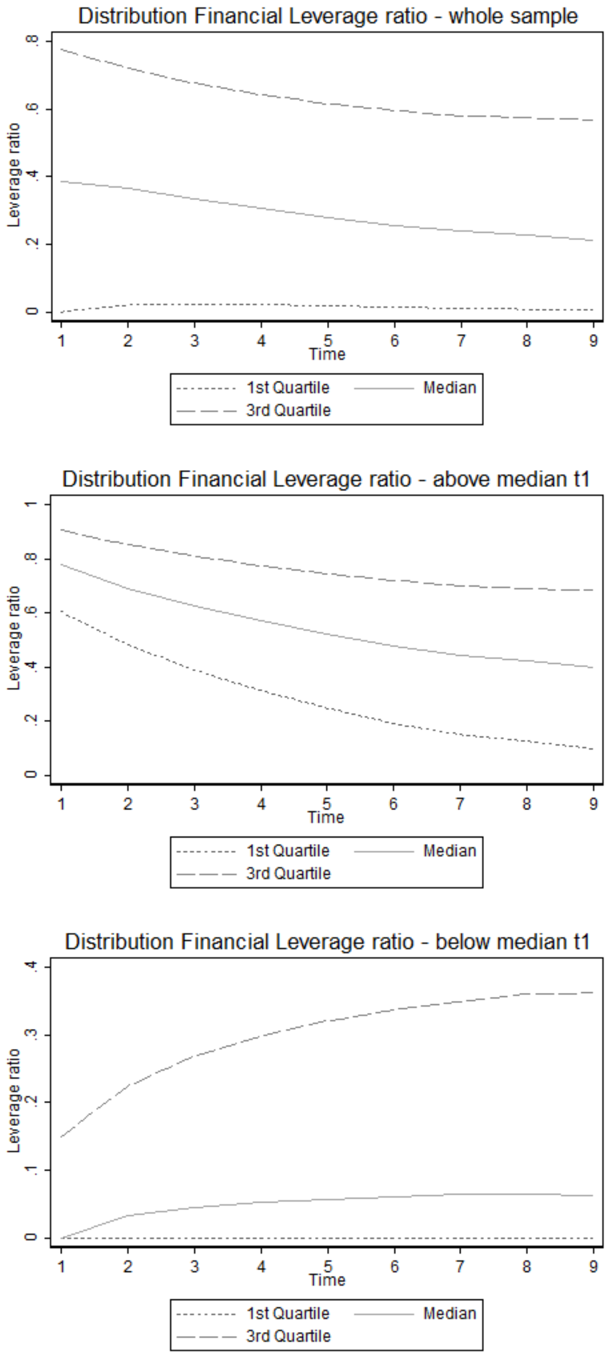

Figure 2. Distribution of Lev over time and across subsamples

The figure shows the distribution over time of Lev. The first panel shows the distribution of leverage ratio (Lev) over the whole sample over time, from the year of incorporation to the ninth year after it. The second panel shows the distribution of Lev over time for the subsample of firms that have Lev(1) above the median. The third panel shows the distribution of Lev over time for the subsample of firms that have Lev(1) below the median.

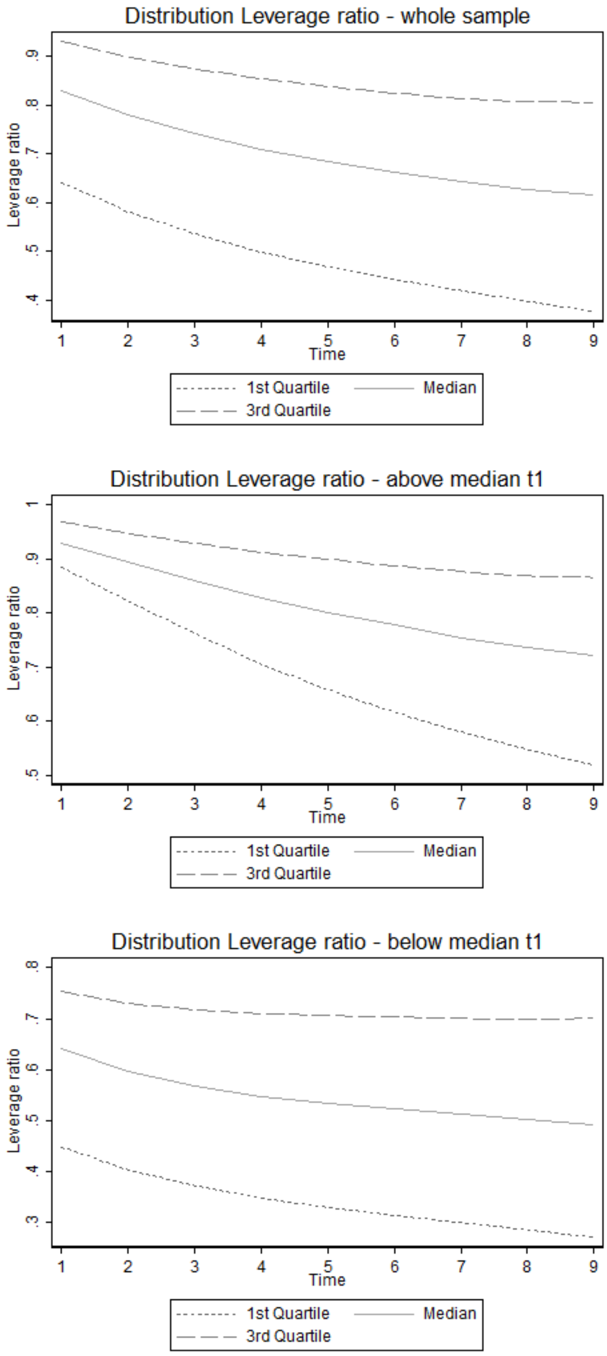

Figure 3. Distribution of FinLev - restricted over time and across subsamples

The figure shows the distribution over time of FinLev - restricted. The first panel shows the distribution of financial leverage (FinLev - restricted) over the whole sample over time, from the year of incorporation to the ninth year after it. The second panel shows the distribution of FinLev - restricted over time for the subsample of firms that have FinLev(1) - restricted above the median. The third panel shows the distribution of FinLev - restricted over time for the subsample of firms that have FinLev(1) - restricted below the median.