

Pós-Doc Research Proposal

This document briefly describes three research projects that I plan to carry out between April 2024 and June 2025 within the scope of CICEE's activity, specifically in its research line on Corporate Sector Investment & Financing, under the supervision of Professor Mário Coutinho dos Santos, Professor Victor Mendes, and Professor João Pinto.

This proposal comprises three projects: (1) “Dynamics of Financing Structure Adjustment Behavior”; (2) “Firms Financing Preferences Along the Life Cycle”; and (3) “Firms Capital Allocation Behavior”. This document describes the overall and each research project context, methodology, resources, expected results, and chronogram, and includes an initial set of relevant bibliographic references.

1. Contextualization

In the aftermath of the 2008 financial crisis, the European sovereign debt crisis, and the recent COVID-19 pandemic, global economies, particularly those within the European Union (EU), have experienced substantial increases in debt levels across sovereign, household, and corporate sectors.

These economic downturns have had non-negligible costly effects on real domestic economies, including constraints on investment and financing for non-financial firms, resulting from governmental fiscal and financial policies aimed at mitigating macroeconomic shocks (Graham, Leary, and Roberts, 2014; Covas and Haan, 2011). Given the recent frequency, severity, duration, and impact of these crises, gaining a comprehensive understanding of their development and effects at the firm level is essential for crafting and implementing recovery policies (DeAngelo, Goncalves, and Stulz, 2018). It is important to examine how EU non-financial firms, facing varying financial conditions and types of frictions and constraints, manage their financing needs and capital allocation over time (Covas and Haan, 2011). Furthermore, in this context, it is important to investigate whether firms' organizational form matters for corporate financial and investment behavior.

Under the trade-off theory of capital structure, firms balance between the benefits of debt tax shields and the costs of financial distress associated with funding choices, leading to a cost of capital that increases with leverage. The dynamic interpretation of this theory suggests that firms adjust their leverage ratios over time towards target levels, correcting any temporary deviations (Leary and Roberts, 2005; Kayhan and Titman, 2007). Prior research documents that firms' leverage ratios seem to mean reverting to the industry's leverage ranges/ratios, suggesting industry affiliation plays a key role in capital structure decisions (e.g., Huang and Ritter, 2009; Kayhan and Titman, 2007; Flannery and

Rangan, 2006). However, prior research offers mixed findings on the speed of adjustment toward target leverage (Öztekin and Flannery, 2012; Huang and Ritter, 2009).

The literature documents various regularities in firms' debt/equity choices and their determinants at the firm, industry, and country levels, including factors such as firm size, life cycle stage, tax considerations, financial flexibility, bankruptcy risk, asset tangibility, internal funding, growth opportunities, and business cycle conditions (e.g., Begenau and Salomao, 2019; Graham, Leary, and Roberts, 2015; Graham and Leary, 2011; Cook and Tang, 2010; Kayhan and Titman, 2007).

Anchored on the intuitions that firms' financing is positively associated with their growth opportunities, and that (random) growth opportunities are unlikely to be uniformly distributed over a firm's life cycle, we conjecture that firms adopt specific financing behavior as they progress over their life cycles (Covas and Haan, 2011; Begenau and Salomao, 2019).

This post-doctoral research proposal aims to investigate the financing and investment behaviors, along the life cycles, of European M-form firms and their comparable single-segment counterparts during the 2012-2022 period. The proposal is structured around three main research questions: Q1) Do non-financial European M-form firm affiliates and their comparable single-segment firms have target leverage ratios, and how do they adjust dynamically their capital structures? At what speed? Q2) Do EU non-financial firms exhibit financing preferences throughout their life cycles? Q3) How does affiliation with an M-form firm influence capital allocation decisions?

To address Q1) we will estimate target leverage ranges, and their readjustment dynamics in terms of the speed of adjustment of firms' leverage ratios toward stationary and non-stationary target ranges, across European M-form firm affiliates and their comparable single-segment firms. To address Q2) we will focus on answering: i) whether EU firms exhibit different financial leverage preferences as they progress along their life cycles; ii) Which are the potential determinants on leverage across the different phases of the life cycle of firms? To address Q3) we will contrast the capital allocative behavior of European M-form firm affiliates with comparable single-segment firms, specifically examining the impact of the availability of internal funding on a firm's capital expenditure and its relationship with factors, such as growth opportunities, asset lumpiness, financial flexibility.

Project 1 – Dynamics of Financing Structure Adjustment Behavior

This research project aims to investigate the dynamics of the financing behavior of nonfinancial firms, using evidence from European M-form firm affiliates and their comparable single-segment firms, namely in terms of leverage target ranges, and their readjustment dynamics. To test whether firms dynamically adjust to target leverage ranges, under the assumption that transaction costs may prevent immediate adjustment, we will estimate a partial adjustment model of the firms' actual financial leverage ratio towards its target within each time period (e.g., Huang and Ritter, 2009; Flannery and Rangan, 2006). Because this empirical testing is prone to self-selection and endogeneity methodological

problems, we will use matching procedures, IV/GMM estimators and second generation of dynamic panel data estimators, respectively. We will develop two strongly balanced samples, one for European M-form firm affiliates, and a control sample including comparable single-segment firms. Data for both samples was drawn from Orbis Europe database, for a sampling period spanning from 2012 to 2022. Additionally, in this project we will discuss and perform comparative empirical analysis on: (i) alternative proxies for preferred leverage; (ii) ratio versus range and static versus dynamics of time-varying target leverage (e.g., Graham and Leary, 2011; Leary and Roberts, 2005); and (iii) dynamic panel data estimators to potentially mitigate mismeasurement of adjustment speeds (SOA). Test for the more accurate and efficient SOA estimators in the likely presence of the equation's disturbance term being correlated with the lagged dependent variable, autocorrelation, fractional and highly persistent debt ratios as dependent variables, and unsuitable instrumental variables used in system GMM.

With this research project, we intend to contribute to a recent strand of the capital structure literature that focus on the dynamics of firms' financing structure, namely Begenau and Salomao (2019), Graham, Leary and Roberts (2014), and Bhamra, Kuehn and Strebulaev (2010).

Research Plan and Methods

This project is estimated to have a duration of 6 months. At the end of this project, we expect to answer Q1, by producing analyses on: (i) whether the adjustment speed toward 'preferred capital structures' is significantly different, e.g., across European M-form firm affiliates and their comparable single-segment firms, over time; and (ii) the impact on the SOA estimation of using alternative proxies for target leverage, ratio versus range and static versus dynamic target, and dynamic panel data estimators (system GMM method).

Methodologically, we will estimate dynamic panel data regression models, specifically instrumental variable/system generalized method of moments (IV/system GMM) estimators and second-generation dynamic panel data estimators, such as the least squares dummy variable correction (LSDVC), and the bootstrap-based correction procedure, to study leverage ratios on firm and industry-specific characteristics, and macroeconomic conditions (Öztekın and Flannery, 2012; Pinto and Silva, 2021). Extant literature (e.g., Flannery and Hankins, 2013) shows that the system GMM is the most adequate method to estimate capital structure models in the presence of endogeneity. According to the authors, Blundell and Bond's system GMM estimator is the best option, when compared with alternative methods of estimating dynamic panel models, for higher levels of endogeneity. An important advantage of this method is that it relies on a set of internal instruments contained in the panel itself, eliminating the need for external instruments, which in most cases is extremely complicated, if not impossible.

Project 2 – Firms Financing Preferences Along the Life Cycle

The second research project aims to investigate whether EU non-financial firms exhibit different financing preferences at various stages of their life cycles. This investigation will include an analysis

of how firms' debt/equity ratios, debt maturity choices, and selection of financing instruments compare across different life cycle stages. Initially, we will cluster EU non-financial firms based on their life cycle phases and analyze their financial leverage accordingly. Subsequently, we will identify the determinants of firms' leverage choices across those different phases. Specifically, the study will examine the impact of country-level macroeconomic indicators, corporate accounting and market characteristics, and corporate ownership structures on firms' financing preferences throughout different phases of their life cycles.

Given the impact that macroeconomic shocks—such as the 2008 financial crisis, the sovereign debt crisis, and the COVID-19 pandemic—have had on firms' progression through their life cycles, their ability to manage financial distress, and their overall capital structure and funding costs, this project holds significant relevance. For corporate managers, developing restructuring strategies that are not only suitable for the firm's current life cycle stage but also effective in steering the firm away from distress is crucial. For policymakers, there is a concern that managers of distressed firms might make restructuring decisions that are inconsistent with the business cycle, which can be detrimental to macroeconomic and financial stability. This research aims to provide insights that could guide both managers and policymakers in making more informed decisions that align with firms' life cycle stages and the broader economic context.

Research Plan and Methods

We estimate that the implementation of this second research project will take approximately 6 months. At the end of this process, we expect to answer Q2, investigating the structure and dynamics of debt financing of firms over their life cycles. To do so, we intend to examine two independent, but closely related, research topics. The first aims to investigate whether firms exhibit different financial leverage preferences as they progress along their life cycles. The second topic refers to the analysis of the potential determinants of leverage across the different phases of the life cycle of firms.

From a methodological perspective, our approach includes estimating dynamic panel data regression models, particularly focusing on IV/system GMM estimators and second-generation dynamic panel data estimators which encompasses methods like the least squares dummy variable correction (LSDVC) and the bootstrap-based correction procedure.

Project 3 – Firms Capital Allocation Behavior

The third research project aims to examine the capital allocative behavior of European M-form firm affiliates and their comparable single-segment firms.

Under the standard conditions of perfect capital markets, including, no borrowing / lending restrictions, unique deterministic equilibrium riskless interest rate for both lenders and borrowers, and contractual completeness, there is no role for capital rationing. Therefore, all positive net present value

(NPV) projects can be undertaken, achieving Pareto optimal intertemporal resource allocation (e.g., Brennan 2003).

Under this neoclassical framework, a firm's capital expenditure behavior is ultimately determined by its investment opportunity set. Therefore, owners aiming to maximize wealth would allocate capital towards investment projects that maximize the expected NPV of their cash flows (e.g., Martin et al. 1988; Auerbach 1979; and Litzenberger and Joy 1975).

With equal access to perfect and frictionless capital markets, firms' investment behavior is independent of their financing (e.g., Brennan 2003), and it is a matter of irrelevancy whether capital allocation is made in a centralized or decentralized environment (Thakor 1993).

However, it is widely accepted among academics that under imperfect and frictional markets, and contracting incompleteness, there is a separation between managerial decision-making and the bearing of residual risk, and information is unevenly distributed among market participants, preventing the formation of homogeneous expectations, and inducing incentives for potentially inefficient asset allocative behavior. These instances create incentives for the superiorly informed party to behave opportunistically, taking advantage of their informational superiority, potentially affecting, among others: (i) firms' investment behavior; and (ii) the cost, of both, internal and external financing; therefore creating a link not only between capital investment behavior and the wealth of the firms' claimholders but also between internal and external capital allocations.

Adopting centralized systems for capital budgeting can be effective in reducing the informational and incentive-related costs tied to investment decisions. Yet, the extent to which the organizational structure, particularly the M-form may help mitigate agency and informational problems remains a matter for empirical investigation (e.g., Sautner and Villalonga 2010; Maksimovic and Phillips 2002; Stein 1997).

Research Plan and Methods

We estimate that the implementation of this third research project will take approximately 6 months. At the end of this process, we expect to answer Q3, contrasting the capital allocative behavior of firms integrated in M-form firms with comparable single-segment firms, and examining the impact of the availability of internal funding on a firm's capital expenditure and its relationship with factors, such as, growth opportunities, asset lumpiness, financial flexibility.

From a methodological standpoint, our approach will involve the use of dynamic panel data regression models, including IV/system GMM estimators and advanced second-generation dynamic panel data estimators. These will encompass techniques such as the least squares dummy variable correction (LSDVC) and the bootstrap-based correction method.

2. Resources

For the development of Projects 1 and 3, we will use data on non-financial European M-form firm affiliates and their comparable single-segment firms drawn from Orbis Europe spanning the 2012-2022 period. Project 2 will use data on EU nonfinancial firms along their life cycles for the sampling period 2012-2022 drawn from Orbis Europe. Software packages will be used according to the research needs and may include Stata and R.

3. Expected results and chronogram

The research proposal aims to publish three articles in JCR/Scopus-indexed journals with the highest possible impact (e.g., Journal of Corporate Finance, The European Journal of Finance, and Journal of Empirical Finance for projects 1 to 3, respectively). The following chronogram conveys the planned milestones:

Tasks		2024				2025	
		Q1	Q2	Q3	Q4	Q1	Q2
Project 1	Introduction and Literature Review - Update						
	Data, Empirical Specification, Methodology, Results						
	Working Paper - Final						
	Seminar Presentation (if possible a Conference Presentation)						
	Journal Selection and Submission						
Project 2	Introduction and Literature Review - Update						
	Data, Empirical Specification, Methodology, Results						
	Working Paper - Final						
	Seminar Presentation (if possible a Conference Presentation)						
	Journal Selection and Submission						
Project 3	Introduction and Literature Review - Update						
	Data, Empirical Specification, Methodology, Results						
	Working Paper - Final						
	Seminar Presentation (if possible a Conference Presentation)						
	Journal Selection and Submission						

Jorge Mota

March 13, 2024

References

- Auerbach, A. 1979. Wealth Maximization and the Cost of Capital. *Quarterly Journal of Economics* 93(3): 433-446.
- Begenau, J., and J. Salomao, 2019. Firm Financing over the Business Cycle. *Review of Financial Studies* 32(4): 1235- 1274.
- Bhamra, H., L.-A. Kuehn, and I. Strebulaev, 2010. The Aggregate Dynamics of Capital Structure and Macroeconomic Risk. *Review of Financial Studies* 23(12): 4187-4241.
- Brennan, M. 2003. Corporate Investment Policy. In *Handbook of the Economics of Finance*, edited by G. Constantinides, M. Harris and R. Stulz, vol. 1A, chapter 2: 167–214. Elsevier.

- Cook, D., and T. Tang, 2010. Macroeconomic Conditions and Capital Structure Adjustment Speed. *Journal of Corporate Finance* 16(1): 73-87.
- Covas, F., and W. Den Haan, 2011. The Cyclical Behavior of Debt and Equity Finance. *American Economic Review* 101(2): 877-899.
- DeAngelo, H., A. Goncalves, and R. Stulz, 2018. Corporate Deleveraging and Financial Flexibility. *Review of Financial Studies* 31(8): 3122-3174.
- Flannery, M., and K. Rangan, 2006. Partial Adjustment toward Target Capital Structures. *Journal of Financial Economics* 79(3): 469-506.
- Flannery, M. & K. Hankins. 2013. Estimating Dynamic Panel Models in Corporate Finance. *Journal of Corporate Finance* 19(1): 1-19.
- Graham, J., and M. Leary, 2011. A Review of Empirical Capital Structure Research and Directions for the Future. *Annual Review of Financial Economics* 3: 309-345.
- Graham, J., M. Leary & M. Roberts. 2014. How Does Government Borrowing Affect Corporate Financing and Investment? NBER Working Papers No. 20581, National Bureau of Economic Research.
- Graham, J., M. Leary & M. Roberts. 2015. A Century of Capital Structure: The Leveraging of Corporate America. *Journal of Financial Economics* 118(3): 658-683.
- Huang, R., and J. Ritter, 2009. Testing Theories of Capital Structure and Estimating the Speed of Adjustment. *Journal of Financial and Quantitative Analysis* 44(2): 237-271.
- Kayhan, A., and S. Titman, 2007. Firms' Histories and Their Capital Structures. *Journal of Financial Economics* 83(1): 1-32.
- Leary, M., and M. Roberts, 2005. Do Firms Rebalance Their Capital Structures? *Journal of Finance* 60(6): 2575-2619.
- Litzenberger, R., and O. Joy. 1975. Decentralized Capital Budgeting Decisions and Shareholder Wealth Maximization. *The Journal of Finance* 30(4): 993-1002.
- Maksimovic, V., and G. Phillips. 2002. Do Conglomerate Firms Allocate Resources Inefficiently across Industries? Theory and Evidence. *The Journal of Finance* 57(2): 721-767.
- Martin, J., S. Cox, and R. MacMinn. 1988. *The Theory of Finance*. New York, USA: The Dryden Press.
- Öztekin, Ö., and M. Flannery, 2012. Institutional Determinants of Capital Structure Adjustment Speeds. *Journal of Financial Economics* 103(1): 88-112.
- Pinto, J., and C. Silva, 2021. Does export intensity affect corporate leverage? Evidence from Portuguese SMEs, *Finance Research Letters*, 38, 101418.
- Sautner, Z., and B. Villalonga. 2010. Corporate Governance and Internal Capital Markets. Harvard Business School working paper.
- Stein, J. 1997. Internal Capital Markets and the Competition for Corporate Resources. *The Journal of Finance* 52(1): 111-133.
- Thakor, A. 1993. Corporate Investments and Finance. *Financial Management* 22(2): 135-144.