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# Credit Market Freedom and Corporate Decisions

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**Abstract:** In this paper, we investigate whether and to what extent credit market freedom affects a firm's target level of investment, cash holdings, and leverage. To do so, we generalize the standard empirical models, commonly used in the finance literature to estimate those targets, in order to incorporate credit market freedom into the set of regressors. We estimate three augmented models on a large and heterogeneous sample of North American nonfinancial firms over the period 2000–2019. Our empirical results suggest that greater credit market freedom is associated with a healthier corporate capital structure, higher financial flexibility, and a friendlier investment environment. Our paper contributes to both economic freedom and finance literatures by investigating an unexplored issue in economics and corporate finance research. In addition, it informs policymakers that promoting financial reforms that increase credit market freedom can boost a country's economic growth.

**Keywords:** economic freedom; corporate decisions; capital structure

**MSC:** 91-11

**JEL Classification:** G10; G18; G30; G31



**Citation:** Iona, A.; Calef, A.; Georgiou, I. Credit Market Freedom and Corporate Decisions. *Mathematics* **2023**, *11*, 1670. https://doi.org/10.3390/math11071670

Academic Editors: Davide Valenti and David Barilla

Received: 10 February 2023
Revised: 9 March 2023
Accepted: 27 March 2023
Published: 30 March 2023



## 1. Introduction

Corporations operate under different levels of economic freedom, as characterized by the lack of rigidities in the labour market, independence in financial markets from government control, and by a legal structure that protects property rights and the freedom to enter and compete in product markets. This has driven some researchers to focus their attention on the importance of economic freedom at the firm level. The extant research argues that the more the financial institutions are free from legal and financial restrictions, the more efficiently they will organize their operations, and the greater the country economic growth will be [1–12].

Claessens and Laeven [5], for instance, pointed out that greater economic freedom could improve banking profitability because banks tended to lend more as economic freedom increased competition across firms and hence the scope for bank lending. In line with this, ref. [9] found that countries with higher levels of economic freedom generally had higher levels of real income, which in turn led to a higher demand for banking services. Refs. [3,4] reported evidence that banks operating in states that enjoyed a higher degree of economic freedom were more cost-efficient. Consistently, Gropper et al. [6] found that the US bank performance was positively related to a state's economic freedom as well as political connections. There is also evidence that economic freedom encourages opportunity entrepreneurship (creating a business in order to pursue an opportunity to earn more money) [13–17], reduces regulatory uncertainty and the likelihood of market crashes [11,18,19], as well as reduces analysts' forecast bias [20]. In addition, it has been found that economic freedom increases bilateral [21] and foreign direct investment [22], boosts profitability, and banking stability [23], and enhances corporate innovations [17,24].

Nevertheless, despite the evidence that economic environments that provide firms with greater freedom to invest can enhance the firms' equity value (Refs. [25,26]), international corporate finance research has had little to state about the implications of weak economic freedom for corporate investment decisions. The first aim of this study is to fill this gap by examining the effect of economic freedom on corporate investment.

Moreover, in line with the evidence that greater economic freedom increases bank lending and demand for banking services [5,9], a firm's cash and leverage should be considered as being affected by the level of external financing: the comparison between the actual levels of cash holdings, leverage, and investment relative to their corresponding target levels should be informative about a firm's ability to finance its target level of investment and we expect this to be affected by the country's level of economic freedom. This is particularly true in countries with low credit market freedom, where financial markets tend to be more underdeveloped, and the costs of external financing are higher [10,27–29]. Therefore, the second aim of our study is to examine the effect of credit market freedom on corporate target levels of cash and leverage.

More specifically, the main purpose of our paper is to investigate to what extent credit market freedom (CMF hereafter) affects a firm's target level of investment, cash holdings, and leverage. In order to do so, we generalize the standard empirical models used in the finance literature to estimate the targets of investment, cash, and leverage to incorporate credit market freedom into the set of regressors. It is worth pointing out that while the Economic Freedom Index as computed by the Fraser Institute is the sum (averaged) of several components (see Table 1), we focus on "Regulation of credit market", which we simply call CMF. CMF is a variable that measures the independence of financial markets from government control. It includes bank ownership, banking competition, the extension of credit to private sector, and the presence of interest rate control. The value of this variable ranges from 0 to 10 with 10 indicating the most negligible government interference in the banking and financial sectors.

**Table 1.** Components of the Economic Freedom of North America Index.

| **1. Government Spending** |
|---|
| 1A. General consumption expenditures by government as a percentage of income |
| 1B. Transfers and subsidies as a percentage of income |
| 1C: Insurance and retirement payments as a percentage of income |
| 1D: Government enterprises and investment |
| **2. Taxation** |
| 2A. Income and payroll tax revenue as a percentage of income |
| 2Bi. Top marginal income tax rate and the income threshold at which it applies |
| 2Bii. Top marginal income and payroll tax rate |
| 2C. Property tax and other taxes as a percentage of income |
| 2D. Sales taxes as a percentage of income |
| **3. Regulation** |
| 3A. Labour market freedom |
| 3Ai. Full-time minimum wage income as a percentage of per capita income |
| 3Aii. Government employment as a percentage of total state/provincial employment |
| 3Aiii. Union density |
| 3Aiv. Hiring regulations and minimum wag |
| **3B. Regulation of credit markets (CMF)** |
| 3C. Business regulations |
| **4. Legal system and property rights (ELS)** |
| **5. Sound money (SM)** |
| **6. Freedom to trade internationally (FTI)** |

We focus on the CMF counterpart of the Economic Freedom Index for a number of reasons. First, because although on average CMF is high, there is a substantial heterogeneity in CMF across US states, as illustrated in Table 2. Second, previous empirical evidence suggests that CMF significantly affects the efficiency of the banking system, which is an important driver of economic growth and development [1,3–5,7,9,11]. Third, we expect that the efficiency of the banking system will translate in a major availability of liquidity for firms, and therefore, it will affect the firm's level of cash holdings, leverage, and investment.

Finally, since the Economic Freedom Index is made up by a number of components which may have conflicting effects on the different corporate decisions, using the whole index in our empirical analysis may lead to misleading results, and to lose the nuance that better explains the impact of each single component of the economic freedom, such as CMF.

**Table 2.** Economic Freedom Components by State.

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| **State** | **EFI** | **CMF** | **SM** | **ELS** | **FTI** |
| AL | 8.18 | 9.06 | 9.66 | 7.88 | 8.16 |
| AR | 8.04 | 9.04 | 9.66 | 7.87 | 8.14 |
| AZ | 8.16 | 9.04 | 9.66 | 7.86 | 8.13 |
| CA | 8.04 | 9.05 | 9.66 | 7.85 | 8.11 |
| CO | 8.14 | 9.03 | 9.65 | 7.82 | 8.08 |
| CT | 8.09 | 9.03 | 9.65 | 7.85 | 8.12 |
| DE | 7.99 | 9.06 | 9.66 | 7.89 | 8.16 |
| FL | 8.24 | 9.07 | 9.66 | 7.87 | 8.13 |
| GA | 8.18 | 9.04 | 9.66 | 7.86 | 8.14 |
| HI | 8.03 | 9.03 | 9.66 | 7.88 | 8.16 |
| IA | 8.16 | 9.07 | 9.66 | 7.89 | 8.16 |
| ID | 8.16 | 9.03 | 9.65 | 7.85 | 8.12 |
| IL | 8.06 | 9.04 | 9.66 | 7.85 | 8.12 |
| IN | 8.17 | 9.04 | 9.65 | 7.85 | 8.12 |
| KS | 8.15 | 9.05 | 9.66 | 7.85 | 8.12 |
| KY | 8.02 | 9.02 | 9.66 | 7.82 | 8.08 |
| LA | 8.06 | 9.02 | 9.65 | 7.84 | 8.11 |
| MA | 8.08 | 9.08 | 9.67 | 7.85 | 8.10 |
| MD | 8.12 | 9.07 | 9.67 | 7.85 | 8.10 |
| ME | 8.10 | 9.04 | 9.66 | 7.84 | 8.11 |
| MI | 8.10 | 9.05 | 9.66 | 7.87 | 8.14 |
| MN | 7.99 | 9.05 | 9.66 | 7.87 | 8.14 |
| MO | 8.13 | 9.09 | 9.67 | 7.89 | 8.17 |
| MS | 8.08 | 9.02 | 9.65 | 7.89 | 8.17 |
| MT | 8.14 | 9.10 | 9.66 | 7.83 | 8.08 |
| NC | 8.18 | 9.07 | 9.67 | 7.88 | 8.14 |
| ND | 8.10 | 8.99 | 9.64 | 7.80 | 8.05 |
| NE | 8.17 | 9.06 | 9.66 | 7.87 | 8.14 |
| NH | 8.33 | 9.05 | 9.66 | 7.89 | 8.17 |
| NJ | 8.04 | 9.06 | 9.66 | 7.86 | 8.13 |
| NM | 8.05 | 9.05 | 9.65 | 7.87 | 8.15 |
| NV | 8.21 | 9.05 | 9.65 | 7.85 | 8.12 |
| NY | 7.92 | 9.06 | 9.66 | 7.87 | 8.14 |
| OH | 7.99 | 9.05 | 9.66 | 7.88 | 8.14 |
| OK | 8.15 | 9.04 | 9.66 | 7.85 | 8.12 |
| OR | 8.08 | 9.06 | 9.66 | 7.89 | 8.16 |
| PA | 8.10 | 9.06 | 9.66 | 7.86 | 8.13 |
| RI | 7.95 | 9.02 | 9.65 | 7.85 | 8.12 |
| SC | 8.17 | 9.05 | 9.66 | 7.85 | 8.11 |
| SD | 8.22 | 9.03 | 9.65 | 7.88 | 8.15 |
| TN | 8.19 | 9.06 | 9.66 | 7.86 | 8.12 |
| TX | 8.17 | 9.04 | 9.66 | 7.85 | 8.11 |
| UT | 8.19 | 9.06 | 9.66 | 7.84 | 8.10 |
| VA | 8.19 | 9.05 | 9.66 | 7.87 | 8.15 |
| VT | 8.10 | 9.07 | 9.66 | 7.90 | 8.18 |
| WA | 8.12 | 9.05 | 9.65 | 7.86 | 8.12 |
| WI | 8.10 | 9.06 | 9.66 | 7.89 | 8.16 |
| WV | 8.01 | 8.92 | 9.62 | 7.78 | 8.03 |
| WY | 8.11 | 8.95 | 9.61 | 7.87 | 8.17 |
| Mean | 8.10 | 9.05 | 9.66 | 7.86 | 8.12 |
| Variance | 0.04 | 0.34 | 0.03 | 0.11 | 0.12 |

Table 2 reports the mean value of the Economic Freedom Index and some economic freedom components by state. Means were calculated for 59 states (state/province) over the 2000–2019 period. In the lower panel, it also reports the total variance over the entire period.

Our study contributes to the economic and finance literatures because the relationship between economic freedom and the level of investment helps to explain the link between economic freedom and a country's level of economic growth. Extensive empirical research

has found that economic freedom is positively correlated with economic growth [17,30–41] and the entry (exit) of new (existing) firms in (from) the market as a result of increased competition [14–16,42]. Nonetheless, the effect of economic freedom on corporate decisions has not yet been explored and remains an empirical question. The underlying idea is that, if low economic freedom is associated with a less stable economic environment and higher costs of external financing [27–29], firms may reduce their current investment and increase their debt capacity as well as cash holdings for precautionary motives or for financing future profitable investment opportunities [43]. Guedhami et al. [44] found that when a country experienced a major deterioration in political freedom status, firms tended to pay out more past excess of cash, and the increase in payout was correlated with future investment cuts. Weak political freedom is an important obstacle to corporate investment decisions and in turn to economic development. We investigate whether the effect of economic freedom on investment, cash and leverage decision is similar.

In addition, if higher economic freedom is associated with less economic, legal, and financial restrictions and better expected investment opportunities [11,39], we expect it to affect the level of a firm's investment. Research suggests that CMF may increase the speed of adjustment of a firm's investment to its target because CMF increases the cost efficiency and then the ability to rapidly reach the target capital investment [3,4].

Moreover, CMF gives managers the freedom to adjust existing operations to the most favourable investment opportunities, by enhancing the investment response to the current or projected profitability [25]. If this is true, we can expect a higher sensitivity of investment to Tobin's $Q$ under greater economic freedom. Finally, economic freedom, by reducing the government interference in the banking and financial sector, can facilitate a firm's access to external financing [45]. Therefore, we can expect firms to face a lower degree of financing constraints in more economically free environments [10].

In this study, we test all predictions above while studying the influence of CMF on corporate financing and investment decisions. Using a large panel dataset of 41,712 firm-year observations from 50 US states over the period 2000–2019, we find that higher credit market freedom is associated with a friendlier corporate environment, characterized by more investment and less cash and leverage. Our empirical findings show that economic and political institutions are an important factor explaining cross-country differences in corporate policies.

Our paper represents an important novelty for both the economic freedom and finance literatures because, to the best of our knowledge, there are no other studies examining the relationship between credit market freedom and corporate investment and financing decisions. In fact, all previous research studies do not test either the relationship between credit market freedom and investment or the relationship between credit market freedom and cash or leverage policy. The only paper that has studied the impact of credit market freedom on corporations is [26]. However, our paper differs substantially from the former paper in a number of respects. First, Ref. [26] used a subsample of US firms over the period 1990–2013 affected by agency problems, while in this study, we observe the behaviour of the entire heterogeneous sample of North American non-financial firms over the period 2000–2019. Second, Ref. [26] investigated the relationship between the value of a firm and its financial policies and studied how CMF affected that relationship. Differently, in our paper, we study whether and to what extent CMF affects a firm's target level of investment, cash holdings, and debt. Thirdly, Ref. [26] showed that the relationship between cash holdings and a firm's value was "U-shaped" in states with high levels of CMF, and the probability of observing firms affected by agency problems was higher in these states. Our paper shows, instead, that a greater CMF is associated with a healthier corporate capital structure, higher financial flexibility, and a friendlier investment environment for all firms.

The paper is organized as follows: In Section 2, we present the data and the empirical methodology used in our analysis. In Section 3, we discuss our empirical results. Section 4 presents some concluding remarks.

## 2. Data and Empirical Methodology

We used a large and representative sample of US public firms. We began with the set of North American (US and Canada) Compustat public firms in existence over the period 2000–2019. Following the relevant finance literature, we excluded firms that had less than three years of full observations. Following the relevant finance literature, we eliminated financial firms (SIC Codes 6020–6799) and regulated utilities (SIC Codes 4011–4991) to get a sample of firms well-diversified across industries. Our final unbalanced sample contained 8,903 firms of different sizes and ages and 41,712 firm-year observations.

As it is customary in corporate finance studies, firm-year observations were deleted if the value for either total assets or investment was zero or missing. All variables were inflation-adjusted to year 2019. Most of our independent variables at the firm level were normalized by the firm's total assets, in order to control for the firm's size: a firm's investment (measured by capital expenditures), cash flow (defined as earnings before extraordinary items and depreciation), profitability (measured by earnings before interest payments and taxes), cash holdings (measured by the cash item in Compustat), leverage (defined as the sum of long- and short-term debt), liquidity (measured as current assets minus current liabilities and cash), were all scaled by total assets. Furthermore, the market-to-book ratio was calculated as the book value of assets minus the book value of common equity minus deferred taxes plus the market value of equity, all divided by total assets. Tangibility was measured as inflation-adjusted net fixed assets. Dividends (as total annual dividend payments) were divided by inflation-adjusted total assets, and size was defined as the log of inflation-adjusted total assets. All relevant variables were winsorized to the 1st and 99th percentile to control for outliers due to possible data entry mistakes.

Data on economic freedom (EF hereafter) were collected from the Economic Freedom of North America 2021 Annual Report (Fraser Institute) [46]. The Economic Freedom Index rates a state's EF on a 10-point scale (with 1 indicating the lowest level of EF and 10 the highest level) at all government levels (federal, state/provincial, and municipal/local). The economic freedom index is a weighted average, for the United States and Canada, of government spending, taxes, regulation, the legal system, sound money, and the freedom to trade internationally (see Table 1 for more details).

We estimated the target level of investment by using the standard $Q$ model of investment due to [47] and refined by [48]:

$$(Equation\ \ Investment\ Target)\ I_{it} = \beta_0 + \beta_1 Q_{it} + \eta_i + \eta_t + \varepsilon_{it}$$

We then added to the equation above, the CMF to the set of regressors, in order to test whether and to what extent CMF affected the target level of investment:

$$I_{it} = \beta_0 + \beta_1 Q_{it} + \beta_2 CMF_t + \eta_i + \eta_t + \varepsilon_{it} \quad (1)$$

where $\eta_i$ is the firm-specific effect capturing all unobservable and time-invariant factors influencing a firm's investment and varying across firms. $\eta_t$ captures all unobservable time-specific effects that change over time but are constant across firms, such as changes in the exchange rate. $\varepsilon_{it}$ is the iid error term.

There is evidence that low-political-freedom countries suffer from under-developed financial markets and high costs of external finance [27–29]. Since cash is the most efficient source of firm financing, firms may stockpile more cash than what is optimal. This would allow them to have cash reserves and hence financial flexibility for future investment opportunities [43]. Studying the behaviour of cash holdings under different regimes of economic freedom would give information about the firm's long-term investment. Therefore, we estimated the target levels of cash holdings and leverage using the [49] model

of cash holdings (Equation (2)) and the [50] model for leverage (Equation (3)) augmented by the CFM variable to see the extent to which CMF affected these targets.

$$\begin{aligned}(Equation\ \ Cash\ Target)CASH_{it} \\ = \beta_0 CASH_{it-1} + \beta_1 Cash\ FLOW_{it} + \beta_2 LIQ_{it} + \beta_3 LEV_{it} \\ +\beta_4 CAPEX_{it} + \beta_5 MTB_{it} + \beta_6 SIZE_{it} + \eta_i + \eta_t + \varepsilon_{it}\end{aligned}$$

$$\begin{aligned}CASH_{it} &= \beta_0 CASH_{it-1} + \beta_1 Cash\ FLOW_{it} + \beta_2 LIQ_{it} + \beta_3 LEV_{it} + \beta_4 CAPEX_{it} + \beta_5 MTB_{it} \\ &+\beta_6 SIZE_{it} + \beta_7 CMF_t + \eta_i + \eta_t + \varepsilon_{it},\end{aligned} \quad (2)$$

In the model above, CASH stands for the ratio of holdings of cash and cash equivalents to total assets. CFLOW is the ratio of pre-tax profits plus depreciation to total assets. LIQ is the ratio of current assets minus current liabilities and total cash to total assets. LEV is the ratio of total debt to total assets. CAPEX stands for the ratio of capital expenditures to total assets. MTB is the market-to-book value, i.e., the ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets, and SIZE is the logarithm of total assets in constant prices.

$$\begin{aligned}(Equation\ Levearge\ Target)LEV_{it} \\ = \pi_0 LEV_{it-1} + \pi_1 FIXAST_{it} + \pi_2 MTB_{it} + \pi_3 CASH_{it} \\ +\pi_4 PROFIT_{it} + \pi_5 SIZE_{it} + \eta_i + \eta_t + \varepsilon_{it}\end{aligned}$$

$$\begin{aligned}LEV_{it} &= \pi_0 LEV_{it-1} + \pi_1 FIXAST_{it} + \pi_2 MTB_{it} + \pi_3 CASH_{it} + \pi_4 PROFIT_{it} \\ &+\pi_5 SIZE_{it} + \pi_6 CMF_t + \eta_i + \eta_t + \varepsilon_{it}\end{aligned} \quad (3)$$

The leverage model by [50] was specified as follows:

We estimated Equation (3), where NFA denotes the ratio of tangible assets to total assets and *PROFIT* denotes the ratio of earnings before interest payments and tax to total assets. The estimated coefficient of CMF informed us about the degree to which CMF affected the target level of leverage.

We estimated our static empirical models, (1), (2) and (3), by means of the within-group estimator (hereafter, *WG*), including both firm and time fixed effects. This is common practice in the finance literature. In addition, we estimated the corresponding dynamic panel data models by means of the bias-corrected method of moments (BCMM hereafter) estimator by [51]. This estimator has several advantages: first, it directly corrects the dynamic panel data bias (Nickell bias) of the conventional fixed-effects (FE) estimator. Second, with this procedure, a formula of the asymptotic variance-covariance matrix for the calculation of standard errors is readily available, unlike the bias-corrected estimator by [52]. Yet another advantage is that the BCMM estimator can accommodate higher-order lags of the dependent variable. Although this latter estimator does not take into account that variables may not be strictly exogenous, we did not need to control for endogeneity because the three empirical models we estimated came directly from well-established theoretical models whose empirical application is standard in this field of research. Moreover, being aware of the potential presence of heteroscedasticity and autocorrelation, standard errors reported in our empirical analysis were all corrected for heteroscedasticity and autocorrelation. Finally, in order to take into account potential cases of multicollinearity, we computed the correlation matrices of our estimated coefficients, whose results confirmed that our estimates did not exhibit multicollinearity [53].

## 3. Empirical Results

In this section, we present some descriptive statistics, and we discuss the results of our regression analysis. Table 2 reports the mean value of the Economic Freedom index (EFI) and most of its constituent components: credit market freedom (CMF), sound money (SM), efficacy of the legal system (ELS), freedom to trade internationally (FTI), and labour market freedom (LMF). Means were calculated for the 59 states in the US and Canada over the 2000–2019 period. The average level of CMF over the 59 states and the period 2000–2019

was 9.05. CMF and SM were the component counterparts of the EFI with the highest mean score (9.05 and 9.66, respectively). The lower panel reports the total variance of the EFI and its components, calculated over the 2000–2019 period. Notice that among all economic freedom components, CMF recorded the highest variance (0.34), that is, it was the most heterogeneous across states and years.

Table 3 reports the descriptive statistics for the main variables used in our empirical analysis. It is worth pointing out that for these medium–large firms of our sample, cash and leverage accounted for a relevant proportion of their total assets (0.1459 and 0.2655, respectively). While this may not be surprising, as in general, medium–large firms are more capable of getting funding, the levels of cash and leverage may be substantially impacted by the level of a state's CMF. Except for size, our variables' distributions exhibited different degrees of asymmetry and relatively high levels of kurtosis. In particular, "Profitability" was negatively skewed and shows very "fat tails". This suggested that our sample of firms experienced severe profitability issues as well as sizeable profits over time with the former aspect stronger than the latter. There was also sector heterogeneity (unreported, but available upon request). Taking these features into account, we ran multiple normality tests and, unsurprisingly, all of them rejected the null hypothesis of a normal distribution for each of our variables with *p*-values always equal to 0.000. Nevertheless, the non-normality of our variables was not an issue, since the large number of observations ensured that the *central limit theorem* held, and that distributions should asymptotically converge to a t-student distribution. This implied that our estimations were robust to this feature of our data.

**Table 3.** Descriptive Statistics: All Sample.

| Variable | Obs. | Mean | Std. Dev. | Skewness | Kurtosis | *p*-Value of Normality Test | Min | Max |
|---|---|---|---|---|---|---|---|---|
| Investment | 41,712 | 0.043 | 0.055 | 2.964 | 13.577 | 0.000 | 0.000 | 0.335 |
| Cash | 41,712 | 0.146 | 0.185 | 2.057 | 7.034 | 0.000 | 0.000 | 0.834 |
| Leverage | 41,712 | 0.266 | 0.418 | 4.141 | 23.656 | 0.000 | 0.000 | 2.798 |
| Cash flow | 41,712 | −0.273 | 1.720 | −9.502 | 106.421 | 0.000 | −21.770 | 0.338 |
| Liquidity | 41,712 | 0.123 | 0.674 | −4.830 | 32.811 | 0.000 | −4.576 | 1.103 |
| Net fix assets | 41,689 | 0.264 | 0.252 | 1.155 | 3.744 | 0.000 | 0.000 | 2.228 |
| MTB | 41,712 | 3.847 | 16.953 | 12.949 | 191.030 | 0.000 | 0.398 | 278.790 |
| Profitability | 41,712 | −0.358 | 6.188 | −65.318 | 6091.574 | 0.000 | −741.067 | 2.628 |
| Size | 41,712 | 5.846 | 2.704 | –0.245 | 2.625 | 0.000 | –0.987 | 11.737 |

Table 3 shows the descriptive statistics of the sample of this study.

Table 4 reports the correlations among CMF and the main financial variables used in our analysis. Correlations were in line with our expectations. CMF was negatively and significantly correlated with cash and leverage. These correlations suggested that the exposure to a greater level of CMF may reduce the level of cash that firms need to stockpile for precautionary, speculative, or financing constraints motives. At the same time, it suggested that greater CMF could reduce the level of debt that a firm needed to finance its first best level of investment. The nonsignificant correlation with the level of investment might also suggest that the exposure to a different level of CMF does not necessarily affect the level of investment because firms operating in environments which facilitate the access to sound money may want to use the reserves of cash to repay the debt rather than to invest more. However, since a correlation analysis does not test determination or causation, our regression analysis was only able to determine whether and in what direction CMF affected the target level of corporate investment, cash, and leverage.

**Table 4.** Correlations.

| | CMF | Invest | Cash | Leverage | Cash Flow | Liquidity | NFA | MTB | Profitability | Size |
|---|---|---|---|---|---|---|---|---|---|---|
| CMF | 1.000 | | | | | | | | | |
| Investment | 0.004 | 1.000 | | | | | | | | |
| Cash | −0.057 * | −0.147 * | 1.000 | | | | | | | |
| Leverage | −0.015 * | 0.107 * | −0.090 * | 1.000 | | | | | | |
| Cash flow | 0.007 | −0.105 * | −0.126 * | −0.461 * | 1.000 | | | | | |
| Liquidity | −0.001 | −0.154 * | 0.095 * | −0.636 * | 0.595 * | 1.000 | | | | |
| NFA | 0.006 | 0.575 * | −0.340 * | 0.114 * | 0.047 * | −0.128 * | 1.000 | | | |
| MTB | −0.021 * | 0.128 * | 0.112 * | 0.345 * | −0.663 * | −0.452 * | −0.033 * | 1.000 | | |
| Profitability | 0.008 | −0.093 * | −0.047 * | −0.205 * | 0.480 * | 0.262 * | 0.010 | −0.445 * | 1.000 | |
| Size | –0.012 | 0.040 * | –0.297 * | –0.155 * | 0.382 * | 0.260 * | 0.243 * | –0.283 * | 0.145 * | 1.000 |

Table 4 reports correlations across all variables used in our analysis. * stands for statistical significance at 10% confidence level.

Nevertheless, before proceeding with our regression analysis, it was worth investigating whether the levels of investment, cash, and leverage were statistically significantly different between regimes of high and low CMF. In this study, a regime of high CMF was a state characterized by a level of CMF equal to or higher than its median value. Contrarily, a regime of low CMF was a state where CMF was lower than the median. Table 5 displays the results from the test (with unequal variances) for differences in mean of investment, cash, and leverage, between regimes of low and high economic freedom, respectively. All the differences found were significant at the 1% level. Notice that companies located in states with low CMF invested less than those located in states with high CMF (0.041 vs. 0.045), consistent with previous studies [13,21,25,54]. More importantly, they stockpiled more cash (0.163 vs. 0.131) and had a higher level of debt (0.286 vs. 0.247). These results were in line with [44] reporting that, when a country experiences a major deterioration in political freedom status, firms tend to cut investment. However, contrary to [44], these firms did not increase payouts but rather retained more earnings as cash stocks.

**Table 5.** Corporate Decisions under Credit Market Freedom Regimes.

| | Observations Low CMF | Observations High CMF | Mean Low CMF | Mean High CMF | Difference | *t*-Value | *p*-Value |
|---|---|---|---|---|---|---|---|
| Investment | 20,172 | 21,540 | 0.041 | 0.045 | −0.004 | −6.600 | 0.000 |
| Cash holdings | 20,172 | 21,540 | 0.163 | 0.131 | 0.033 | 17.900 | 0.000 |
| Leverage | 20,172 | 21,540 | 0.286 | 0.247 | 0.039 | 9.600 | 0.000 |

Table 5 presents the mean and the two-sample *t*-test (with unequal variances) for difference in mean of the main target variables used in our analysis, between the regimes of high and low CMF. A regime of high CMF is characterized by a level of CMF equal to or higher than its median, while a regime of low CMF is characterized by a level of EF lower than its median.

All estimation results are reported in Tables 6–8. In estimating the static models of investment, cash, and leverage, we use the within-group estimator (hereafter *WG*). Table 6 reports the regression results of the estimated investment model in Equation (1) by using an unbalanced panel of 41,712 firm–year observations over the period 2000–2019. More specifically, column 1 reports the estimated coefficients of the investment model in Equation (1) by means of the within-group estimator, by omitting the lagged dependent variable to avoid the Nickell bias of the conventional fixed-effects estimator. Column 2 displays the within-group estimated coefficients of the investment model after adding the CMF to the set of regressors. Finally, column 3 reports the estimated coefficients of the augmented dynamic investment model (including the lagged dependent variable) by using the bias-corrected method of moments estimator [51]. It is worth noticing that the BCMM estimator does not provide the adjusted R-square. Therefore, in order to comment about the goodness of fit of the model across the different estimators and model specifications, we computed the F-test for each model and under each estimator. The results confirmed

that all models were correctly specified, and no variables needed to be dropped from the models.

**Table 6.** Credit Market Freedom and Corporate Investment.

| **Dependent Variable: Investment** | **WG** | **WG** | **BCMM** |
|---|---|---|---|
| | (1) | (2) | (3) |
| MTB | 0.0004 *** | 0.0004 *** | 0.0005 *** |
| | (0.0000) | (0.0000) | (0.0002) |
| CFM | | 0.0078 *** | 0.0551 *** |
| | | (0.0017) | (0.0117) |
| Firm FE | Yes | Yes | Yes |
| Time FE | Yes | Yes | Yes |
| Credit market freedom | No | Yes | Yes |
| Dynamic panel | No | No | Yes |
| Adj. $R^2$ | 0.5729 | 0.5775 | – |
| F-test | 80.00 | 52.60 | 10.11 |
| *p*-Value | 0.0000 | 0.0000 | 0.0064 |
| Obs. | 41,712 | 41,712 | 30,266 |

In Table 6, we report the estimated coefficients of the investment model by using CMF and an unbalanced panel of 41,712 firm-year observations over the period 2000–2019. Column 1 reports the estimated coefficients of the baseline target model of investment by means of a within-group estimator. Column 2 reports the within-group estimated coefficients of the investment model after adding the CMF to the set of regressors. Finally, column 3 displays the estimated coefficients of the augmented investment model by using the bias-corrected method of moments estimator by [51]. *** stands for statistical significance at 1% confidence level. Standard errors, robustness to heteroskedasticity, and autocorrelation are reported in parentheses.

**Table 7.** Credit Market Freedom and Corporate Cash Holdings.

| **Dependent Variable: Cash Holdings** | **WG** | **WG** | **BCMM** |
|---|---|---|---|
| | (1) | (2) | (3) |
| Cash flow | 0.0025 ** | 0.0025 ** | 0.0108 *** |
| | (0.0012) | (0.0012) | (0.0032) |
| Liquidity | 0.0075 *** | 0.0075 *** | −0.0746 *** |
| | (0.0028) | (0.0028) | (0.0084) |
| Investment | −0.2166 *** | −0.2166 *** | −0.2762 *** |
| | (0.0183) | (0.0183) | (0.0225) |
| Leverage | −0.0466 *** | −0.0466 *** | −0.0454 *** |
| | (0.0041) | (0.0041) | (0.0066) |
| MTB | 0.0008 *** | 0.0008 *** | 0.0002 |
| | (0.0001) | (0.0001) | (0.0003) |
| Size | −0.0217 *** | −0.0217 *** | −0.0079 *** |
| | (0.0013) | (0.0013) | (0.0016) |
| CFM | | −0.0819 *** | −0.0231 *** |
| | | (0.0055) | (0.0038) |
| Firm FE | Yes | Yes | Yes |
| Time FE | Yes | Yes | Yes |
| Cred Mark Fr | No | Yes | Yes |
| Dynamic Panel | No | No | Yes |
| Adj. $R^2$ | 0.5999 | 0.5999 | – |
| F-test | 101.16 | 100.48 | 276.39 |
| *p*-Value | 0.0000 | 0.0000 | 0.0000 |
| Obs. | 41,712 | 41,712 | 30,266 |

In Table 7, we report the estimated coefficients of the cash model by using CMF and an unbalanced panel of 41,712 firm-year observations over the period 2000–2019. Column 1 reports the estimated coefficients of the baseline target model of cash by means of a within-group estimator. Column 2 reports the within-group estimated coefficients of the cash model after adding the CMF to the set of regressors. Finally, column 3 displays the estimated coefficients of the augmented cash model by using the bias-corrected method of moments estimator by [51]. *** and ** stand for statistical significance at 1% and 5% confidence level, respectively. Standard errors, robustness to heteroskedasticity, and autocorrelation are reported in parentheses.

**Table 8.** Credit Market Freedom and Corporate Leverage.

| **Dependent Variable: Leverage** | **WG** | **WG** | **BCMM** |
|---|---|---|---|
| | (1) | (2) | (3) |
| Net fixed assets | 0.2544 *** | 0.2544 *** | 0.1813 *** |
| | (0.0258) | (0.0258) | (0.0287) |
| MTB | 0.0046 *** | 0.0046 *** | 0.0011 |
| | (0.0004) | (0.0004) | (0.0013) |
| Cash | −0.2533 *** | −0.2533 *** | −0.0739 *** |
| | (0.0189) | (0.0188) | (0.0205) |
| Profitability | −0.0035 ** | −0.0035 ** | −0.0486 *** |
| | (0.0017) | (0.0017) | (0.0110) |
| Size | −0.0861 *** | −0.0861 *** | −0.0058 |
| | (0.0043) | (0.0043) | (0.0047) |
| CFM | | −0.3497 *** | −0.4150 *** |
| | | (0.0128) | (0.0973) |
| Firm FE | Yes | Yes | Yes |
| Time FE | Yes | Yes | Yes |
| Cred Mark Fr | No | Yes | Yes |
| Dynamic Panel | No | No | Yes |
| Adj. $R^2$ | 0.5722 | 0.5722 | – |
| F-test | 171.86 | 223.60 | 195.82 |
| *p*-Value | 0.0000 | 0.0000 | 0.0000 |
| Obs. | 41,689 | 41,689 | 30,237 |

In Table 8, we report the estimated coefficients of the leverage model by using CMF and an unbalanced panel of 41,712 firm-year observations over the period 2000–2019. Column 1 reports the estimated coefficients of the baseline target model of leverage by means of a within-group estimator. Column 2 reports the within-group estimated coefficients of the leverage model after adding the CMF to the set of regressors. Finally, column 3 displays the estimated coefficients of the augmented leverage model by using the bias-corrected method of moments estimator by [51]. *** and ** stand for statistical significance at 1% and 5% confidence level, respectively. Standard errors, robustness to heteroskedasticity, and autocorrelation are reported in parentheses.

In line with the theory, the estimated coefficient of the MTB was positive and statistically significant under all three estimated models. Moreover, its value was quite consistent across all estimations. Importantly, the WG regression results of the augmented model showed that CMF positively and significantly affected the target level of corporate investment. This means that CMF moved up the target level of investment by improving the firms' financial health and their ability to undertake more profitable investments. Consistent with this view, when we used the BCMM estimator (column 3), all WG results held: MTB and CMF positively affected investment, but the coefficient of CFM was much higher, which signalled that regression (2) was underestimating its impact. This outcome supports the view that the presence of CMF increases the responsiveness of a firm's investment to an increase in profitable investment opportunities, captured by the MTB ratio.

Table 7 reports the regression results of the estimated cash model in Equation (2) by using an unbalanced panel of 41,712 firm-year observations over the period 2000–2019. As above, column 1 reports the estimated coefficients of the cash model (Equation (2)) by means of the within-group estimator, by omitting the lagged dependent variable to avoid the Nickell bias of the conventional fixed-effects estimator. Column 2 displays the within-group estimated coefficients of the model after adding the CMF to the set of regressors. Finally, column 3 reports the estimated coefficients of the augmented cash model by using the bias-corrected method of moments estimator by [51]. The results in column 1 show that all estimated coefficients were statistically significant and with the sign as predicted by the theoretical model of cash of [49]. The fixed-effect estimated coefficients of the augmented model (column 2) showed that CMF did not affect the sign, the magnitude, and the statistical significance of any of the model's parameters. Moreover, CMF negatively and significantly affected the target level of cash holdings (−0.0819). This result suggested that greater CMF, by creating a friendlier financial environment, did reduce the need of stockpiling cash stock for speculative or precautionary motives, therefore reducing a firm's

target level of cash. Albeit small in size, the negative effect of CMF on target cash holdings held when we used a BCMM estimator (column 3).

Finally, Table 8 reports the estimation results of the leverage model in Equation (3). We display in column (1) the estimation of the baseline leverage model by using a WG estimator [50]. Column 2 reports the within-group estimated coefficients of the leverage model after adding the CMF to the set of regressors. Finally, column 3 displays the estimated coefficients of the augmented leverage model by using the bias-corrected method of moments estimator by [51].

The estimation results of the target model of leverage (column 1) showed that all estimated coefficients were statistically significant and with the sign as predicted by [50]. The within-fixed-effect estimated coefficients of the augmented model (Column 2) showed that CMF did not affect the sign, the magnitude, and the statistical significance of all model parameters. Moreover, CMF negatively and significantly affected the target level of leverage ($-0.3497$). This result confirmed that greater CMF, by creating a friendlier financial environment, did reduce the need of raising debt in the financial market therefore reducing a firm's target level of debt. The negative effect of CMF on the target level of leverage held when we used a BCMM estimator (Column 3).

Overall, our findings suggested that CMF improved a firm's financial health: firms operating in states that experienced a higher level of CMF invested more and had lower target levels of cash and leverage. They seemed to have less need to accumulate cash and raise debt to guarantee financial flexibility. This is in line with previous empirical evidence that economic freedom encourages investment opportunities, reduces regulatory uncertainty, increases direct investment, boosts profitability, and enhances corporate innovations [13,18,20,22,23].

## 4. Conclusions

In this study, we used a large and heterogeneous sample of North American nonfinancial firms over the period 2000–2019, to investigate whether credit market freedom (CMF) affected a firm's target level of investment, cash, and leverage. In particular, we generalized the empirical models commonly used in the finance literature for estimating the target levels of cash, leverage, and investment to incorporate credit market freedom into the set of regressors. Our empirical results were robust to the estimation framework and suggested that a firm's exposure to higher levels of CMF increased its target level of investment and decreased its target level of cash and leverage. This implied that financial reforms aiming at reducing credit market rigidities—as predicted by the CMF component—boosted firm investment. At the same time, firms could enjoy greater financial flexibility because the lower optimal levels of cash reserves and leverage allowed the firms to finance their investment by using a greater availability of cash and debt capacity.

These findings support the view that greater CMF leads to healthier capital structure, to higher financial flexibility, and to a friendlier investment environment. Therefore, our empirical findings support the view that economic and financial institutions are an important factor explaining cross-country heterogeneity in corporate policies and economic growth; our results inform policymakers that promoting financial reforms will boost not only a country's financial flexibility but also its economic growth. This is especially relevant in light of the significant investment that countries are called to make for the ecological transition, and the tight governments' financial budgets in a period of rising inflation and nominal interest rates.

A limitation of our analysis is having restricted the investigation to the US and Canada, due to the availability of firm financial data for those countries. Because of this, our empirical analysis could not benefit from a larger variability in CMF. Further research may extend the analysis to include more countries across the world to take into account both the wider heterogeneity in the level of credit market freedom and the origin of a country's legal system, which is considered responsible, among other factors, for the quality of financial reforms implemented by a country [50].

**Author Contributions:** Software, A.C.; Formal analysis, A.I.; Investigation, A.I. and I.G.; Data curation, A.C.; Writing—original draft, A.I.; Writing—review & editing, A.C. and I.G. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Data Availability Statement:** Company data came from a restricted database, namely Compustat that restricts access to its subscribers, while Economic freedom indices come from Fraser Institute. They are available here: https://www.fraserinstitute.org/economic-freedom/map?geozone=world&year=2020&page=map.

**Conflicts of Interest:** The authors declare no conflict of interest.

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