Universidad del Valle
Cuadernos de Administración

Journal of Management
Print ISSN: 0120-4645 / E-ISSN: 2256-5078 / Short name: cuad.adm.
Pages: e2411242 / Vol: 37 / Issue: 71 / Sep. - Dec. 2021
Faculty of Administration Sciences / Universidad del Valle / Cali - Colombia

Announcements Effect of Corporate Bond Issuance on Stock Returns: Evidence from Chile

Efecto de los Anuncios de Emisión de Bonos Corporativos sobre los Retornos Accionarios: Evidencia de Chile

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Article of Scientific and Technological Research
Submitted: 30/04/2021
Reviewed: 15/06/2021
Accepted: 15/09/2021
Published: 02/12/2021
Thematic lines: Economy and International Trade
JEL classification: G14, G30
https://doi.org/10.25100/cdea.v37i71.11242

Abstract

This study measures the announcement effect of corporate bond issuance on stock returns for companies listed

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on the Santiago de Chile Stock Exchange (BCS). The sample is made up of 29 firms and 87 corporate bond issuance announcements during the 2010-2017 period. The announcement effect of corporate bond issuance on stock return is measured by an event study. This methodology allows to calculate abnormal returns for the days of the event period. The results show that the average abnormal return on the day of the announcement is negative (between -0.09% and -0.03%), but it is not statistically significant. However, the average abnormal return on the day after the announcement is positive (between 0.27% and 0.32%) and has statistical significance. The significant and positive average abnormal return on the day after the announcement suggests a late market reaction. The study shows that there is a significant signaling effect of bond issuance announcements on stock returns.

Keywords: Emerging market; Corporate bonds; Signaling; Event study; Abnormal return.

Resumen

El propósito de este estudio es medir el efecto del anuncio de una emisión de bonos corporativos sobre los retornos accionarios de las empresas que cotizan en la Bolsa de Comercio de Santiago de Chile (BCS). La muestra está compuesta por 29 empresas que realizaron 87 anuncios de emisión de bonos corporativos durante el período 2010-2017. El efecto del anuncio de emisión de bonos sobre el retorno de la acción se mide mediante un estudio de eventos. Esta metodología permite calcular los retornos anormales de las acciones en el día del evento (el día del anuncio) y alrededor de ese día. Los resultados muestran que el retorno anormal promedio en el día del anuncio es negativo (entre -0,09% y -0,03%), pero no significativo. Sin embargo, el retorno anormal promedio en el día siguiente al anuncio es positivo (entre 0,27% y 0,32%) y significativo. El retorno anormal promedio positivo y significativo del día posterior al anuncio sugiere una reacción tardía del mercado. El estudio evidencia que hay un efecto de señalización significativo de los anuncios de emisión de bonos sobre los retornos de las acciones.

Palabras Clave: Mercado emergente; Bonos corporativos; Señalización; Estudio de eventos; Retornos anormales.

1. Introduction

Corporate bonds are public offering debt securities. Therefore, the corporate bond issuance constitutes a financing operation that modifies the firms' capital structure and alters its relationship with its optimal debt level (Smith, 2001, p. 278). In the context of signaling theory, the corporate bonds issuances are evaluated by market agents, which can cause a stock prices reaction that alters the shareholders wealth and the firm value.

The stock prices reaction to capital structure changes has been researched in both developed and emerging markets. In developed markets, various studies have shown that the stock prices experience abnormal returns between the moments before the announcements and the issuance of securities (Asquith and Mullins, 1986; Mikkelson and Partch, 1986; Lucas and McDonald, 1990). In emerging markets, evidence has shown that the stock prices reaction to capital structure changes also generates abnormal returns that are related to the qualities of the issuing firms and to the mechanisms that determine the capital structure decision (Vithessonthi, 2008). All these studies agree that the stock prices reaction conveys information to the market and it is not necessarily asymmetric.

In Chile, some research has been conducted on this matter, which has shown that capital structure changes through corporate bonds issuances alter the stock prices (Castillo, 2004; Muñoz, Sepúlveda and Veloso, 2019). Those conclusions have agreed with the international empirical results. However, their analyzes have not captured the boom period of the issuance of corporate debt in Latin American markets observed after the subprime mortgage crisis (De Gregorio, García and Jara-Bertin, 2017). In fact, for the period 2012-2015, corporate bonds were issued for USD 37,000 million in Chile. This record constitutes a historical maximum and is comparable to all bonds issued during the previous eight years. In 2017, bonds were issued for USD 7,975.1 million among bank and non-bank placements, which represents an increase of 37.75% compared to the previous year (Villagrán, 2018). This period was described by a greater depth and size of the bond markets. This context offers a new opportunity to research the possible stock prices reaction to corporate bond issuances in Chile and whether it is related to the performance of the issuing companies.

Based on the above arguments, the objective of this research is to analyze the impact of bond issuances on the stock prices reaction in the Chilean market. Chile is an emerging market governed by French civil

https://doi.org/10.25100/cdea.v37i71.11242

law. This regulatory environment provides weak protection to the investor's rights, which means that the stock prices reaction can convey information to the market, generating information asymmetries and transfer of wealth among investors. In addition, after the subprime crisis, corporate debt increased in Latin American markets, which also implies relevant capital structures changes and whose impacts on stock prices have not been fully researched (De Gregorio *et al.,* 2017). Therefore, our research has two empirical contributions. First, we assess whether corporate bond issuances generate significant abnormal changes on stocks returns, and particularly after the announcement moment. Second, we analyze whether firms that experience negative and positive reactions present differences in their financial performance.

We used a sample of 29 companies for the period from January 1, 2010 to December 31, 2017. The results revealed that the 87 corporate bond issuance announcements generated an abnormal return that ranged from 0.27% to 0.32% during the day after the announcement. This result indicates that the capital structure changes cause shareholders' wealth changes and convey information to the market. This signaling is consistent with stock market inefficiencies. Firms with positive abnormal returns do not have relevant differences in their corporate performance compared to those that registered negative abnormal returns.

After this introduction, section 2 presents the literature review and the research hypotheses. Section 3 presents the analysis methodologies, while section 4 indicates the results obtained. Finally, section 5 groups the conclusions of this research.

2. Capital structure and securities issuance

The main theories on issuance of securities and capital structure that the financial literature offers are: 1) trade-off; 2) signaling; and 3) pecking order. These theories are related to asymmetric information, agency problems, taxes and bankruptcy costs. After the empirical discussion, we will propose the hypotheses.

2.1. Trade-off

This theory proposes that the issue securities of a company move its capital structure towards an optimal leverage that is determined by a trade-off between the marginal costs and benefits of the debt. Debt costs consist of potential bankruptcy and agency costs arising from conflicts between shareholders and bondholders; while the benefits of debt include, for example, the debt tax shield and the overinvestment problem control (Jensen, 1986; Fama and French, 2005).

In relation to the evidence, the debate regularity has been focused on that companies' issue stocks when their prices are high (Dittman and Thakor, 2007). According to the theory, the stock prices increase reduces the firm's debt ratio, which should lead to the issuance of debt toward the optimal leverage. However, Baker, and Wurgler (2002), among other authors, find that US companies issue equity instead of debt when stocks prices are high (Dittman and Thakor, 2007, p. 1). On the other hand, Mongrut, Fuenzalida, Pezo, and Zdenko (2010) analyze the pecking order and trade-off theories for companies of Argentina, Brazil, Chile, Mexico and Peru and find that firms behave according to the trade-off theory. The empirical evidence provided by the US market is inconsistent with the trade-off theory, while the capital structure of Latin American firms would be according to it.

2.2. Signaling

The signaling theory is related to the existence of information asymmetries and to the assumption that managers often have better information about the firm value than external investors.

In markets with asymmetric information, it is difficult to distinguish good quality from bad quality and this difficulty is inherent to the business world (Akerlof, 1970, p. 500). In this context, the work of Spence (1972) on signaling, whose fundamental idea is that individuals can perform actions to provide information to others, despite the fact that these actions have no effects on productivity or what the buyer wants (Lazear, 2008).

The information asymmetries between

https://doi.org/10.25100/cdea.v37i71.11242

management and investors have led to two theories of funding decisions: 1) pecking order; and 2) signaling. According to the signaling and the idea of Spence (1972), the firm management can make financing decisions to provide information to investors and cause a market reaction, even when that decision has no effect on firm productivity. In this regard, there are authors who argue that managers who make financial decisions are concerned with the signaling effects of such decisions (Barclay and Smith, 1999).

With regard to financing decisions and the bond issuances, there are different theories in the financial literature about the announcements of the bond issuances and their impact on stock prices reaction. For this reason, Castillo (2004) classifies these theories into three groups: 1) those that state that the advertisement does not generate abnormal returns; 2) those that argue that the announcement of the risky debt issuance has a negative impact on the firm value and negative abnormal returns; and 3) those that state that generate positive abnormal returns.

In relation to the last group, and from an information asymmetry context about firms' activities, an increase in the debt level communicates to the market that the firm is of good quality. This fact constitutes an effective signaling strategy (Ross, 1977; Barclay and Smith, 1999). Debt contracts oblige the company to make fixed payments, and its failure to comply has serious consequences including bankruptcy of the firm (Barclay and Smith, 1999). Therefore, the increase in indebtedness can be a credible (and costly to imitate) sign that the company expects higher cash flows in the future (Ross, 1977; Barclay and Smith, 1999, p. 12). On the other hand, Barclay and Smith (1999) point out that stock prices are more sensitive than bond prices to information about future expectations. Therefore, signaling theory suggests that the management will choose to issue debt if it believes the firm is undervalued.

The empirical evidence for the US market is diverse and shows that the announcements of debt issuances generate stock price increases or does not affect them (Castillo, 2004). Regarding the relationship between bond issuance and information asymmetries, there is evidence that firms with greater information asymmetries issue more short-term debt (Barclay and Smith, 1995). There is also evidence about negative and significant reactions in bond and stock prices when the bond issue is motivated by an unexpected cash flow deficit (Akhigbe, Easterwood, and Pettit, 1997). In other markets the results are also diverse. The firms' characteristics such as the dividend payments can affect the market reaction. The market would react positively and significantly when the announcements are made by companies with low dividend payments, but such reaction would not be relevant if the announcements are made by firms with high dividend payments. This fact supports the substitute relationship about the information on debt and dividends (Verona and García, 2006).

In Chile, the authorization of bond issues granted by the market regulator does not produce significant abnormal returns (Castillo, 2004). In other emerging markets such as Malaysia, there is evidence about positive abnormal returns after bond issuance, indicating that the market considers bond offerings as favorable news. Even the signaling effect of bond issuance announcements is not influenced by firm characteristics (Chin and Abdullah, 2013). In Malaysia, Singapore and Thailand also find positive and significant abnormal returns (M'ng, Rahman, and Kit, 2020).

The empirical results are ambiguous and vary among markets. In this regard, Fama and French (2005) point out that event studies that calculate abnormal returns cannot resolve the issue unambiguously, since price responses to announcements may not be due solely to asymmetric information problems.

2.3. Pecking order

This theory was formulated by Myers and Majluf (1984) and suggests that corporate financing depends on the firm' preference for internal sources of funds, and debt and equity as external financing. Information asymmetries are assumed to exist because management knows more about the firm value than potential investors, and therefore investors interpret the firm's decisions rationally. The authors suggest that capital

https://doi.org/10.25100/cdea.v37i71.11242

structures are the result of individual financing decisions in which the management follows a hierarchical order (pecking order). Furthermore, the management does not follow an optimal long-term capital structure, but simply chooses the financing alternative with the lowest cost and information asymmetries (Barclay and Smith, 1999). The pecking order theory assumes that management is better informed than investors, which generates adverse selection costs that would affect the costs and benefits related to the trade-off theory. Therefore, companies will finance new investments with retained earnings, then with risk-free debt, risky debt, and finally with equity (Dittmar and Thakor, 2007).

The empirical evidence indicates that the US companies' issue or withdraw capital each year and rejects the pecking order theory main predictions about the frequency and circumstances in which firms issue and repurchase stocks (Fama and French, 2005). For Latin American companies, the evidence indicates that the pecking order theory does not explain the financing policy, since Latin American firms prefer to contract debt rather than finance themselves with generated funds (Mongrut *et al.,* 2010). In addition, Goodell and Goyal (2018) studied 21 emerging markets and showed that firms prefer the issuance of bonds over bank loans. This would occur when there is less corporate opacity, lower foreign access restrictions, an environment with lower transaction costs and limits to legal protection.

The studies by Mongrut *et al.* (2010) and Goodell and Goyal (2018) show the importance of bonds as a financing source in Latin America and emerging markets, which suggests an interest in analyzing the effects of the bond issuance announcements on the stock returns.

2.4. Hypotheses

Based on signaling theory, this research raises hypotheses H_1 and H_2:

H_1: Chilean companies experience average positive abnormal returns on the announcement day (t = 0) of corporate bond issuance.

H_2: Chilean companies experience average positive abnormal returns on the day after the announcement (t = + 1) of corporate bond issuance.

According to Ross (1977) and Barclay and Smith (1999), if management has information that investors do not know, then the financial structure choice conveys information to the market and relates the debt increase to its perception of value. For this reason, the announcement of a bond issue is expected to generate a positive average abnormal return at t=0 or at t=+ 1 if the market reacts late.

The average effect is expected to be a positive abnormal return. However, there is evidence that companies with low growth opportunities, large or regulated, have more long-term debt in their capital structure (Barclay and Smith, 1995). For this reason, the firms' characteristics could influence the signaling effect of the announcements. Companies can present positive or negative abnormal returns because the information conveyed by the announcement depends on market expectations about firm profitability and growth that are essential to evaluate their financing decisions (Fama and French, 2005). Therefore, we proposed the third hypothesis (H3) that expect to find significant differences in the profitability and growth indicators between both groups of companies:

H_3: There are differences between the financial performance of companies with positive abnormal returns and those with negative abnormal returns.

3. Methodology

3.1. Data and sample

The corporate bond issuance announcements made by Chilean firms listed on the Santiago de Chile Stock Exchange (BCS) between January 1, 2010 and December 31, 2017 are analyzed.

The study sample is defined as follows. First, the companies that announced bond issues between 2010 and 2017 are identified. Next, the firms that have a stock market

https://doi.org/10.25100/cdea.v37i71.11242

presence between 240 days before the announcement date and 40 days after the announcement are selected[1]. In accordance with the above, the study sample is made up of 29 companies that corresponds to 87 bond issuance announcements during the period. Table 1 shows the list of 29 firms that announced bond issues during the 2010-2017 period and the date of each bond issuance announcement.

Table 1. Chilean firms that announced corporate bond issuances, 2010-2017

Issuing company	Announcement date	Issuing company	Announcement date
CorpBanca S.A.	04-01-2010	Enjoy S.A.	27-08-2014
Enjoy S.A.	24-06-2010	Coca Cola Embonor S.A.	11-09-2014
Molibdenos y Metales S.A.	05-08-2010	Empresas CMPC S.A.	11-09-2014
Enjoy S.A.	03-09-2010	Viña Concha y Toro S.A.	11-09-2014
Salfacorp S.A.	10-09-2010	S.A.C.I Falabella	22-10-2014
CorpBanca S.A.	27-10-2010	ECL S.A.	24-10-2014
Empresas Iansa S.A.	16-11-2010	S.A.C.I Falabella	27-10-2014
ECL S.A.	17-12-2010	Sociedad Química y Minera de Chile S.A.	28-10-2014
Cencosud S.A.	13-01-2011	Sonda S.A.	26-11-2014
Empresas CMPC S.A.	13-01-2011	Empresas Copec S.A.	04-12-2014
Molibdenos y Metales S.A.	01-04-2011	Parque Arauco S.A.	12-12-2014
Bco. de Crédito e Inversiones S.A.	15-07-2011	Grupo Security S.A.	18-12-2014
Aes Gener S.A.	30-08-2011	Aes Gener S.A.	21-12-2014
Empresas Copec S.A.	15-09-2011	Cencosud S.A.	05-02-2015
Bco. de Crédito e Inversiones S.A.	26-03-2012	Cencosud S.A.	12-02-2015
Banmédica S.A.	03-04-2012	Parque Arauco S.A.	17-04-2015
Empresas CMPC S.A.	18-04-2012	Aes Gener S.A.	24-04-2015
CorpBanca S.A.	10-05-2012	Latam Airlines Group S.A.	29-05-2015
Molibdenos y Metales S.A	28-06-2012	Latam Airlines Group S.A.	09-06-2015
Masisa S.A.	04-09-2012	Aes Gener S.A.	10-07-2015
Bco. de Crédito e Inversiones S.A.	06-09-2012	Aes Gener S.A.	14-07-2015
Cencosud S.A.	06-12-2012	Banmédica S.A.	27-07-2015
Empresas Hites S.A.	06-12-2012	Empresas Hites S.A.	14-09-2015
Molibdenos y Metales S.A.	25-02-2013	Inversiones la Construcción S.A.	11-08-2016
Molibdenos y Metales S.A.	11-03-2013	CAP S.A.	14-09-2016
Sociedad Química y Minera de Chile S.A.	03-04-2013	CAP S.A.	21-09-2016
Banmédica S.A.	26-04-2013	Parque Arauco S.A.	12-10-2016
S.A.C.I Falabella	26-04-2013	Inversiones la Construcción S.A.	10-11-2016
S.A.C.I Falabella	02-05-2013	Inversiones la Construcción S.A.	24-11-2016
Empresas CMPC S.A.	08-05-2013	Cencosud S.A	01-12-2016
Embotelladora Andina S.A.	04-09-2013	S.A.C.I Falabella	13-12-2016
Embotelladora Andina S.A.	26-09-2013	Empresas Copec S.A.	21-12-2016
Embotelladora Andina S.A.	01-10-2013	Sociedad Matriz SAAM S.A.	17-01-2017
Empresa Nacional de Telecomunicaciones S.A.	24-10-2013	Banmédica S.A.	18-01-2017
Aes Gener S.A.	12-12-2013	Empresas CMPC S.A.	31-03-2017

[1] Some companies that announced the bond issue did not have long historical price series. To avoid the observations loss, in these cases 40 days before the announcement and 240 days later were considered.

https://doi.org/10.25100/cdea.v37i71.11242

Aes Gener S.A.	19-12-2013	Latam Airlines Group S.A.	06-04-2017
Embotelladora Andina S.A.	02-04-2014	SMU S.A.	24-04-2017
Masisa S.A.	28-04-2014	Enjoy S.A.	09-05-2017
Masisa S.A.	05-05-2014	Enjoy S.A.	16-05-2017
Empresas CMPC S.A.	11-06-2014	Cencosud S.A.	17-07-2017
Colbún S.A.	03-07-2014	SMU S.A.	28-09-2017
Empresa Nacional de Telecomunicaciones S.A.	10-07-2014	Colbún S.A.	05-10-2017
Empresa Nacional de Telecomunicaciones S.A.	17-07-2014	S.A.CI. Falabella	24-10-2017
		Empresas Hites S.A	15-12-2017

Source: Authors' own elaboration.

3.2. Event study

To measure the effect of the announcement of the bond issue on the stock returns, the event study methodology is used. The events study makes it possible to analyze the impact of an event on securities prices of the companies (Brown and Warner, 1980). According to this methodology, the stock abnormal returns are calculated on the day of the event (the announcement day) and around that date.

First, the event day (t=0) is identified as the date that firm announces the issue, and the Chilean Financial Market Commission (CMF[2]) publishes it as "essential event". Then, a period of 240 days is defined before the announcement (Weston, Siu, and Johnson, 2000). The period of the event is constituted by 3 days, one day before (t=-1) and one day after (t=+1) around the announcement date (t=0). The 39 days immediately prior to the event period (from t=-40 to t=-2) are excluded since they could be contaminated by information leaks (Aktas, De Bodt, and Roll, 2004); while the previous 200 days (t=-241 to t=-41) constitute the period without event. The purpose is isolate the announcement effect. The event period starts from day t=-1 to analyze if there was an anticipated effect on returns.

Second, the normal or expected return of a stock *i* is calculated for each day *t* of the event period ($\hat{R}_{it}$), assuming normal conditions or absence of the event under study. Brown and Warner (1980, 1985) proposed three models to calculate $\hat{R}_{it}$: 1) mean adjusted return; 2) market model; and 3) market adjusted return.

The mean adjusted return calculates $\hat{R}_{it}$ as the average daily return of the stock $\bar{R}_{it}$ for the 200-day non-event period (Weston *et al.*, 2000). Thus, $\hat{R}_{it}$ is calculated using model (1), where R_{it} is the observed return of stock *i* on day *t* of the period without event of T=200 days:

$$\hat{R}_{it} = \bar{R}_{it} = \frac{\sum_{t=-241}^{-41} R_{it}}{T} \quad (1)$$

According to model (2), the market model calculates $\hat{R}_{it}$ through a linear regression between the daily observed returns of a stock *i* (denoted as R_{it}) and the daily observed returns of a representative stock market index (R_{Mt}), measured through General Stock Price Index (IGPA) of the BCS on day *t* of the period without an event. Both time series come from the non-event period. In model (2), α_i measures the average return; β_i measures the sensitivity of the return of stock *i* to market fluctuations; and ε_{it} is an error term. Model (2) estimates the values of α_i and β_i ($\hat{\alpha}_i$ and $\hat{\beta}_i$, respectively). Then, these estimates are used in model (3) to calculate $\hat{R}_{it}$ from the observed return of the IGPA for the event period. Therefore:

$$R_{it} = \alpha_i + \beta_i R_{Mt} + \varepsilon_{it} \quad (2)$$

[2] The Commission for the Financial Market (CMF) is the government institution that regulates and supervises the Chilean financial market. The CMF ensures the proper functioning, development and stability of the financial market www.cmfchile.cl

https://doi.org/10.25100/cdea.v37i71.11242

$$\hat{R}_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{Mt} \quad (3)$$

Finally, the market adjusted return assumes that $\hat{R}_{it}$ is equal to the market return on each day t of the event period, as indicated by model (4):

$$\hat{R}_{it} = R_{Mt} \quad (4)$$

These models appear frequently in the empirical literature about events study and each one has advantages and disadvantages. The mean adjusted return is perhaps the simplest model. However, Brown, and Warner (1980, 1985) find that it often produces results similar to those of more sophisticated models. The market model represents a potential improvement over the mean adjusted return, since it eliminates the part of the return that is related to the market return variation. This fact reduces the abnormal returns variance and increases the model capability to detect effects around events (MacKinlay, 1997). Regarding the market adjusted return, MacKinlay (1997) points out that this model has the greatest restrictions[3], but it is useful when the data are limited (when it is not possible to have an estimation period prior to the event, for example, in a stock public offer).

It should be noted that the general properties of events study tests come from large-scale simulations by Brown and Warner (Kothari and Warner, 2007). Brown and Warner (1980) argue that more complex methodologies can be worse, both compared to the market model and with the mean adjusted return. Brown and Warner (1985) confirm these conclusions using daily returns instead of monthly returns; and Aktas *et al.* (2004) point out that the event study method is robust to the choice of a specific return generation process. However, all three methods use the variance of the no-event returns to evaluate the returns of the event period. This is a limitation because adjustments are necessary when there are event-induced increases in variance or when the non-event period event is contaminated by unrelated events (Savickas, 2003; Aktas, De Bodt, and Cousin, 2007).

Third, the abnormal return of a stock i is calculated for each day t of the event period. The abnormal return (r_{it}) is the difference between the observed return of stock i on day t of the event period (R_{it}) and the expected return in the absence of the event ($\hat{R}_{it}$). Then the average abnormal return (AR_t) is calculated for each day t of the event period, according to model (5). The AR_t measures the average effect of the event on the stock returns of the n firms into the sample:

$$AR_t = \frac{\sum_{i=1}^{n} r_{it}}{n} \quad (5)$$

Fourth, the accumulated average abnormal return on each day τ of the event period (CAR_τ) is calculated using model (6), with τ=-1, 0, +1 days. The CAR_τ measures the cumulative average effect of the announcement during the event period.

$$CAR_\tau = \sum_{t=-1}^{t=\tau} AR_t \quad (6)$$

3.3. Univariate model

The previous models have advantages but also disadvantages. For this reason, a fourth model is used to strengthen the analysis. According to Li, Pincus and Rego (2008), a univariate analysis is performed according to model (7) in order to measure the average abnormal return related to the announcement.

$$RA_{it} = \alpha_0 + \sum_{j=1}^{n} \beta_j D_j + \varepsilon_t \quad (7)$$

Where RA_{it} is the abnormal return of stock i on day t. It is calculated as the difference between the return of stock i on day t (R_{it}) and the market return on day t (R_{Mt}), and over a period of 41 days of stock transactions

[3] The market adjusted return can be considered as a restricted market model, with αi equal to zero and βi equal to 1. Since the model coefficients are predetermined, an estimation period is not required to obtain αi and βi. This model assumes that the ex-ante expected returns are equal among the securities, but not necessarily constant (Brown & Warner, 1980). A general recommendation is to use this restricted model only if necessary (MacKinlay, 1997).

https://doi.org/10.25100/cdea.v37i71.11242

around the announcement date (t =-20, -19,..., +19, +20)[4]. The market return corresponds to the return of the General Stock Price Index (IGPA). In addition, D_j is a dummy variable that takes the value 1 for the days of events j and 0 otherwise. Three dummy variables are used in the study: D_1 is equal to 1 on day t=0 and 0 otherwise; D_2 is equal to 1 on days t=0 and t=+1, and 0 otherwise; and D_3 is equal to 1 on days t=-1, t=0 and t=+1, and 0 otherwise. In this way, the analysis focuses on day t=0 and on the windows closest to the day of the event: [0; +1] and [-1; +1].

In model (7), the constant α_0 is the estimated average daily abnormal return for the days wi thout events. The coefficient β_j of each variable D_j is an estimate of the average daily abnormal return related to the announcement. To apply model (7), the sample was divided into two parts: a sample composed of the announcements that register positive abnormal returns on day t=0, and another sample composed of the announcements that register negative abnormal returns on day t=0. The sample is divided because positive abnormal returns can offset negative abnormal returns and dilute the effect of the announcement on stock returns. The division of the sample allows to observe more clearly the average effect of the announcement on each group.

3.4. Characterization of financial performance

The financial situation of the issuing companies is characterized by the following financial performance indicators: 1) return on assets (ROA), which measures the company's corporate performance; 2) the price-to-book (PtB) ratio, which measures investment opportunities; 3) the firm size (Size); 4) the debt ratio (Leverage); and 5) beta (β), which measures the firm systematic risk. The purpose of this is to analyze whether there are differences in financial indicators, mainly in corporate performance, between firms that experienced positive abnormal returns and those that figured negative abnormal returns on announcement date.

Fama and French (2005) argue that the profitability and growth opportunities of the firms are essential to evaluate their financing decisions. This fact justifies the use of ROA and PtB to characterize the financial situation of companies. Furthermore, the choice of financial performance indicators is based on the studies made by Maquieira, Olavarrieta, and Zutta (2007) and Castañeda and Contreras (2017) for Chilean context. Maquieira *et al.* (2007) analyzed the capital structure determinants. Their results show that the profitability had the sign predicted by the theory (the higher the profitability of the company, the lower the debt). On the other hand, Castañeda and Contreras (2017) analyze the debt maturity determinants. These authors conclude that the growth opportunities had the expected negative effect; and that the firm size had a positive impact. These studies justify the use of Size and Leverage. Finally, a widely used risk measure such as β is incorporated.

4. Results

The results of the study of events, the univariate analysis and the analysis of financial indicators are presented below.

4.1. Event study results

Table 2 shows the average abnormal return (AR_t) on days t=-1, t=0, and t=+1. In addition, Table 2 shows the accumulated average abnormal return between days t=0 and t=+1 ($CAR_{[0,1]}$) and between days t=-1 and t=+1 ($CAR_{[-1,1]}$) around the event. The

[4] There is a conceptual difference between the abnormal return from the univariate model and the abnormal return of the mean adjusted return, market model and market adjusted return models. In the univariate model, the abnormal return is understood as the greater or lesser return of stock i with respect to the market and is calculated as the difference between R_{it} and R_{Mt}. In the mean adjusted return, market model and market adjusted return models, the abnormal return is understood as the higher or lower return observed with respect to that is expected for stock i and is calculated as the difference between the observed return of stock i on the day t of the period of the event (R_{it}) and the expected return in the event absence ($\hat{R}_{it}$). However, the abnormal return of the univariate model coincides with the abnormal return of the market adjusted return, because in the latter, the expected return of stock i on day t is equal to the market return. The market adjusted return calculates the expected return through the market model but restricting to α_i=0 and β_i=1. Due to the above, $\hat{R}_{it}=R_{Mt}$ and the abnormal return of the market adjusted return is R_{it}-$\hat{R}_{it}$ or R_{it}-R_{Mt}, which numerically matches the abnormal return of the univariate model.

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$AR_{t=-1}$ of the day before the announcement (t=-1) is analyzed due to the possibility that the market anticipates the news or that it leaks. The $AR_{t=0}$ of the announcement date is published (t=0) measures the average effect of this event on the stock returns. The analysis also includes the $AR_{t=+1}$ of the day after the announcement (t=+1) due to the possibility that the Chilean stock market has some degree of inefficiency and stock prices react to the announcement with one-day delay. AR_t and CAR_t are calculated using the mean adjusted return, market model and market adjusted return models. Given the characteristics of these models, the most robust and relevant results correspond to the mean adjusted return and market model.

Table 2 shows that $AR_{t=0}$ is negative (between -0.09% and -0.03%), but it has no statistical significance. On the other hand, $AR_{t=+1}$ is positive and varies between 0.27% (market model) and 0.32% (mean adjusted return). In both models, $AR_{t=+1}$ is significant. Furthermore, $CAR_{[0;+1]}$ and $CAR_{[-1;+1]}$ are positive, but not statistically significant. The results present evidence in favor of hypothesis H_2, but they do not support hypothesis H_1.

4.2. Univariate model results

Table 3 (Panel A) shows the results of model (7) for firms that experienced positive abnormal returns at t=0. The average daily abnormal return of the days without events (α_0) is negative and not statistically significant. The coefficients β_1, β_2 and β_3 show that the average daily abnormal return related to the issuance announcement is positive and significant: 0.83% at t=0; 0.43% between t=0 and t=+1; and 0.36% between t=-1 and t=+1.

Table 3 (Panel B) shows the results of model (7) for firms with negative abnormal returns at t=0. The average daily abnormal return of the days without events (α_0) is positive and not statistically significant. On the other hand, the coefficients β_1, β_2 and β_3 show that the daily average abnormal return related to the issuance announcement is negative and significant: -1.21% at t=0; -0.49% between t=0 and t =+1; and -0.34% between t=-1 and t=+1.

Table 2. Average abnormal returns and accumulated average abnormal returns

Model	ARt=-1	ARt=0	ARt=+1	CAR[0;+1]	CAR[-1;+1]
Mean adjusted return	0,23%	-0,09%	0,32%	0,23%	0,46%
	(-1,36)	(-0,52)	(1,90)*	(0,97)	(1,57)
Market model	0,10%	-0,03%	0,27%	0,24%	0,34%
	(0,67)	(-0,23)	(1,79)*	(1,10)	(1,29)
Market adjusted return	0,11%	-0,03%	0,24%	0,20%	0,31%
	(0,70)	(-0,22)	(1,55)	(0,94)	(1,17)
n (announcements)	87	87	87	87	87

Notes: 1) (*): significant at a 90% confidence level; (**): significant at a confidence level of 95%; and (***): significant at a 99% confidence level.

Source: Authors' own elaboration.

Table 3. OLS model results

Variable	Coef.	Panel A: Firms with ARt>0			Panel A: Firms with ARt<0		
Constant	α0	-0,000078	-0,000084	-0,000137	0,000057	0,000001	0,000009
		(-0,22)	(-0,24)	(-0,38)	(0,15)	(0,00)	(0,02)
D1	β1	0,008330			-0,012135		
		(3,73)***			(-4,98)***		
D2	β2		0,004291			-0,004891	
			(2,68)***			(-2,79)***	

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D3	β3			0,003579			-0,003368
				(2,70)***			(-2,32)**
Total announcements		87	87	87	87	87	87
F Test		13,89	7,16	7,28	24,82	7,78	5,39
Observations		3.567	3.567	3.567	3.567	3.567	3.567
Events w/ARt>0		48	48	48			
Obs. w/ARt>0		1.968	1.968	1.968			
Events w/ARt<0					39	39	39
Obs. w/ARt<0					1.599	1.599	1.599
Event window		t=0	[0;+1]	[-1;+1]	t=0	[0;+1]	[-1;+1]
Event day		1	2	3	1	2	3

Notes:

1) Model (7) is applied to the sample of announcements that register positive abnormal returns (Panel A) and negative abnormal returns (Panel B).

2) D1 is equal to 1 on day t=0 and 0 otherwise; D2 is equal to 1 on days t=0 and t=+1, and 0 otherwise; and D3 is equal to 1 on days t=-1, t=0 and t=+1, and 0 otherwise.

3) For each announcement, a period of 41 days of stock transactions around the announcement day is considered (t=-20, -19,..., +19, +20).

4) (*): significant at a confidence level of 90%; (**): significant at a confidence level of 95%; and (***): significant at a 99% confidence level. Source: Authors' elaboration.

Source: Authors' own elaboration.

4.3. Financial performance characterization

Table 4 shows the descriptive statistics of the financial indicators of the companies that announced corporate bond issuances. This analysis considers only non-financial firms, so the number of announcements decreases from 87 to 82 and the number of companies decreases from 29 to 27. The results did not vary when we included financial firms. Panel A shows the firm's financial indicators that registered positive abnormal returns at t=0, according to the market model. The abnormal return calculated by means of the market model is used. The market model is used since it is a less restrictive and more robust model than the market adjusted model. Panel B shows the firm's financial indicators that reported a negative abnormal return at t=0, according to the market model.

Panels A and B indicate large differences between the minimum and maximum values of the financial indicators. This shows the presence of outliers that can influence the mean of the indicators. For this reason, the analysis of financial indicators is conducted based on the median. Therefore, Panel B reports differences between the means and medians of the indicators.

On the median, the ROA (6.48%) of the companies with positive abnormal returns is higher than the ROA (5.96%) of the companies with negative abnormal returns. The size (19.21) of the firms with positive abnormal returns is smaller than the size (19.43) of the companies with negative figures. The indebtedness (0.66) related to the firms with positive abnormal returns is lower than the leverage (0.67) of the companies with negative abnormal returns. The investment opportunities (1.58) of companies with positive rates are lower than those related with firms with negatives abnormal returns (1.63). Finally, the systematic risk (1.00) is also lower for firms with positive abnormal returns.

However, according to the *t*-student test, the differences between the financial indicators of both samples of companies are not statistically significant. The results of the nonparametric Welch test, which measures the statistical significance of the differences between medians, are similar to those of the *t*-student test. Based on these results, there is no evidence that supports the hypothesis H_3. Consequently, there are no differences between the financial performance of companies that register positive abnormal returns, compared to those that present negative abnormal returns.

https://doi.org/10.25100/cdea.v37i71.11242

Table 4. Descriptive statistics of the financial indicators for issuing firms

Panel A: Firms with positive abnormal returns at t=0								
Statistics	**rt=0**	**CAR[0;+1]**	**CAR[-1;+1]**	**ROA**	**Size**	**Lev**	**PtB**	**Beta**
Announcements	45	42	45	45	45	45	45	45
Minimum	0,0180%	0,0149%	0,0354%	0,6465%	13,8814	0,1337	0,1956	0,2770
Median	0,6039%	1,2436%	1,4494%	6,4805%	19,2082	0,6596	1,5848	0,9991
Maximum	3,7956%	12,6967%	10,8024%	15,4282%	23,2575	2,8062	4,3707	2,1425
Mean	0,8877%	1,7791%	2,0820%	6,4094%	18,4727	0,8457	1,8133	1,0201
Standard deviation	0,8232%	2,1887%	1,9924%	2,9504%	3,1596	0,5698	0,9759	0,4499
Panel B: Firms with negative abnormal returns at t=0								
Statistics	**rt=0**	**CAR[0;+1]**	**CAR[-1;+1]**	**ROA**	**Size**	**Lev**	**PtB**	**Beta**
Announcements	37	40	37	37	37	37	37	37
Minimum	-4,4746%	-4,4534%	-5,0041%	-0,2397%	13,1956	0,3367	0,1956	0,3657
Median	-0,8994%	-1,1653%	-1,1490%	5,9632%	19,4319	0,6675	1,6321	1,0259
Maximum	-0,0037%	-0,0475%	-0,0561%	20,8800%	23,3570	2,8062	7,0941	2,6341
Mean	-1,2629%	-1,3838%	-1,7084%	6,2254%	18,8368	0,9705	2,1494	1,1854
Standard deviation	1,1052%	1,2116%	1,3035%	4,0760%	3,0030	0,6551	1,4715	0,5234
Difference				0,0018	-0,3641	-0,1248	-0,3361	-0,1653
t-Student				(0,23)	(-0,53)	(-0,91)	(-1,19)	(-1,48)

Notes:

1) The abnormal return and the accumulated average abnormal return were calculated using the market model.
2) ROA: measures the firm performance, calculated as operating earnings (EBIT) to the total assets' ratio during the year t-1.
3) Size: measures the firm size, calculated as the natural logarithm of the firm's total assets during the year t-1.
4) Lev: firm indebtedness, calculated as the long-term debt and book equity ratio at the year t-1.
5) PtB: the price-to-book ratio, calculated as the market price to book value of the stocks during the year t-1.
6) Beta: measure of the firm's systematic risk, calculated using the market model.
7) (*): significant at a confidence level of 90%; (**): significant at a confidence level of 95%; and (***): significant at a 99% confidence level.

Source: Authors' own elaboration.

5. Conclusions

The purpose of this study is to measure the effect of the announcement of corporate bonds issuances on the stock returns of companies listed on the Santiago Stock Exchange (BCS) during the 2010-2017 period. In relation to the announcement of a corporate bond issuance by Chilean companies, we formulate this question: Does the issuance cause any reaction in stocks prices? The event study shows that the announcement of the bond issuance did not have a significant effect on stock returns on the announcement date (t=0). However, it had a significant effect on the following day (t=+1).

Another important question discussed in our research is: What is the direction and magnitude of the effect on stock returns? From the perspective of the average effect, the results show that the average abnormal returns the day after the announcement (t=+1) was positive and significant and vary between 0.27% and 0.32%. The fact might have two possible explanations: 1) the announcements on day t=0 were made after the closing of the stock market; or 2) there was a late market reaction to the bond issuance announcement explained by market inefficiency. Finally, from the perspective of individual analysis, there are companies that show positive and negative abnormal returns.

Finally, we provide evidence for the following research question: Are there differences in financial performance between firms that report a positive effect and those that report a negative effect? According to the analysis of the median of the financial indicators, companies with positive abnormal returns on the announcement date (t=0) have a higher return on assets, a smaller size, a lower indebtedness, lower investment

https://doi.org/10.25100/cdea.v37i71.11242

opportunities, and a lower systematic risk compared to companies with negative abnormal returns. However, the differences between the financial indicators are not statistically significant.

This study provides evidence about the effect of bond issuance announcements in emerging markets. The results show a positive and significant average abnormal return on the day after the announcement. This reveals a possible significant signaling effect of bond issuance announcements on stock returns. However, the sample of announcement with negative and significant abnormal returns raises the need for additional studies to explain these results, either through the use of new methodologies or a greater number of observations.

Finally, the results of this research have economic policy implications, useful for regulators who have the mandate to ensure the stability of the financial system. The existence of abnormal returns before or after the announcements of bond issuance in Chile constitutes a phenomenon by which policymakers may design measures to reduce information asymmetries among the different agents, whether they are investors, bondholders and managers. On the other hand, the study has implications for corporate management in the sense that companies can know the possible consequences of future announcements of corporate debt issuances on stock prices. Although with the current data it has not been possible to find differentiating factors between companies that presented positive and negative abnormal returns, decision makers would have to internally analyze other aspects in their corporate governance practices that could be key to determine the impact of a debt issuance announcement on the equity market value.

6. Conflict of interest

The authors declare no conflict of interest.

7. Source of Financing

This research is performed by Research Group in Economics and Business, Universidad de Concepción.

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How to cite this paper?

Cornejo-Saavedra, E. E., Muñoz Mendoza, J. A., Delgado Fuentealba, C. L., Sepúlveda Yelpo, S. M., & Veloso Ramos, C. L. (2021). Announcements Effect of Corporate Bond Issuance on Stock Returns: Evidence from Chile. *Cuadernos de Administración, 37*(71), e2411242. https://doi.org/10.25100/cdea.v37i71.11242