CHOICE OF FINANCING IN A BORROWING-CONSTRAINED ECONOMY AND LONG-TERM PROFITABILITY EFFECTS

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Abstract

This paper examines the long-run stock performance of equity issuers in a borrowing-constrained emerging economy and documents no negative abnormal stock performance when there are severe borrowing constraints. This result is robust to the inclusion of several risk factors and firm characteristics as control variables in the regressions. Findings of this study might have important implications for other emerging markets and international investors taking positions in these markets.

The corporate finance literature is rich with studies that examine the long-run stock and operating performances of companies that issue seasoned equity. Findings from developed markets generally document negative abnormal returns and poor operating performance in the long-run following a seasoned equity offering (SEO)[1]. Several studies also provide evidence that the stated purpose by the managers regarding the use of the SEO proceeds typically affects this long-run stock performance. For instance, Hertzel and Li (2010) report that issuers with higher growth opportunities do not experience negative abnormal returns in the long-run. In line with this literature, Lyandres, Sun and Zhang (2008) propose an investment factor that is equal to the return on a portfolio that is long in low-investment stocks and short in high-investment stocks and show that this factor helps to explain the SEO underperformance. Separately, Billett, Flannery and Garfinkel (2011) argue that the negative post issue underperformance is related to the number of different types of securities issued but not to the specific type of security issued per se. They show that, after controlling for multiple security issuances, there is no statistically significant underperformance following bank loan issues, SEOs and private equity placements. The goal of this paper is to analyze the long-run stock performance of firms issuing new equity as rights offerings in Turkey over a period from January 1989 to June 2013 and examine the role of the investment and liquidity factors as well as multiple right issues in explaining the long-run performance following these corporate events.

There are a limited number of studies analyzing the long-run stock performance of companies issuing seasoned equity in emerging economies such as Turkey (Wang, Wei and Pruitt, 2006; Matthew, 2002). Moreover, studies on emerging markets document results that are not compatible with the findings from developed markets. According to these studies, SEO firms in emerging markets have either positive or zero abnormal stock performance in the long-run as opposed to the negative performance predominantly reported for the SEO firms in developed markets. These different findings imply that firms in emerging and developed markets may have different investment strategies. More studies on emerging markets are needed in order to better understand the dynamics of security issuance in these markets. Since emerging markets are attracting more and more international investors and provide higher diversification benefits (Li, Sarkar and Wang, 2003; Gupta and Donleavy,

[1] Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), Jegadeesh (2000), Bayless and Jay (2003) report this underperformance for the US seasoned equity offering firms. Ho (2005), Stehle, Ehardt and Przyborowsky, (2000), Kabir and Roosenboom (2001) document this for the UK, Germany and the Netherlands, respectively. Pastor-Llorca and Martin-Ugedo (2004) report negative abnormal returns for Spanish companies that issue seasoned equity in general and Farinos (2001) documents similar findings for only small- and medium-sized Spanish firms.

2009; Driessen and Laeven, 2007) compared to developed markets, understanding the dynamics of these markets can prove to be quite valuable.

In addition to being an emerging market, Turkey is an interesting country to examine this issue because of the economic and financial developments during the sample period analyzed in this study. In the first half of the sample period from 1989 to 2001, the corporate bond market in Turkey was quite inactive, and therefore, for most firms bond financing was not a readily available source of financing. In addition to having incomplete financial markets, Turkey experienced hyperinflation during the 1990s. The economic uncertainty created by inflation and the political instability led by frequent government changes reduced the willingness of Turkish commercial banks to grant long-term credit to corporations. Moreover, continuing large budget deficits forced the Turkish government to rely heavily on high-interest debt financing during the same period. The frequent issuance of government securities with high real rates of return provided a lucrative investment alternative for bank funds and thus further reduced the availability of long-term bank credit to corporations as a source of financing (Güner and Danışoğlu Rhoades, 2003) while increasing the real cost of borrowing to prohibitively high levels in Turkey.

In the second part of the sample period from 2002 to 2013, the Turkish economy and financial markets experienced some major changes. Starting from 2004, Turkey adopted an inflation-targeting program and was able to reduce the hyperinflation down to single digits. Furthermore, as a result of the restrictions imposed upon government spending, the budget deficit declined significantly resulting in a reduction in the financing requirements of the government and hence the real interest rate on government securities. As a result of these changes, Turkish commercial banks became more willing to extend loans to the private sector at lower interest rates. Moreover, since November 2002, the same single party government has been in power in Turkey whereas in the first half of the sample period, there were 12 different coalition governments. In light of all these changes, in the second subperiod, economic and political uncertainty decreased, real borrowing costs declined and bank lending to corporations became more readily available. Parallel to these changes, the corporate bond market became somewhat more active, although it still does not represent a significant source of financing for Turkish firms.

Given these changes in the availability of financing alternatives during the sample period analyzed in this paper, it is conceivable to expect different long-run stock performances for equity issuing firms in these two subperiods. Furthermore, characteristics of firms issuing seasoned equity may have also changed over the sample period. By analyzing the announcement effects of rights offerings in the Turkish market over a similar period, Danışoğlu, Güner, Önder and Tepe (2014) document more negative short-run market reaction to these announcements in the second subperiod when alternative sources of financing are more readily available in the market.

In recent years, the effects of economy-wide borrowing constraints on security returns and the market reaction to equity offerings attracted some attention in the literature. Lamont, Polk and Saá-Requejo (2001) present evidence that financial constraint is an independent common risk factor that affects security returns over and above the Fama-French factors. Similarly, Dissanaike, Faasse and Jayasekera (2014) examine the short-run market reaction to equity offerings by UK firms before and after the global financial crisis of 2008. Dissanaike et al. argue that during the financial crisis, the information asymmetries between issuers and investors increased and the supply of capital declined significantly. They document a significantly larger negative reaction to equity issues during the post-crisis period. They also show that this negative reaction cannot be explained by the signaling quality or the firm-level information asymmetry effects.

Given the evidence on the effect of economy-wide borrowing constraints on security returns, this study analyzes how the long-run stock performance of equity-issuing companies change when economy-wide borrowing constraints are decreasing in the Turkish financial markets and contributes to the literature in four ways. First, to the best of our knowledge, it is the first study to analyze the effect of economy-wide financing constraints on the long-run stock performance of equity issuers. Second, this study includes the Lamont et al.'s investment factor in the model that is estimated to explain the long-run stock performance. When the economy-wide borrowing constraints are high, equity issuance may be the only viable source of financing available to the firms. Hence, the investment factor may not have a significant relationship with the long-run performance of equity issuer in such an environment. Also, as the economy-wide borrowing constraints decrease, the investment factor may be expected to become more relevant as a determinant of the long-run performance of equity issuers. Third, this paper analyzes the differences in long-run stock performances of single and multiple equity issuers over a 12 month period. In a borrowing-constrained economy, companies are expected to issue equity more frequently. Therefore, lower long-run stock performance documented for repeat/multiple security issuers in developed markets may not be observed in this market when the borrowing constraints are more severe. Fourth, this study also analyzes the effect of a market-wide liquidity factor on the long-run stock performance of equity issuers in such a market.

Empirical findings of the study are consistent with the arguments given above. Rights offering firms in the first subperiod have more growth opportunities and better financial characteristics. Furthermore, firms are more inclined to engage in multiple rights offerings within a 12 month time horizon in the first subperiod than the second subperiod. Results for the full period show that firms issuing rights offerings have negative abnormal long-run stock performance. This result is consistent with the findings from developed markets. However, further analysis shows that this negative long-run stock performance exists only when firms have alternative sources of financing and disappears when equity financing is the only choice of financing available. Furthermore, firms with multiple rights offerings experience higher underperformance only in the second subperiod. Since economy-wide borrowing constraints are reduced significantly in the second subperiod, these findings are consistent with the expectations.

The remainder of the study is organized as follows. The next section explains the institutional framework and provides summary statistics on the distribution of rights offerings over the sample period. In Section II, the methodology and data are described. Section III presents the empirical results and Section IV concludes the article.

I. Institutional Framework

The Turkish stock market was established in 1986 and is classified as an emerging market[2]. Despite being a fairly young market, Borsa Istanbul (BIST) is a popular destination for investors seeking to diversify internationally (64 percent of the listed equities are held by foreign investors)[3]. During the sample period, BIST is a continuous auction market with no market maker where shares of stock are traded through a fully automated computer system

[2] The total market capitalization to GDP ratio was 6.33% in 1989 and increased to 39.14% in 2012 according to World Development Indicators. The average ratio over this time period is 23.85%.

[3] http://borsaistanbul.com/datum/ilgili_dosyalar_eng/IPO_in_Turkey_and_Listing_on_Borsa_Istanbul_Basics.pdf accessed on October 27, 2013.

that matches orders based on price and time priority rules. Trading is carried out in separate morning and afternoon sessions and there is a price limit of ±10 percent per session.

Contrary to the US and similar to most of the European countries, the Turkish Capital Markets Law required all seasoned equity offerings to be conducted as a rights offering during the sample period. In rights offerings, current shareholders are given priority to purchase the new shares before they are offered to the general public. This way, the existing shareholders are protected from a dilution effect on their ownership percentages.

The sample covers completed seasoned equity issues that were brought to the market in the form of rights offerings between January 1, 1989 and June 30, 2013. Because of the developments mentioned in the previous section in Turkey over this period, the sample is divided into two subperiods with the first subperiod from January 1989 to December 2001 and the second subperiod from January 2002 to June 2013. The stock prices and values for the BIST-100 Index are obtained from the Borsa Istanbul. These prices are adjusted for stock splits and dividends by the authors. Data on firm characteristics are obtained from the financial statements of the companies that are available at the BIST and Public Disclosure Platform (PDP)[4] web sites. The risk free rate used in the estimations is the nominal compound return on the zero-coupon government domestic debt instrument issued by the Turkish Treasury with a remaining maturity closest to 90 days as of the last trading day of month *t*. The data are obtained from the Borsa Istanbul, Central Bank of the Republic of Turkey, and the Official Journal of the Republic of Turkey databases.

A search through these data sources revealed a total of 804 completed seasoned equity offerings during the sample period. The distribution of the offerings over the 24.5 years covered in the sample period is provided in Panel A of Table I. There is a notable decline in the number of offerings per year during the second subperiod (618 in the first versus 186 in the second). This decline can be attributed to the lower interest rates and more readily available bank loans as an alternative source of financing for firms during second subperiod[5]. Panel B of Table I shows the frequency of multiple rights offerings over a 12-month period by the sample firms for the full sample and the two subperiods. As expected, multiple issues by the same firm are significantly lower in the second subperiod.

As a result of frequent rights offerings by Turkish firms and the small number of firms listed on the BIST during the first part of the sample period, it is almost impossible to find a matching control firm for each issuer. Furthermore, the remaining non-issuing firms very rarely have the same or similar characteristics as the issuers in order to be included in a matching-firm sample. Therefore, instead of matching each issuer firm with a non-issuer, this paper utilizes the calendar-time portfolio approach. The post-issue monthly returns on the calendar-time issuer and non-issuer portfolios are analyzed by using factor regressions. Also, as a first step in the analysis, excess returns of the issuer and non-issuer firms are regressed on firm characteristics. Details of these analyses are presented in the next section.

II. Methodology and Data

In this study, the framework developed by Billett et al. (2011) is used to analyze the long-run performance of firms issuing rights offerings in Turkey. Billett et al. analyze the post-issue returns of single and multiple security issuers in the US market. Their sample includes

[4] http://kap.gov.tr/en/home.aspx

[5] The average time deposit rate is 81.5% for the first subperiod (1994-2001) and 26.2% for the second subperiod (2002-2010). Rates continued to decline further during the latter part of the second subperiod and the average time deposit rate was equal to 16.1% during the last 24 months of the sample. (Source: Authors' calculations)

information on five types of financing activities, namely, IPOs, SEOs, public debt, bank loans and private equity. Furthermore, they control for consecutive issuances of the same type of security by firms. They create dummy variables to indicate multiple security issuances and the consecutive issuances of the same security by the same firm over a 36-month period using flexible- and variable-length windows. In comparing the performances of single and multiple security issuers, they use three different methodologies. First, they use Fama-MacBeth (1973) style regressions to analyze the performance of issuers while controlling for firm characteristics. Second, they evaluate the long-run stock performance of issuers using the three-factor model of Fama and French (1995) and the four-factor model of Carhart (1997). Lastly, they analyze the difference of buy-and-hold returns between the issuers and matched non-issuers. All three methods yield similar results and indicate that multiple security issuers have much worse post issue stock performance than single security issuers. In addition, performance of repeated issuers of the same security type is not significantly different from the single issuers.

Iqbal, Akbar and Shiwakoti (2013) analyze the performance of firms offering multiple rights issues in the UK market using a similar methodology to Billett et al (2011). Inconsistent with the Billett et al. findings, they document that one-time rights issuers do experience underperformance and firms with multiple rights offerings do not experience significant long-run underperformance. Both studies, despite their conflicting findings, point out the importance of controlling for multiple security offerings by the same firm in evaluating the long-run stock performance of issuers.

In this study, similar to Billett et al. (2011), firm characteristics regressions and factor models are estimated in order to examine the long-run stock performance of issuers. As explained before, since it is not possible to find a matching control firm for each issuer firm, the buy-and-hold abnormal returns could not be calculated.

A. Firm Characteristics Regressions

Billett et al. (2011) estimate the firm characteristics regression separately for every month in their sample period as described in the Fama-MacBeth methodology and then they report the time series averages of these coefficient estimates. In this study, it is not possible to estimate the firm characteristics regression separately for each month in the sample because with a lack of rights offering events in each and every month, the model is not full rank for those months when the dummy variables that control for repeat and multiple issuers are all equal to zero simultaneously. The "post-issue" period for measuring the stock performance is chosen to be 12 months during which the sample firm has in this study. Yüce, Önder and Şımga-Mugan (1999) show that the long-run investment horizon for small investors in Turkey is only forty-five days. As a result, the post-issue returns are calculated between January 1990 and June 2013.

The estimated firm characteristics regression has the following form:

$$R_{it} - R_{mt} = \alpha_0 + \beta_1 ONE_{it} + \beta_2 MULTI_{it} + \beta_3 CAPEX_{it} + \beta_4 Q_{it} + \beta_5 DEBT_{it} + \beta_7 EBIT_{it} + \beta_8 CASH_{it} + \beta_9 SIZE_{it} + \beta_{10} BMV_{it} + \varepsilon_{it} \quad (1)$$

In Equation (1), R_{it} and R_{mt} are the month t returns on the issuing firm's stock and the market index, respectively. The *BIST-100* index is taken as the market proxy in this model.

ONE and *MULTI* are dummy variables controlling for the single and multiple rights offerings by the same firm over a 12-month period. In creating these dummy variables, a

fixed-length window is used. When one of these dummy variables is turned on, it stays on for the next 12 months. *ONE* has a value of 1 during the 12-month post-issue window after the first rights offering by a firm. If the firm issues another rights offering within 12 months of the previous rights offering, then *MULTI* is also set to 1 for the next 12 months regardless of the duration of the overlap between the 12-month post-issue windows of two consecutive rights offerings. The construction of these dummies is described in Figure 1.

In Figure 1, consider a company that conducts a rights offering in month *t*. The 12-month post-issue window for this event is from month *t+1* to *t+12*. During this 12-month window, the dummy variable *ONE* has a value of 1. Now, suppose that this company conducts another rights offering in month *t+8*. The 12-month post-issue window for this second event goes from month *t+9* to *t+20*. Since the company issued another rights offering within the 12 months of the previous offering, the dummy variable *MULTI* is set to 1 between months *t+9* and *t+20* even though the 12-month post-issue windows of these two events overlap only from *t+9* to *t+12*. For months between *t+9* and *t+12*, both dummy variables have a value of 1.

The first firm characteristic included in the model is *CAPEX*, the annual change in gross property, plant and equipment and inventories divided by the lagged book value of assets. A negative relationship between this variable and security returns is documented by Cooper, Gülen and Schill (2008). Agency problem (Titman, Wei and Xie, 2004) and exercise of real growth options (Carlson, Fisher and Giammorino, 2006) are given as the explanations for this negative relationship. Contrarily, Eberhart, Maxwell and Siddique (2004) report a positive abnormal return following an increase in research and development (R&D) expenditures and attribute this to the growth options generated by the R&D activities. Since R&D activities are typically quite low in Turkey, a negative relationship is expected between the *CAPEX* variable and post-issue returns.

Q is Tobin's *Q* defined as total assets minus book value of equity plus market value of equity divided by total assets for firm *i* at time *t*. This variable measures the firm's growth opportunities. This measure is expected to have a positive effect on the post-issue stock returns since a higher growth potential is expected to be perceived favorably by the investors in the market.

The next set of variables are included in the model in order to measure the financial distress experienced by the issuing firms. *CASH* is the cash and marketable securities divided by total assets of firm *i* at time *t*. This variable measures the firm's liquidity. *DEBT* is the total debt ratio of firm *i* at time *t*. It is calculated as the sum of short- and long-term debt divided by total assets. This variable measures the financial levarege of the firm. *EBIT* is the operating income before depreciation divided by total assets of firm *i* at period *t*. It controls for the ability of the firm to generate earnings. In this group, lower *CASH*, higher *DEBT* and lower or negative *EBIT* represent higher levels of financial distress and are expected to have a negative effect on the returns of the issuing firms.

SIZE is the natural logarithm of firm *i*'s equity value. It is calculated as the number of shares outstanding times the closing price at the end of month *t* for firm *i*. This is a traditional control variable in the extant literature showing the negative relationship between firm size and security returns.

BMV is the book-to-market equity ratio. Book value of equity at December of year *t* is divided by market value of equity on June of year *t* for firm *i*. This is another traditional control variable and it is the distress factor from the Fama-French three factor model. This variable can also proxy for the growth opportunities of the firm.

B. Calendar-Time Portfolio Regressions

In order to compare the post-issue stock performance of issuers and non-issuers, two calendar-time portfolios are created. An issuer is a company that performed a rights offering over the previous 12-month period. Non-issuers are determined by first eliminating the issuers from the sample for the 25 months surrounding every rights offering that they conduct (12 months before the rights offering, the month of the rights offering and 12 months after the rights offering). Consider a firm that conducts a rights offering during January 1993. This firm becomes a member of the issuer calendar-time portfolio in February of 1993 and stays in that portfolio until January of 1994. This firm can be considered as a non-issuer for the periods before January 1992 and after January 1994. These issuer and non-issuer calendar-time portfolios are rebalanced and portfolio returns are calculated every month throughout the sample period.

Monthly returns on these two calendar-time portfolios are analyzed by using different factor models. The variable of interest in the factor regressions is the difference in intercepts for the issuer and non-issuer portfolios. The first factor regression estimated is the single-index market model. In addition, the Fama-French three-factor model and the Carhart four-factor models are estimated. Finally, the four-factor model is augmented first by the Lyandres et al. (2008) investment factor and, second, by the Pastor and Stambaugh (2003) liquidity factor. The calculation of the small-minus-big (*SMB*), the high-minus-low (*HML)*, and the winner-minus-loser (WML) portfolio returns are in line with the standard methods that are used widely in the literature. In order to calculate these factors, companies listed on the BIST are sorted into two size and three book-to-market ratio groups independently and then the returns on the *SMB* and *HML* factors are calculated following the procedure explained in Fama and French (1995). The Carhart *WML* factor is the difference in the past eleven-month returns of winner (top 30%) and loser (bottom 30%) portfolios.

The investment factor, *INV*, is calculated as the return on a zero-cost portfolio that is long in the low investment-to-asset firms and short in the high investment-to-asset firms. The investment-to-asset ratio is calculated as the sum of the annual change in gross property, plant and equipment and inventories divided by the lagged book value of assets. The plant, property and equipment measure the real investments in long-term assets whereas inventories measure investments in short-term assets. In constructing the investment factor, firms are sorted independently in two classes based on each of the size, book-to-market and investment-to-assets measures. As a result of these three independent sorts, 8 equally-weighted portfolios are formed. The *INV* factor is the difference in the returns of low-investment and high-investment portfolios controlling for size and book-to-market effects.

Bilinski, Liu and Strong (2012) provide evidence that changing liquidity for the issuer stocks may play a role in the long-run performance of SEO firms. They show that the liquidity of the issuer stocks increases following an SEO, thereby reducing the liquidity premium required by investors. Bilinski et al. are able to show that after adjusting for the changes in liquidity risk, SEO firms do not seem to underperform in the long-run. Bilinski et al. (2012) augment the Fama-French three-factor model with a liquidity factor calculated as the return on a zero-cost portfolio long in low-liquidity stocks and short in high-liquidity stocks. In this study, a liquidity factor is calculated as explained in Pastor and Stambaugh (2003). This liquidity measure is calculated with respect to a stock's volume and is based on temporary price changes that occur as a result of changes in the order flow. The liquidity factor, *LIQ*, is the return on a zero-cost portfolio that is long in low-liquidity stocks and short in high-liquidity stocks. The estimated models are the relevant versions of the following full model:

$$R_{pt} - R_{ft} = \alpha_0 + \beta_p (R_{mt} - R_{ft}) + \beta_S SMB_t + \beta_H HML_t + \beta_I INV_t + \beta_L LIQ_t + \varepsilon_{pt} \quad (2)$$

III. Empirical Results

Table II presents the characteristics of firms conducting rights offerings over the full sample and the two subperiods analyzed in this study. As seen in this table, issuers in the first subperiod have higher investment ratios, Tobin's Q and operating income compared to issuers in the second subperiod. These differences imply that issuers in the first subperiod mostly have higher growth opportunities. Moreover, these firms have lower book-to-market ratios, indicating that they are not financially distressed firms. Firms issue more multiple rights offerings within a 12 month period in the first subperiod compared to the second one. This finding is consistent with Turkish economy being more borrowing constrained in the first subperiod.

Figure 2 shows the annualized returns on the issuer and non-issuer calendar-time portfolios during the sample period. The Loans-to-GDP (Gross Domestic Product) ratio is overlaid in the figure in order to visually compare the long-run abnormal returns of issuer and non-issuer portfolios as the availability of alternative sources of financing changes in the market. The Loans-to-GDP ratio is calculated quarterly as the ratio of total loans given to the private sector by the Turkish banking system to the rolling annual GDP. As seen in the figure, the ratio increases significantly in the second part of the sample period, indicating more bank loans being given to the private sector. As expected, the post issue stock performances of the issuer and non-issuer portfolios are more similar in the first subperiod compared to the second subperiod. As a matter of fact, in 8 out of 12 years in the first subperiod, issuers underperform non-issuers but the difference in the returns of these two portfolios is quite small. Contrarily, issuers underperform non-issuers in 10 out of 12 years during the second subperiod and the difference in the returns is much larger this time. This figure provides justification for analyzing the performances of issuer and non-issuer calendar-time portfolios separately for these two subperiods.

A. Firm Characteristics Regressions

Table III presents the results of the firm characteristics regressions. The first two columns report the estimated coefficients for the whole sample period. The variables of interest in these models are the dummy variables that represent one-time issuers (*ONE*) and multi-issuers (*MULTI*). The coefficient estimates of these two dummies imply a significantly negative return for the issuer firms and this negative return is larger when the firm is a multi-issuer. Initially, these results seem consistent with the results from previous studies. However, the coefficient estimates for the dummy variables cannot be interpreted on their own since they only represent the return that is earned by the one-time or multi-issuers over and above the intercept estimate. Therefore, it is necessary to test whether these estimates are significant when they are tested together with the intercept. The hypothesis tests reported in Panel B show that rights offering firm do not have negative index-adjusted returns when the model controls for firm-specific characteristics.

When the stock performance of issuing firms is analyzed separately for the two subperiods, some interesting differences are observed. These results are reported in the third and fourth columns of Table III. During the first subperiod, the *ONE* and *MULTI* dummies are not significant and the intercept of the model is significantly positive. Hypothesis tests in Panel B also support these findings. Moreover, in the second subperiod when firms have more readily available financing alternatives, both dummies are significantly negative when they are tested together with the intercept. These findings may suggest that firms issue additional equity to

finance their positive NPV projects in the first subperiod, and thus do not exhibit underperformance over the long-run, but, in the second subperiod, they issue equity mostly to take advantage of overvaluation in the stock market. The remaining control variables in the models have the expected signs.

B. Calendar-Time Portfolio Regressions

Another way to test the long-run performance of equity issuing firms is to estimate factor regressions with the dependent variable as the calendar-time equally-weighted portfolio returns for issuer versus non-issuer firms[6]. In order to provide comparable results to the existing literature, several different models are estimated. The first factor regression is the single-index market model. In addition, the Fama-French three-factor model and the Carhart four-factor models are estimated. With the purpose of reflecting the differences between issuers and non-issuers, the four-factor model is augmented first by the Lyandres et al. (2008) investment factor and, second, by the Pastor and Stambaugh (2003) liquidity factor. The dependent variable in these models is the excess return on the issuer and non-issuer portfolios.

Panels A and B of Table IV report the results of the issuer and non-issuer portfolios, respectively. The variable of interest in these models is the intercept. If the intercepts of all models are found to be negative for the issuer portfolios and positive or zero for the non-issuer portfolios, then this would indicate negative post-issue performance for issuers. When the parameter estimates in the table are analyzed, it is seen that all risk factors, with the exception of momentum, are significant and positive for either portfolio. The *LIQ* factor is significant only for the issuer portfolio. The positive coefficient on the investment factor (*INV*) implies that firms with lower growth opportunities are perceived to be riskier. In addition, the positive coefficient for the liquidity factor (*LIQ*) suggests that stocks are perceived to be riskier when there is a decline in market-wide liquidity. When the intercepts are significant in this table, they are negative for the issuer portfolio and positive for the non-issuer portfolio. Such a result suggests that the abnormal return performance of the issuer portfolio is indeed negative after controlling for the market-wide risk factors.

In order to test whether the negative long-run abnormal performance of issuers changes between the two subperiods, pooled factor regressions of monthly returns on issuer and non-issuer portfolios are estimated with two new dummy variables. The first dummy variable, *SEO*, takes a value of 1 for the issuer portfolio and 0 for the non-issuer portfolio. The second variable *SEO×PERIOD 90-01* is an interaction variable between the *SEO* dummy and the period dummy. As before, the period dummy is equal to 1 during first subperiod (1990 – 2001). Table V presents the results of these factor model estimations. The negative coefficients on the *SEO* dummy in all models support the finding in Table IV that issuers have significantly negative abnormal returns. On the other hand, the coefficient of the interaction variable is positive and significant for all but the single-factor model. As seen in the hypothesis tests provided at the bottom of Table V, the positive coefficient on this variable offsets the negative coefficient on the *SEO* dummy, making the abnormal return of issuers not significantly different from zero in the first subperiod. These findings suggest that when there is an economy-wide borrowing constraint, the issuer firms do not exhibit a negative abnormal performance over the long-run. These firms might be issuing equity as the only viable source of financing available to them with the purpose of financing their investments in positive NPV projects and thereby increasing the firm value. This finding also suggests that the

[6] The choice of equal weighting is motivated by the similarity of findings reported in studies constructing both equally-weighted and value-weighted portfolios.

negative long-term performance observed for the whole period can be attributed to rights offerings conducted in the second subperiod when alternative sources of financing are more readily available to firms. In unreported results, when factor models are estimated separately for the two subperiods, the performance of the issuer portfolio is found to be not significantly different from the performance of the non-issuer portfolio in the first subperiod but it is significantly lower in the second subperiod.[7] These results highlight the importance of controlling for the availability of alternative sources of financing when evaluating the long-run performance of equity issuing firms.

IV. Conclusion

This study is one of the few emerging market studies that analyze the long-run performance of SEO firms. The emerging market analyzed in this paper, Turkey, has an interesting characteristic. There is a severe economy-wide borrowing constraint in the first part of the sample period and this constraint declines gradually over the sample period. Findings of this study indicate that the economy-wide borrowing constraint has a significant effect on the long-run performance of Turkish firms that conduct rights offerings during the sample period. The study analyzes the long-run performance of rights offering firms by using a firm characteristics regression and several multi-factor models over a period during which the economy-wide borrowing constraints are steadily decreasing. The findings of the firm characteristic and multi-factor models consistently show that single and multiple rights offering firms experience a negative abnormal performance within one year of the issue only when there are alternative sources of financing available in the market. When equity is the only available source of financing for firms, even the multiple issuers do not experience negative abnormal post-issue performance. These results underline the importance of controlling for economy-wide borrowing constraints while analyzing the effect of financing choices on firm performance. This is another emerging market study that documents significantly different results from the studies analyzing the same issue in developed markets. This study provides support for the view that findings from developed markets cannot be generalized to emerging markets and possibly to other developed markets.

[7] Differences in factor sensitivities of calendar-time issuer and non-issuer portfolios are checked by creating interaction variables with the risk factors and the SEO dummy variable. It is found that factor sensitivities of these two portfolios are not significantly different from each other in all the factor models except for the one with the liquidity factor. When the market-wide liquidity factor is included in the models, the issuer portfolio has higher sensitivities to the market risk, the size factor and the liquidity factor compared to the non-issuer portfolio.

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Table I

Distribution of Rights Offerings over the Sample Period

Total number of rights offerings conducted during the sample period and rights offerings in each year during the sample period are reported in Panel A of this table. Panel B shows the frequency of repeat rights offerings within a 12 month time period for the full sample and the two subperiods.

Panel A: Number of rights offering in each year

Year	Number of Offerings	Subperiod Totals
1989	32	
1990	39	
1991	58	
1992	52	
1993	48	
1994	73	
1995	68	618
1996	46	
1997	45	
1998	46	
1999	40	
2000	40	
2001	31	
2002	34	
2003	18	
2004	19	
2005	17	
2006	11	
2007	9	186
2008	8	
2009	16	
2010	13	
2011	21	
2012	20	
2013	4	
Total	804	804

Panel B: Distribution of single and multiple rights offerings by the same firm within a 12-month period

Number of Offers within a 12-Month Period	Whole Period (1989 – 2013)	Subperiod 1 (1989 – 2001)	Subperiod 2 (2002 – 2012)
1	585	428	157
2	212	184	28
3	7	6	1
Total	804	618	186

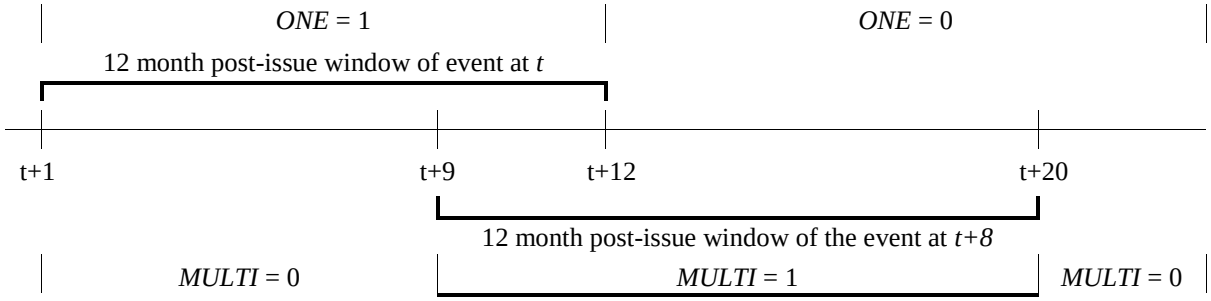

Figure 1. Fixed length windows. This figure describes the construction of the *ONE* and *MULTI* dummy variables. *ONE* has a value of 1 for the 12 months following the first rights offering of a firm. If the firm issues another rights offering within the 12 months of the previous rights offering, then *MULTI* is set to 1 for the following 12 months regardless of the lenght of the overlap between the 12-month post-issue periods of two consecutive offerings. This figure describes the construction of the two dummies when a firm has rights offerings in months *t* and *t+8*.

Table II
Descriptive Statistics

This table presents descriptive statistics on the characteristics of issuer and non-issuer firms for the whole sample period (1990-2013) and the two subperiods (1990-2001 and 2002-2013). *ONE* and *MULTI* are dummy variables that take a value of 1 for the firms with single and multiple rights offerings over a 12-month period, respectively. *CAPEX* is the capital expenditures divided by the total assets of the firm *i* at time *t*. *CASH* is the cash and marketable securities divided by total assets of firm *i* at time *t*. *DEBT* is the sum of short- and long-term debt divided by the total assets of the firm *i* at time *t*. *EBIT* is the operating income before depreciation divided by the total assets of the firm *i* at time *t*. *Q* is the Tobin's *Q* defined as total assets minus book value of equity plus market value of equity divided by total assets of firm *i* at time *t*. S*IZE* is the market value of the firm's equity calculated as the number of shares outstanding times the closing price at the end of month *t* for firm *i*. *BMV* is the book-to-market equity ratio for firm *i* at time *t*. The equality of the means of the firm characteristics in two subperiods is tested using the Student's t test. All firm characteristics are found to be significantly different between the two subperiods at the 1 percent significance level except for the *DEBT* variable which is significantly different at 5 percent. The figures in the table are percentages except for *Q* (measured as times) and *SIZE* (measured in Turkish Liras).

	Period	*ONE*	*MULTI*	*CAPEX*	*CASH*	*DEBT*	*EBIT*	*Q*	*SIZE*	*BMV*
Mean	Whole	75.15	27.40	40.67	5.01	22.83	13.10	1.7496	81,808,092	0.6466
	First	71.57	30.75	49.26	4.68	21.92	17.32	1.8705	38,307,184	0.6130
	Second	87.42	15.89	15.07	6.00	25.55	0.51	1.3357	230,750,000	0.7614
Standard Deviation	Whole	43.25	44.63	42.63	7.53	18.63	16.00	1.1192	334,353,285	0.5662
	First	45.15	46.19	40.14	6.80	18.21	15.20	1.1393	216,670,000	0.5827
	Second	33.28	36.68	39.57	9.35	19.65	10.97	0.9392	553,850,000	0.4902
Minimum	Whole	0.00	0.00	-91.26	0.00	0.00	-40.17	0.4550	1,418	0.0027
	First	0.00	0.00	-47.17	0.02	0.00	-40.17	0.4550	1,418	0.0035
	Second	0.00	0.00	-91.26	0.00	0.00	-39.23	0.5979	4,970,160	0.0027
Maximum	Whole	100.00	100.00	392.97	50.93	83.20	60.94	11.8040	4,054,369,236	3.9562
	First	100.00	100.00	392.97	43.33	83.20	60.94	11.8040	2,625,000,000	3.9562
	Second	100.00	100.00	278.44	50.93	78.11	40.24	11.6640	4,054,400,000	2.3806

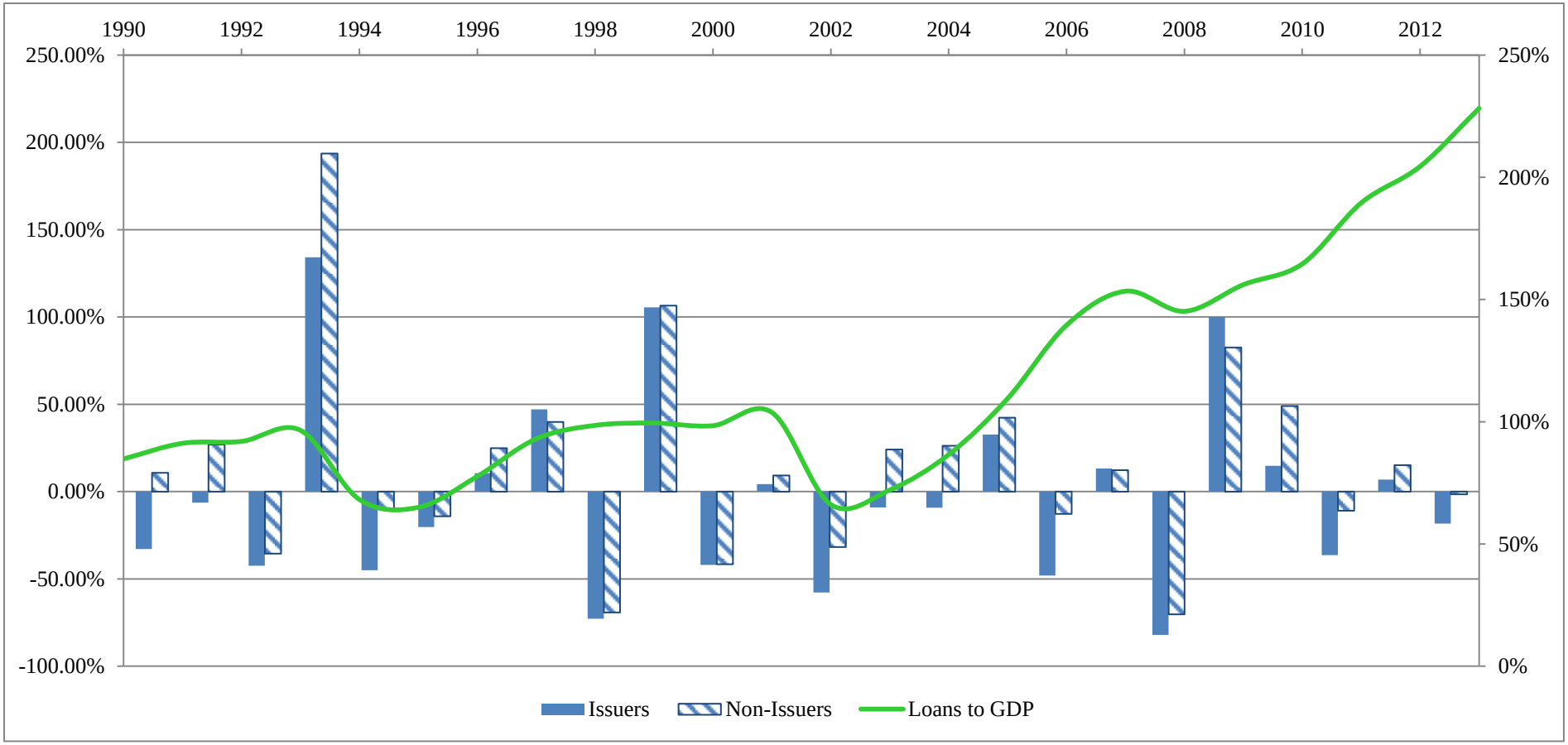

Figure 2. Long-run performance of issuer and non-issuer portfolios. This figure shows the annual performance of issuer and non-issuer portfolios over the period from January 1989 to June 2013. An issuer is a company that conducts a rights offering over the past 12 months. This firm is included in the issuer portfolio for the following 12 months. An issuer cannot be included in the non-issuer portfolio for the 25 months surrounding its rights offering date (12 months before the rights offering, the month of the rights offering and 12 months after the rights offering). These portfolios are rebalanced every month. The Loans-to-GDP variable is used as a proxy for the economy-wide borrowing constraint. This variable is calculated quarterly as the ratio of total loans given to the private sector by the Turkish banking system to the rolling annual gross domestic product (GDP). The left-hand-side axis represents portfolio returns and the right-hand-side axis represents the loans-to-GDP ratio.

Table III

Firm Characteristics Regressions

This table presents the OLS results for the monthly excess return of issuer firms on firm characteristics. R_{it} and R_{mt} are the month *t* returns on the issuing firm's stock and the market index, respectively. The model is estimated for the whole sample period (1990-2013) and for the two subperiods (1990-2001 and 2002-2013) in order to examine whether results are different when firms face more severe economy-wide borrowing constraints during the first subperiod:

$$R_{it} - R_{mt} = \alpha_0 + \beta_1 ONE_{it} + \beta_2 MULTI_{it} + \beta_3 CAPEX_{it} + \beta_4 Q_{it} + \beta_5 DEBT_{it} + \beta_7 EBIT_{it} + \beta_8 CASH_{it} + \beta_9 SIZE_{it} + \beta_{10} BMV_{it} + \varepsilon_{it}$$

ONE and *MULTI* are dummy variables that take a value of 1 for firms with single and multiple rights offerings over a 12-month period, respectively. *CAPEX* is capital expenditures divided by the total assets of firm *i* at time *t*. *CASH* is cash and marketable securities divided by total assets of firm *i* at time *t*. *DEBT* is the sum of short and long term debt divided by total assets of firm *i* at time *t*. *EBIT* is the operating income before depreciation divided by total assets of firm *i* at time *t*. *Q* is Tobin's *Q* defined as total assets minus book value of equity plus market value of equity divided by total assets for firm *i* at time *t*. *SIZE* is the natural logarithm of firm *i*'s equity value (number of shares outstanding times closing price) at the end of month *t* for firm *i*. *PERIOD 90-01* is a dummy variable that equals 1 for the first subperiod and 0 for the second subperiod. Numbers below the parameter estimates are the associated p values. The equality of performance for firms with one versus multiple issues during the whole period as well as the two subperiods is tested by using the F test. Numbers reported for the hypothesis tests are F statistics with their associated p values given below the statistic. Bold figures indicate significance at an alpha level of 10% or lower.

Panel A: OLS Results

	1990-2013	1990-2013	1990-2001	2002-2013
Intercept	**0.0201**	0.0089	**0.0901**	**-0.0277**
	0.0482	0.2809	<.0001	0.0257
PERIOD 90-01	**-0.0076**			
	0.0127			
ONE	**-0.0171**	**-0.0093**	-0.0054	**-0.0123**
	0.0008	0.0021	0.2447	0.0039
ONE×PERIOD 90-01	**0.0133**			
	0.0350			
MULTI	**-0.0362**	**-0.0091**	-0.0050	**-0.0290**
	0.0026	0.0608	0.4495	0.0038
MULTI×PERIOD 90-01	**0.0338**			
	0.0101			
CAPEX	**-0.0043**	**-0.0048**	**-0.0186**	-0.0011
	0.0389	0.0204	0.0014	0.5819
CASH	**-0.0310**	**-0.0292**	-0.0297	**-0.0411**
	0.0033	0.0055	0.2340	<.0001
DEBT	0.0014	0.0001	0.0137	-0.0051
	0.8035	0.9889	0.1968	0.3790
EBIT	**-0.0343**	**-0.0367**	**-0.0834**	-0.0052
	<.0001	<.0001	<.0001	0.5802
Q	**0.0094**	**0.0093**	**0.0061**	**0.0141**
	<.0001	<.0001	<.0001	<.0001
SIZE	-0.0003	0.0002	**-0.0030**	**0.0013**
	0.5853	0.6167	0.0007	0.0487
BMV	**-0.0208**	**-0.0198**	**-0.0519**	**-0.0075**
	<.0001	<.0001	<.0001	<.0001
OLS Adj R^2	1.68	1.65	1.93	2.39
Model F statistic	58.93	76.94	34.96	69.43
N	40,729	40,729	15,564	25,165

Table III - *Continued*

Panel B. Hypothesis Tests				
	1990-2013	1990-2013	1990-2001	2002-2013
Intercept + Period+ One + One×Period= 0	0.82			
	0.3639			
Intercept + Period+ Multi + Multi×Period= 0	**3.94**			
	0.0472			
Intercept + One = 0		0.00	**29.82**	**9.87**
		0.9631	<.0001	0.0017
Intercept + Multi = 0		0.00	**28.33**	**13.18**
		0.9795	<.0001	0.0003

Table IV

Calendar-Time Portfolio Regressions

This table presents factor regression results for calendar-time portfolios of issuers and non-issuers. Both portfolios are formed in a similar fashion to Fama and French (1993). The dependent variables in Panels A and B are the excess monthly returns on the equally-weighted portfolios of issuers and non-issuers, respectively. Portfolio formation period is from January 1989 to June 2012 and the return calculation period is from January 1990 to June 2013. Issuers (non-issuers) are those firms that have (not) made a rights offering during the 12 months preceding the return calculation month. Both portfolios are rebalanced monthly. R_f is the compound return on the 90-day Treasury security. R_m is the return on the *BIST-100* index. *SMB*, *HML*, *WML*, *INV* and *LIQ* are the small-minus-big, the high-minus-low, the winner-minus-loser, the investment and the liquidity factors, respectively. These factors are calculated as described in the text. Numbers below the coefficient estimates are p values. Bold figures indicate significance at an alpha level of 10% or lower.

Panel A. Equally-Weighted Issuer Portfolios

	Single-Factor	Three-Factor	Four-Factor	Four-Factor	Five-Factor	Six-Factor
Intercept	-0.0030	**-0.0067**	**-0.0087**	-0.0056	**-0.0087**	**-0.0125**
	0.5186	0.0582	0.0990	0.1178	0.0952	0.0440
$R_m - R_f$	**0.8943**	**0.9503**	**0.9515**	**0.9475**	**0.9493**	**0.9692**
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
SMB		**0.7379**	**0.7387**	**0.7398**	**0.7414**	**0.8354**
		<.0001	<.0001	<.0001	<.0001	<.0001
HML		**0.2893**	**0.2904**	**0.3107**	**0.3145**	**0.3003**
		<.0001	<.0001	<.0001	<.0001	<.0001
WML			0.0009		0.0015	0.0038
			0.6149		0.4125	0.1307
INV				**0.1658**	**0.1811**	**0.2968**
				0.1001	0.0777	0.0215
LIQ						**0.1129**
						0.0338
OLS Adj R^2	74.60	85.59	85.55	85.68	85.66	85.72
F statistic	808.85	545.33	407.94	412.26	329.55	228.17
N	276	276	276	276	276	228

Panel B. Equally-Weighted Non-Issuer Portfolios

	Single-Factor	Three-Factor	Four-Factor	Four-Factor	Five-Factor	Six-Factor
Intercept	**0.0111**	**0.0074**	0.0061	**0.0087**	0.0060	0.0038
	0.0033	0.0038	0.1037	0.0007	0.1034	0.3681
$R_m - R_f$	**0.8596**	**0.9043**	**0.9051**	**0.9010**	**0.9025**	**0.8742**
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
SMB		**0.6494**	**0.6499**	**0.6516**	**0.6530**	**0.6645**
		<.0001	<.0001	<.0001	<.0001	<.0001
HML		**0.3058**	**0.3065**	**0.3311**	**0.3343**	**0.3206**
		<.0001	<.0001	<.0001	<.0001	<.0001
WML			0.0006		0.0013	0.0007
			0.6469		0.3261	0.6712
INV				**0.1961**	**0.2092**	**0.2358**
				0.0063	0.0042	0.0071
LIQ						-0.0256
						0.4754
OLS Adj R^2	80.68	91.36	91.34	91.57	91.56	91.72
F statistic	1149.44	970.51	725.82	747.35	598.00	420.17
N	276	276	276	276	276	228

Table V

Pooled Regressions for Calendar-Time Portfolios

This table presents the pooled factor regression results for calendar-time portfolios of issuers and non-issuers. Both portfolios are formed in a similar fashion to Fama and French (1993). The dependent variable is the excess monthly returns on the equally-weighted portfolios of issuers and non-issuers. Portfolio formation period is from January 1989 to June 2012 and the return calculation period is from January 1990 to June 2013. Issuers (non-issuers) are those firms that have (not) made a rights offering during the 12 months preceding the return calculation month. Both portfolios are rebalanced monthly. R_f is the compound return on the 90-day Treasury security. R_m is the return on the *BIST-100* index. *SMB, HML, WML, INV* and *LIQ* are the small-minus-big, the high-minus-low, the winner-minus-loser, the investment and the liquidity factors, respectively. These factors are calculated as described in the text. *SEO* is a dummy variable that takes a value of 1 for the issuer portfolio and 0 otherwise. *SEO×PERIOD 90-01* is an interactive dummy variable. The equality of performance for issuer and non-issuer firms between the two subperiods is tested by using the F test. Numbers reported for the hypothesis tests are F statistics with their associated p values given below the statistic. Numbers below the coefficient estimates in the factor regressions are p values. Bold figures indicate significance at an alpha level of 10% or lower.

Equally-Weighted Issuer and Non-Issuer Portfolio Returns, 1990-2013

	Single-Factor	Three-Factor	Four-Factor	Four-Factor	Five-Factor	Six-Factor
Intercept	**0.0111**	**0.0074**	**0.0078**	**0.0087**	**0.0077**	0.0037
	0.0086	0.0156	0.0506	0.0048	0.0519	0.4287
SEO	**-0.0204**	**-0.0211**	**-0.0212**	**-0.0216**	**-0.0211**	**-0.0169**
	0.0055	<.0001	<.0001	<.0001	<.0001	0.0026
SEO×PERIOD 90-01	0.0125	**0.0138**	**0.0142**	**0.0149**	**0.0139**	**0.0130**
	0.1393	0.0234	0.0302	0.0144	0.0318	0.0762
$R_m - R_f$	**0.8773**	**0.9278**	**0.9276**	**0.9247**	**0.9252**	**0.9205**
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
SMB		**0.6945**	**0.6944**	**0.6968**	**0.6972**	**0.7511**
		<.0001	<.0001	<.0001	<.0001	<.0001
HML		**0.2973**	**0.2971**	**0.3217**	**0.3229**	**0.3093**
		<.0001	<.0001	<.0001	<.0001	<.0001
WML			-0.0002		0.0005	0.0011
			0.8824		0.6922	0.5266
INV				**0.1892**	**0.1935**	**0.2646**
				0.0022	0.0020	0.0007
LIQ						0.0460
						0.1533
OLS Adj R^2	77.48	88.34	88.31	88.51	88.50	88.22
Model F statistic	632.73	835.51	695.02	708.68	606.52	427.05
N	552	552	552	552	552	456
Hypothesis:						
SEO + SEO×Period = 0	1.04	1.88	1.71	1.65	1.79	0.38
	0.3075	0.1706	0.1921	0.1993	0.1810	0.5378