ABSTRACT:
I investigate the relation between the proportion of CEO’s Equity-Based Compensation (EBC) to the total compensation, as a proxy for the degree of alignment of interests of managers and existing shareholders, and abnormal returns of firms issuing SEOs. I find that firms with high proportion of CEO’s EBC to the total compensation would have more negative abnormal returns, ceteris paribus, which is consistent with prior literature. When I control for the effect of EBC, I do not find that implementation of Say-on-Pay rule has a positive impact on the stock performance of firms issuing SEOs.
1. Introduction

Seasoned equity offering (SEO) has been a very important channel for public firms to raise external capital during the past several decades. Prior studies have indicated that issuance of SEOs has significant negative impact on the stock performance of firms. Smith (1977) is the first to document significant underpricing for SEOs. Masulis and Korwar (1986) find that there exists negative price change on the stocks of firms immediately after issuing SEOs. Loughran and Ritter (1995) show that no matter for firms issuing an initial public offering (IPO) or a SEO, they significantly underperform in the stock returns relative to non-issuing firms for five years after the offering date. Spiess and Affleck-Graves (1995) document that firms making SEOs during 1975–1989 substantially underperform a sample of matched firms from the same industry and of similar size that do not issue equity.

There are several theoretical explanations for the negative stock performance of firms after issuing SEOs. The most common explanation is regarding the adverse selection. Myers and Majluf (1984) show that issuance of SEOs conveys the negative information to the stock market. Since in the Myers and Majluf (1984) framework, the issuance of equity is secondary to issuance of debt, when managers have superior inside information vis-a-vis outside investors, SEO will give a negative signal to the market such that when outside investors buy stocks in SEO, they require a price discount.

The other explanation is market timing. Baker and Wurgler (2002) mention that firms are more likely to issue equity when their market values are high, relative to book and past market values. In a survey from 370 CFOs, Graham and Harvey (2001) find that recent stock price performance is the third most popular factor affecting equity-issuance decisions, in support of the “window of opportunity”, which means the recent rise in stock price. As mentioned in the first explanation, there exists information asymmetry between insiders and outsiders such that the managers will take advantage of superior inside information and issue common stocks when stock prices are overvalued.
In the framework of Myers and Majluf (1984), the basic assumption is that managers maximize the benefits of existing or the “old” shareholders. However, the more reasonable assumption may be that there exists some degree of alignment of interests between managers and existing shareholders. Shleifer and Vishny (1988) indicate that if executives are paid with higher proportion of equity-based compensation (EBC) to total compensation, they are less likely to have managerial decisions that are non-value maximizing, because such actions would reduce their personal wealth as well. Due to this argument, the proportion of EBC to total compensation can be a proxy for degree of alignment of interests between managers and existing shareholders.

Datta et al. (2005) are the first to identify an association between EBC and the stock abnormal returns of firms following SEOs. They extend the framework of Myers and Majluf (1984) and assume that there exists some degree of alignment of interests between managers and existing shareholders, and they find that SEOs will incur more negative abnormal returns for firms whose executives have higher proportion of EBC to total compensation, ceteris paribus. They also mention the concept of value gap, meaning the difference between the offer price and intrinsic value of stock price, and the existence of value gap would help both existing shareholders as well as managers with equity ownership extract the benefits of new shareholders when firms issue stocks. Therefore, they argue that high proportion of EBC to total compensation as a proxy for high degree of alignment of interests between managers and existing shareholders would signal a large value gap when firms issue SEOs such that market would respond more negatively.

Brazel and Webb (2006) find similar results vis-à-vis those in Datta et al. (2005), but they propose another explanation behind the link between EBC and underpricing of SEOs. They argue that as CEO’s proportion of EBC to total compensation increases, investors are more likely to view SEO announcement as the last resort source of capital. This ‘last resort’ signal causes investors to be more concerned about a firm’s financial condition such that market would respond more negatively to the announcement of SEOs. Here, proportion of
EBC to total compensation is still a proxy for the degree of alignment of benefits between managers and existing shareholders. As Pecking Order Theory indicates, internal cash holdings are preferred to issuance of debt, and issuance of debt is preferred to issuance of stock when firms need capital. If managers’ wealth is more aligned with existing shareholders’ wealth, they are more reluctant to issue stocks if necessary. If they prefer to issue stocks, this action would jeopardize their wealth and signal the market that firm may not have good financial condition such that SEOs would incur more underpricing.

In order to tighten the regulation on public firms and financial institutions to protect US economy from being subject to the later potential financial crisis similar to that in 2008, US president Obama signed Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) into law in July 2010. Dodd-Frank Act consists of a bunch of rules targeting towards various financial institutions and public firms to protect US economy from being exposed to large systematic risk. Among the rules in Dodd-Frank Act, there are several rules aimed at improving the corporate governance of US public firms. One of them is named Say-on-Pay (SOP) rule, which was implemented on Jan. 25, 2011. The rule amendments implement Section 951 of the Dodd-Frank Act, which added Section 14A to the Exchange Act. This statute requires public companies subject to the federal proxy rules to provide their shareholders with an advisory vote on executive compensation. SOP votes must be held at least once every three years. Although SOP rule is non-bonding, meaning that shareholders’ voting on CEO compensation does not have a direct impact on the outcome of CEO compensation, this rule may still help improve public firms’ corporate governance and curb the fast growth of CEO compensation during the recent decade.

In this paper, I adopt the analysis framework in the previous literature regarding the association between EBC and SEOs and investigate whether the SOP rule can actually help improve the corporate governance of public firms when controlling for the effect of EBC. Kim and Purnanandam (2014) find that weak corporate governance is a primary reason investors respond negatively to the announcement of SEOs. They use the passage of enactment of
business combination statutes (BCS) in some states as a proxy for poor corporate governance and find that firms in states that pass BCS would have more negative abnormal returns following the SEOs, ceteris paribus. SOP rule is aimed at curbing the fast growth of CEO compensation and improving the corporate governance of US public firms. If the implementation of SOP can really help improve the corporate governance, we may anticipate less negative abnormal returns of firms in SEOs following the implementation date of SOP rule vis-a-vis that before the implementation date.

In this paper, I find that firms with high proportion of CEO’s EBC to the total compensation have equally weighted mean cumulative abnormal return (CARs) of -2.25% in SEOs and that firms with low proportion of CEO’s EBC to the total compensation have equally weighted mean CARs of -2.06% in SEOs by using (0,+1) event window. Both of these two mean CARs are statistically significant at 1% level, and the mean difference of these two subsamples is statistically significant at 1% level as well. These results are consistent with the findings in Datta et al. (2005) as well as Brazel and Webb (2006). In order to mitigate the potential effects caused by the financial crisis in 2008, I also do the subsample event study with the exclusion of three years’ data, namely, 2007, 2008, and 2009. The results remain nearly the same. Firms with high proportion of CEO’s EBC to the total compensation would have more negative abnormal returns in the issuance of SEOs vis-a-vis firms with low proportion of CEO’s EBC to the total compensation.

Moreover, I use panel regression with firms’ abnormal returns as the dependent variable and the factor regarding the proportion of CEO’s EBC to the total compensation to investigate whether proportion of CEO’s EBC to the total compensation can have explanatory power on the abnormal returns. Specifically, I set a dummy variable equal to 1 if the proportion of CEO’s EBC to the total compensation is more than the median of the proportion of CEO’s EBC to the total compensation and 0 otherwise in the sample. In order to control for the time varying characteristics in the sample, I use a time fixed effect in the regression. I also use the firm fixed effect to control for the potential firm specific characteristics. Following the
previous literature (Corwin, 2003; Kim and Park, 2005; Bowen et al., 2008), I put several control variables such as the logarithm of total assets and logarithm of offer size, measured by proceeds from the SEOs, as explanatory variables in the panel regression. The baseline result indicates that firms with high proportion of CEO’s EBC to the total compensation would have more CARs in the issuance of SEOs vis-a-vis firms with low proportion of CEO’s EBC to the total compensation, which is consistent with previous result in the event study.

Furthermore, I use the event study to identify whether the implementation of SOP rule can actually help improve the corporate governance of public firms and then improve the stock performance of these firms issuing SEOs. However, no matter I use the full sample or the subsample with the exclusion of three years’ data in the financial crisis, namely, 2007, 2008, and 2009, I find that event study indicates firms actually perform even worse after the implementation of SOP rule compared to before. In the regression analysis, I put the interaction term of EBC factor and a dummy variable to capture whether the SEO is before and after the implementation of SOP rule. The result indicates that the implementation of SOP seems to have a negative impact on abnormal returns of firms issuing SEOs after controlling for the EBC effect, although the coefficient of the interaction term is not statistically significant.

My study contributes to the literature on the relation between the CEO compensation structure and abnormal returns of SEOs. Datta et al. (2005) and Brazel and Webb (2006) both find that higher proportion of executives’ EBC to the total compensation is associated with more negative abnormal returns. My study corroborates their findings. The event study result indicates that firms with higher proportion of CEO’s EBC to the total compensation would yield lower CARs vis-a-vis firms with low proportion of CEO’s EBC to the total compensation in SEOs, which is consistent with findings of Datta et al. (2005) and Brazel and Webb (2006).

My study also contributes to the literature regarding the impact of SOP rule on firm behaviors. To my best understanding, this paper is the first paper in the finance literature to analyze the impact of implementation of SOP rule on firm’s SEOs. The SOP rule was firstly
implemented in UK in 2002. Afterwards, more and more countries begin to adopt this rule. Accordingly, there are also some debates regarding the benefits and costs of this rule. There is no doubt that the objective of the rule is to help create a value enhancing monitoring mechanism in which shareholders have a say on the executive compensation, although their opinions are not binding.

Ferri and Maber (2013) investigate the impact of implementation of SOP rule on stock price reaction in UK, and they find that shareholders regard this rule as a value enhancing mechanism and that regulation’s announcement triggers a positive stock price reaction at firms with weak penalties. Besides, Bebchuk (2007) finds that shareholder franchise provides a mechanism for ensuring that directors are well chosen and have incentives to serve shareholder interests once chosen, supporting the argument of benefits of SOP rule. Kimbro and Xu (2016) indicate that Firms with high SOP approval have better performance and returns, higher CEO ownership, lower institutional ownership, lower CEO compensation, lower return volatility, and better accounting quality than do firms with high SOP dissent, providing evidence that SOP rule could be an effective mechanism of corporate governance. Thomas et al. (2012) indicate to a growing role for shareholders in influencing executive pay practices and more generally corporate governance.

However, critics argue that SOP rule will make directors pander to ill-informed shareholders such that it eventually results in the adoption of sub-optimal executive compensation policy. Cai and Walkling (2011) suggest that SOP rule creates value for companies with inefficient compensation but can destroy value for others. In this paper, I find there is a negative association between the implementation of SOP rule and the firm value characterized by the cumulative abnormal returns of firm issuing SEOs after controlling for the effect of CEO’s EBC, although the effect is not statistically significant. This may indicate that SOP rule may not be that effective in the improvement of corporate governance as previously anticipated by many people. The most sensible reason may be that SOP rule is not binding. Even though shareholders can vote against the policy of CEO’s compensation, the
results do not have direct real effect. However, since SOP rule has been implemented for only several years, more academic work remains to be done regarding the benefits and costs of the SOP rule.

The remainder of the paper is organized as follows. Section 2 describes the data and sample selection and provides the summary statistics. Section 3 proposes the hypotheses I want to test in this paper. Section 4 explains the methodology and indicates the empirical results. Section 5 summarizes the main findings and their implications.

2. Sample and Descriptive Statistics

2.1 Sample Construction

The initial SEO sample is collected from Securities Data Company’s (SDC) Global New Issues Database. The period of SEO sample spans from January 2006 through March 2016. Following the previous literature regarding the selection criteria of SEOs (Cohen and Zarowin, 2010; Karpoff et al., 2013; Corwin, 2003; Gao and Ritter, 2010), I select the SEO data based on the criteria as follows. Firstly, I require SEOs to be underwritten public offers of common stock by US corporations listed on NYSE, Nasdaq, or Amex. Secondly, I exclude standbys, American depositary receipts (ADRs), closed-end funds, unit investment trusts, real estate investment trust (REITs), and SEOs with offer prices less than $5. These exclusions yield a sample of 4,631 SEOs. I obtain the CEO compensation data from ExecuComp database in WRDS. The accounting and financial variables are collected from Compustat database. After merging these three datasets, there are a total of 946 SEOs from 2006 to 2015 in the final sample.

2.2 Measure of CEO’s equity-based compensation (EBC)

Following Brazel and Webb (2006), I use the CEO’s option awards as the measure of CEO’s equity-based compensation (EBC). I obtain value of option awards directly from ExecuComp. In ExecuComp, option awards are evaluated based on Black-Scholes methodology before FAS 123R or fiscal year 2006 and based on grant-date fair value after 123R or from the
fiscal year 2006 (Cheng et al., 2015; Humphery-Jenner et al., 2016). Since my sample is from 2006 to 2015, option awards I use are all based on the grant-date fair value after 123R.

2.3 Descriptive Statistics

Table 1 presents the time series statistics of issue size and firm size of SEOs by calendar year in the sample. In terms of the firm size of firms issuing SEOs in the sample, there is no general trend. Gustafson and Iliev (2015) find that the deregulation in 2008 regarding the easiness of public issuance makes small firms more likely to issue public equity rather than issuing private placement. However, in my sample, there is no such trend in the sample. The reason may be that in the sample selection, I exclude the SEOs with less than 3 dollars, a process that may have already excluded most of the small firms. The mean asset size in the sample period is 59,865.11 million, while the median asset size of firms in the sample is only 3,069.20 million, indicating that the asset size in the sample is highly positively skewed. In 2008, 2009, and 2010, mean values of asset size of the firms issuing SEOs are noticeably higher than those in other years in the sample. This may indicate that in the periods around the financial crisis, large firms had more flexibility to issue equity in the stock market.

In terms of the issue size or the proceeds from the SEOs, mean and median are very close for most of the years in the sample, ranging from 180 to 260 million. The only exception...
is in 2015, which is due to the small sample, since we have only 7 observations in 2015 in the sample. The reason causing small sample in 2015 is that Compustat database will not finish all the updates of 2015 data until July 2016.

It is surprising to see that the largest number of SEOs in the sample occurred in 2009. The reason may be that based on the NBER Business Cycle (http://www.nber.org/cycles.html), the trough of financial crisis was in June 2009, and since June 2009, the whole economy has been in a upward trend such that more firms seek to raise capital in the stock market to fund their potential investment opportunities.

### 3. Hypothesis Development

Hypothesis 1. *Firms with high proportion of CEO's EBC to total compensation will have more negative abnormal returns in SEOs vis-a-vis firms with low proportion of CEO’s EBC to the total compensation.*

Datta et al. (2005) relax the assumption of Myers and Majluf (1984) that managers act in the best of existing shareholders' interests, and they assume that there exists some degree of alignment of interests between managers and existing shareholders. They argue that there exists the value gap between the firms' intrinsic stock price and the offer price accepted by the market in the SEOs, due to the information advantage of managers as insiders over investors as outsiders. When the value gap is large, managers are more likely to issue equities in order to take advantage of the value gap provided that their own interests are more aligned with existing shareholders. The reason is that if their interests are more aligned with existing shareholders, the benefits of issuance of equity would be also more enjoyed by themselves. Thus, market would react more negatively to the issuance of SEOs for the firms with higher degree of alignment of interests between managers and existing shareholders, because market thinks that managers and existing shareholders would be more likely to take advantage of the information asymmetry in SEOs. In the paper Datta et al. (2005), the authors use the proportion of executives’ EBC to the total compensation as a proxy for the degree of alignment
of managers’ interests and existing shareholders’ interests. Therefore, they argue that compared to firms with low proportion of executives’ EBC to total compensation, firms with high proportion of executives’ EBC to total compensation would have more negative abnormal returns around the issuance date in SEOs, ceteris paribus.

Another theoretical explanation regarding the relation between the degree of alignment of interests of managers and of existing shareholders is from Brazel and Webb (2006). They argue that issuance of equity is the “last resort” for managers to fund the capital for different purposes. There has been a large body of literature investigating the negative abnormal returns following SEO, thus managers know that SEO would signal the market that their corporations might have some financial constraints, liquidity issues, etc. As long as there exists some degree of alignment of interests between managers and existing shareholders, managers are not willing to issue equity if they can raise capital internally through cash holdings or issue the corporate debt in the bond market. This argument is consistent with the modified Pecking Order Theory proposed in Myers (1984), who uses the information asymmetry to attach a theoretical underpinning to the well-known Pecking Order Theory. If managers generally are not willing to issue equity but they still do that, which can be regarded as the last resort for funding capital. This choice of raising capital would be a very bad signaling to the market such that market would react very negatively to SEOs, and the higher degree of alignment of interests of managers and shareholders a firm has, the more negatively market would react to this firm’s SEO.

In sum, no matter for which theoretical explanations we use, firms with high proportion of CEO’s EBC to total compensation would have more negative abnormal returns around the issuance date of their SEOs, ceteris paribus. Following Datta et al. (2005) and Brazel and Webb (2006), I use the proportion of CEO’s EBC to the total compensation as a proxy for the degree of alignment of interests between managers and existing shareholders. Therefore, I hypothesize that firms with high proportion of CEO’s EBC to total compensation will have
more negative abnormal returns in SEOs vis-a-vis firms with low proportion of CEO’s EBC to the total compensation.

Hypothesis 2. *Firms would not have better stock performance in SEOs following the implementation of SOP rule compared to before.*

As mentioned earlier, SOP rule was firstly implemented in UK in 2002. Afterwards, more and more countries begin to adopt this rule. Since the adoption of SOP rule, there always have been some debates regarding the benefits and costs of this rule. SOP is aimed at improving the corporate governance of firms regarding CEO compensation such that the improvement of corporate governance would be embedded in the stock performance of these firms after the implementation of SOP rule if implementation of SOP rule can really improve the corporate governance. Kim et al. (2013) finds that there is a positive relation between corporate governance and stock performance in SEOs. Therefore, if the improvement of corporate governance holds, firms would have better stock performance in SEOs following the implementation of SOP rule. However, as mentioned earlier, since shareholders’ voting rights are not binding, meaning that their results would not have the real effect on firms’ policy of CEO compensation, I hypothesize that SOP rule would not have real effect on the stock performance of firms in SEOs after the implementation of this rule.

4. **Empirical Design and Results**

4.1 *Event study regarding the abnormal returns of SEOs for firms with high and low CEO’s EBC to total compensation*

A large body of literature has found that firms would underperform in stock market following the SEOs (Smith, 1977; Masulis and Korwor, 1986; Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995; Corwin, 2003). There is also a body of literature covering event study methodology used to analyze the impact of corporate specific events on the stock performance (MacKinlay, 1997; Kothari and Warner, 2008; Ahern, 2009). As mentioned
earlier, there are two theoretical arguments regarding the relation between proportion of CEO's EBC to the total compensation, as a proxy for the degree of alignment of interests of managers and existing shareholders, and underperformance of firms issuing SEOs. Both these two arguments indicate that firms with high proportion of CEO’s EBC to total compensation would have more negative abnormal returns vis-a-vis the firms with low proportion of CEO’s EBC to total compensation.

In order to empirically test whether these arguments can hold or not, I set up a cut-off of the proportion of CEO’s EBC to total compensation, which is the median of this proportion, to classify all the observations in the sample into two categories. One category has all the firms with the proportion of CEO’s EBC to total compensation above the median, indicating that this group has higher degree of alignment of interests of managers and existing shareholders. In contrast, the other category has all the firms with the proportion of CEO’s EBC to total compensation equal to or below the median, indicating that this group has lower degree of alignment of interests of managers and existing shareholders.

Table 2 presents of event study results of abnormal returns of SEOs for firms with high and low proportion of CEO’s EBC. The two commonly used empirical asset pricing models for event study are the Fama and French Three Factor Model and CAPM or Market Model in event study. Fama and French (1992; 1993) show that their three-factor model has better explanatory power on the cross section of stock return. Thus, in this paper, I use the Fama French Three Factor Model to do the event study. The event window I choose is (0,+1). When calculating the mean cumulative abnormal return, I use both equally weighted returns and value weighted returns. Panel A presents the abnormal returns of firms with high proportion of CEO’s EBC to total compensation and firms with low proportion of CEO’s EBC to total compensation in the issuance of SEOs with the event window (0,+1) in the full sample. For the firms with low proportion of CEO’s EBC to total compensation in SEOs, their equally weighted and value weighted mean cumulative abnormal returns (CARs) are -2.06% and -2.07%, which are pretty close to each other. For the firms with high proportion of CEO’s EBC
to total compensation in SEOs, their equal weighted and value weighted mean cumulative abnormal returns (CARs) are -2.25% and -2.20%, which are also pretty close to each other.

Table 2

<table>
<thead>
<tr>
<th>Panel A (full sample)</th>
<th>Abnormal Returns of SEOs for firms with high and low CEO’s EBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event Window (0, +1)</td>
<td>Mean Cumulative Abnormal Return Standard Error Obs</td>
</tr>
<tr>
<td>Low EBC (EW)</td>
<td>-2.06%*** 0.22% 506</td>
</tr>
<tr>
<td>Low EBC (VW)</td>
<td>-2.07%*** 0.22% 506</td>
</tr>
</tbody>
</table>

| Panel B (exclude periods in Financial Crisis) |
| Event Window (0, +1)  | Mean Cumulative Abnormal Return Standard Error Obs | Mean Cumulative Abnormal Return Standard Error Obs | Mean Difference | Z-statistics of mean difference |
| Low EBC (EW)          | -1.81%*** 0.22% 322 | High EBC (EW) | -1.90%*** 0.26% 251 | -0.09%*** -4.421 |
| Low EBC (VW)          | -1.88%*** 0.22% 322 | High EBC (VW) | -1.93%*** 0.26% 251 | -0.05%*** -2.471 |

Note: “EW” means equally weighted, and “VW” means value weighted. *, **, and *** indicate the significance in 10%, 5%, and 1% level respectively.

These results indicate that firms with high proportion of EBC to total compensation would have both more negative equally weighted and more value weighted abnormal returns following the SEOs, which is consistent with the Hypothesis 1. The difference of mean equally weighted and value weighted CARs are -0.19% and -0.13%, and they are both statistically significant at 1% level. These results are also consistent with the theoretical arguments proposed by Datta et al. (2005) and Brazel and Webb (2006).

Since financial crisis had a huge negative impact on the macro economy and aggregate supply and demand of firms in the market and firms also had huge frictions at that time that prevented them from raising capital in the stock market, in order to mitigate the potential impact caused by the financial crisis, I use the subsample which excludes year 2007, 2008, and
2009 in the sample to do the same event study analysis. When excluding 3 years’ data during the financial crisis, I find that the mean CARs in the subsample actually decrease compared to those in the full sample. However, event study results still hold when we exclude the 3 years’ data during the financial crisis. The equally weighted and value weighted mean CARs of firms with low proportion of EBC to total compensation are both lower than those of firms with high proportion of EBC to total compensation accordingly. The difference of both equally weighted and value weighted mean CARs are -0.09% and -0.05%, which are both statistically significant at 1% level, although the power of significance decreases compared to that in the full sample. In sum, the results of event study indicate that firms with high proportion of high CEO’s EBC to the total compensation would have more negative abnormal returns than those with low proportion of CEO’s EBC to the total compensation.

4.2 Regression analysis regarding the relation between proportion of CEO’s EBC to the total compensation and the corresponding firms’ abnormal returns in SEOs

The event study results have shown that firms with high proportion of CEO’s EBC to the total compensation would have more negative abnormal returns in SEOs compared to those with low proportion of CEO’s EBC to the total compensation. In this section, I use the multiregression analysis to analyze the impact of proportion of CEO’s EBC to total compensation on the abnormal returns of the corresponding firms in SEOs. Specifically, I use the panel regression to analyze the impact of proportion of CEO’s EBC to total compensation on the abnormal stock returns of firms in SEOs. Following the previous literature, I include several control variables in the regression (Corwin, 2003; Kim and Park, 2005; Bowen et al., 2008). In order to mitigate the firm specific and time effects, I also include the firm fixed effects and year fixed effects in the regression. The model is shown as follows:

\[ CAR_{i,t} = \beta_0 + \beta_1 \cdot EBC_{i,t} + \beta_2 \cdot X_{i,t} + \theta \cdot Year_t + \delta \cdot Firm_i + \varepsilon_{i,t} \] (1)

where the dependent variable is the mean CARs in the sample. \(EBC_{i,t}\) is a dummy variable, and I require this variable should be equal to 1 if the proportion of CEO’s
EBC to the total compensation is greater than the median and 0 otherwise. $X_{i,t}$ are the control variables in the regression. $Year_t$ is the time fixed effect, and $Firm_{i}$ is the firm fixed effect.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Model 1 (Full sample)</th>
<th>Model 2 (Exclude Financial Crisis)</th>
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<tr>
<td>Intercept</td>
<td>0.604***</td>
<td>0.803***</td>
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<td></td>
<td>(3.07)</td>
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<td>-0.114***</td>
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<td></td>
<td>(-2.77)</td>
<td>(-3.24)</td>
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<td>Yes</td>
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<tr>
<td>R-squared</td>
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<tr>
<td>N</td>
<td>835</td>
<td>501</td>
</tr>
</tbody>
</table>

Note: “*”, “**”, and “***” indicate the significance in 10%, 5%, and 1% level respectively.

Table 3 presents the multi regression results. Model 1 presents the result in the full sample, while model 2 excludes three years’ data in financial crisis, namely, 2007, 2008, and 2009. Two control variables I use are the logarithm of total assets, a proxy for the firm size, and logarithm of the proceeds of SEOs. Model 1 indicates that high proportion of CEO’s EBC to the total compensation is negatively associated with the abnormal returns of firms issuing SEOs, ceteris paribus. This result indicates that firms with high proportion of EBC to the total compensation would have more negative abnormal returns in SEOs vis-à-vis those with low proportion of CEO’s EBC to total compensation. Although this result is not significant in the full sample, the sign of the coefficient is consistent with the previous event study results and the theoretical arguments in Datta et al. (2005) and also Brazel and Webb (2006). Model 1 also indicates that the impact of raw proceeds of SEOs on the firms’ stock performance is weak. Moreover, size has negative impact on the abnormal returns of SEOs, and the coefficient is statistically significant at 1% level, which is consistent with empirical asset pricing study.
Model 2 uses the same regression model except I exclude the three years’ data in the financial crisis, namely, 2007, 2008, and 2009. The effect of size is still negative and statistically significant at 1% level. In this subsample analysis, the negative impact of proportion of EBC to the total compensation on the abnormal returns of firms issuing CEO becomes stronger and statistically significant. The difference may be attributed to the argument that part of the effect of proportion of EBC to total compensation in the full sample analysis is driven by the time fixed effect of the financial crisis, since financial crisis had a huge impact on the aggregate demand and supply of all firms in the market. The effect of proceeds of SEOs is mixed in Model 1 and Model 2, but they are both insignificant. In sum, the multiregression results indicate that there is a negative relation between the proportion of CEO’s EBC to the total compensation and abnormal returns of firms issuing SEOs when controlling for other variables.

4.3 Event study regarding the abnormal returns of firms issuing SEOs before and after the implementation of SOP rule.

The implementation of SOP rule is aimed at allowing shareholders to have a say on the CEO’s compensation policy, although this kind of voting right is not binding. Regarding the benefits and drawbacks of SOP rule, there has been a large debate both in the academia and in practical world. However, since the implementation of SOP rule in UK, which is the first country ever to put forward this policy, there have been more and more countries adopting this kind of policy, despite the fact that different countries implement this policy with different forms. On January 25, 2011, as one of the rules in Dodd-Frank Act, SOP of US edition has been approved by the SEC, and this date marks the official implementation of SOP rule in the US. Similar to the SOP policies in other countries, SOP rule in the US is also non-binding, meaning that shareholders’ voting results would not influence of implementation of CEO’s compensation policy, even though 98% of all the shareholders vote against the policy of CEO’s compensation in shareholders’ meeting.
As long as this SOP rule is non-binding, I doubt that the implementation of this rule can have the real effect on improving the corporate governance of firms getting involved in this policy. Table 4 presents the event study result regarding the abnormal returns of firms issuing SEOs before and after the implementation of SOP rule.

Table 4

| Panel A (full sample) |  |  |  |  |  |  |
|-----------------------|----------------|--------|-------|----------------|--------|-------|----------------|
|                       | Event Window   | Mean Cumulative Abnormal Return | Standard Error | Obs | Mean Cumulative Abnormal Return | Standard Error | Obs | Mean Difference | Z-statistic of difference |
| Before SOP (EW)       | (0, +1)       | -2.03% | 0.23% | 610 | -2.36% | 0.17% | 346 | -0.33%*** | -35.667 |
| Before SOP (EW)       | (0, +1)       | -1.98% | 0.23% | 610 | -2.39% | 0.17% | 346 | -0.41%*** | -45.087 |

| Panel B (exclude periods in Financial Crisis) |  |  |  |  |  |  |
|-----------------------------------------------|----------------|--------|-------|----------------|--------|-------|----------------|
|                                               | Event Window   | Mean Cumulative Abnormal Return | Standard Error | Obs | Mean Cumulative Abnormal Return | Standard Error | Obs | Mean Difference | Z-statistic of difference |
| Before SOP (EW)                               | (0, +1)       | -1.08% | 0.31% | 227 | -2.36% | 0.17% | 346 | -1.28%*** | -56.122 |
| Before SOP (VW)                               | (0, +1)       | -1.16% | 0.32% | 227 | -2.39% | 0.17% | 346 | -1.23%*** | -53.008 |

Note: “EW” means equally weighted, and “VW” means value weighted. ***,*** indicate the significance in 10%, 5%, and 1% level respectively.

Panel A presents the event study result in the full sample. It is surprising that the mean cumulative abnormal returns of firms issuing SEOs after the implementation of SOP rule are even worse vis-a-vis those before the implementation of rule. The equally weighted and value weighted mean CARs of firms before the implementation of rule are -2.03% and -1.98%, respectively, while the mean CARs of firms after the implementation of the rule are -2.36% and -2.39% respectively. These two difference of mean CARs are also statistically significant.
in 1% level. It seems that after the implementation of SOP rule, the performance of SEOs in general becomes even worse rather than better than before.

One of the possible reasons may be due to the aggregate effect caused by the financial crisis, which had tremendous impact on all the firms in the stock market. In order to mitigate the effect caused by the financial crisis, I also do the event study with the exclusion of three years’ data associated with the financial crisis, namely, 2007, 2008, and 2009. Panel B presents the results with the exclusion of three years’ data in the sample. Since the implementation date of SOP is January 25, 2011, the exclusion does not influence the results of abnormal returns of firms issuing SEOs after the implementation date. The disparity of abnormal returns of firms issuing SEOs before and after the implementation of SOP rule becomes even more negative, indicating that after removing the potential effect of financial crisis, the abnormal returns of firms issuing SEO after implementation of SOP rule become even worse. The differences of both equally weighted and value weighted mean CARs are -1.28% and -1.23%, which are also statistically significant in 1% level. In sum, the event study results indicate that the firms issuing SEOs following the implementation of SOP rule seem to have worse abnormal returns compared to those before the implementation of SOP rule. However, the event study results tend to be descriptive. In the next section, I use the regression analysis to check whether the results still hold.

4.4 Regression analysis regarding the relation between the implementation of SOP rule and the abnormal returns of firms in SEOs

In the previous section, I have shown that there is a negative relation between the proportion of CEO’s EBC to total compensation and the abnormal returns of firms issuing SEOs. In this section, I seek to investigate the impact of implementation of SOP rule on the abnormal returns of firms issuing SEOs when controlling the effect the proportion of CEO’s EBC to total compensation and several other variables. The regression model is shown as follows:
\[ CAR_{i,t} = \beta_0 + \beta_1 \times EBCdummy_{i,t} + \beta_2 \times EBCdummy_{i,t} \times SOPdummy_{i,t} + \beta_3 \times X_{i,t} + \theta \times Year_{t} + \delta \times Firm_i + \varepsilon_{i,t} \] (2)

where the dependent variable is the mean CARs in the sample. \( EBCdummy_{i,t} \) is a dummy variable, and I require this variable should be equal to 1 if the proportion of CEO’s EBC to the total compensation is greater than the median and 0 otherwise. \( SOPdummy_{i,t} \) is also a dummy variable, and I require that this variable should be equal to 1 if the issuing date is after the implementation of SOP rule, which is January 25, 2011 and 0 otherwise. In the model, I use the interaction term \( EBCdummy_{i,t} \times SOPdummy_{i,t} \) to capture the effect of implementation of SOP rule when controlling for the proportion of EBC to CEO compensation. \( X_{i,t} \) are the control variables in the regression. \( Year_t \) is the time fixed effect, and \( Firm_i \) is the firm fixed effect.

<table>
<thead>
<tr>
<th>Table 5</th>
</tr>
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<tbody>
<tr>
<td><strong>Model 1 (Full sample)</strong></td>
</tr>
<tr>
<td>Intercept</td>
</tr>
<tr>
<td>(3.11)</td>
</tr>
<tr>
<td>EBCdummy</td>
</tr>
<tr>
<td>(-0.4)</td>
</tr>
<tr>
<td>EBCdummy * SOPdummy</td>
</tr>
<tr>
<td>(-0.69)</td>
</tr>
<tr>
<td>ln.offer</td>
</tr>
<tr>
<td>(-1.08)</td>
</tr>
<tr>
<td>ln.at</td>
</tr>
<tr>
<td>(-2.84)</td>
</tr>
<tr>
<td>firm and year fixed effects</td>
</tr>
<tr>
<td>R-squared</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

Note: "***", "**", and "*" indicate the significance in 10%, 5%, and 1% level respectively.

Table 5 presents the regression results with the interaction term \( EBCdummy_{i,t} \times SOPdummy_{i,t} \) included. In order to detect the impact of implementation date of SOP rule on the abnormal returns issuing SEOs, I use the interaction term \( EBCdummy_{i,t} \times SOPdummy_{i,t} \)
and control for $EBC_{dummy_{i,t}}$ and some other variables in the regression. Model 1 presents the result in the full sample, and it shows that controlling for the proportion of CEO’s EBC to total compensation, the implementation of SOP has a negative impact on the abnormal returns of firms issuing SEOs, ceteris paribus. The sign of coefficients is consistent with the event study results, but it is not statistically significant. The effect of firm size is still statistically significant after adding the interaction term, but the coefficient of proportion of CEO’s EBC to total compensation becomes insignificant. The reason may be that this effect has been partly absorbed by the interaction term.

In order to mitigate the potential time effects caused by the financial crisis, I also do a subsample analysis. Model 2 presents the regression results of subsample analysis with the exclusion of three years’ data, namely, 2007, 2008, and 2009. No fundamental changes occur compared to the Model 1 with the full sample included. After controlling for the effect of proportion of CEO’s EBC to total compensation, the impact of implementation of SOP rule on the abnormal returns of firms issuing SEOs is still negative, indicating that the implementation of SOP would actually make firms issuing SEOs perform even worse, ceteris paribus, although the coefficients are not significant. In sum, it seems that the implementation of SOP fails to achieve its planned objective, which is the improvement of corporate governance. Because if the corporate governance in the market level improves as a whole, this impact may have already been embedded in the stock prices of firms issuing SEOs.

5. Conclusion

Since the implementation of SOP rule in UK in 2002, more and more countries seek to adopt this policy to give shareholders a say on the policy of CEO’s compensation. There have been a long time debate regarding whether this policy can have the real effect on the public firms, because in most of the countries adopting this policy, shareholders’ voting results are not binding. Because the rule is not binding, indicating that even though nearly 100% of shareholders vote against the policy of CEO’s compensation, the policy of CEO’s compensation
can still be implemented, many people in academia and in the practical world do not believe that this policy can have any real effect on the corporate governance of firms.

Since SOP rule is related to the CEO compensation, I also add the effect of proportion of EBC to the total compensation as a proxy for degree of alignment of managers and existing shareholders in the analysis. I find that the proportion of EBC to total compensation has a negative impact on abnormal returns of firms issuing SEOs, which is consistent with the previous literature. Then I control the effect of proportion of EBC to the total compensation to detect whether the implementation of SOP rule has the real effect on the abnormal returns of firms issuing SEOs. Unfortunately, I do not find any significant effect. The reason may be that SOP rule is not binding such that this rule cannot really have an impact on the decision making of public firms. Many more things remain to be done regarding whether SOP rule can have some real effects on the corporate governance and the stock performance in the future.
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