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The long-run performance of seasoned stock-warrant unit offerings

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Abstract

This paper investigates the long-run performance of unit offering firms in France. Studying the period 1991–2020, the empirical results show a low subsequent long-run stock performance and post-issue decline in operating performance over 3- and 5-year periods, suggesting that unit offering firms underperform in the long-run. Additional analyses on the intended use of the proceeds show that the underperformance in the long-run of unit seasoned offerings does not depend on the intended use of the proceeds, consistent with the rationale that unit offering firms were overvalued at issuing and experienced a pre-issuance run-up. Overall, the results are in accordance with the behavioral explanation.

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1. Introduction

In a frictionless market with no transaction costs and no impediments to financing, issuing units is irrelevant to the firm. The presence of market imperfections such as information asymmetries and contracting costs between insiders and outside investors can justify the issue of units. In this respect, Schultz (1993) suggests that the free cash flow problem advanced by Jensen (1986) can be mitigated by issuing units. Since unit offerings are a kind of sequential equity financing they can mitigate the agency costs of free cash flow such those related to investing excess cash in negative net present value projects. One of the advantages of warrants in unit offerings is the possibility to raise capital in the second stage if stock prices rise and the warrants are exercised before the expiration date. Thus, there is no need for the firm to issue stocks through seasoned equity offerings to complete their needed financing (Byoun, 2004).

Chemmanur and Fulghieri (1997) present a model of unit offering in the presence of asymmetric information where insiders of high quality firms include warrants, underprice the issue, and retain ownership to distinguish themselves from low-quality firms. The insiders choose optimally the proportion of retained equity, issuance price, and the number of warrants to be issued to minimize the signaling costs. Including warrants in the offering helps insiders reduce the underpricing of issue [1]. Prior studies on seasoned equity offerings (SEOs) report a poor long-run stock price performance for seasoned equity issuers compared to matched non-issuers. Studies on the US such as Loughran and Ritter (1995), Spiess and Affleck-Graves (1995) and Jegadeesh (2000) document a significant market underperformance over the 3- to 5-year period following a SEO. Similar evidence is reported by Levis (1995) for U.K. market, Cai and Loughran (1998) and Kang, Kim and Stulz (1999) for Japanese market, and Jeanneret (2005) for the French market. More recently, Chen, Chou and Lin (2019) show that firms conducting SEOs during high sentiment periods experience severe post-issue underperformance, compared to those conducting SEOs during low sentiment periods. Loughran and Ritter (1995) and Baker and Wurgler (2000) provide evidence that US-listed firms tend to issue equity prior to low returns at both the individual firm level and aggregate market level. In a subsequent paper, Baker and Wurgler (2002) present further evidence that leads them to conclude that market timing plays an important role in shaping the capital structure of firms.

[1] Welch (1989) and Allen and Faulhaber (1989) consistently suggest that high-quality firms underprice their IPO and can issue later at a higher price a subsequent seasoned offering.

Loughran and Ritter (1997) document a post-issue decline in operating performance and link it to low post-issue stock returns. They explain this pattern by the windows of opportunity framework as overvalued firms are more inclined to take advantage of the situation to issue equity. When these issuing firms experience a decline in operating performance post-issue, investors admit that the stock is still overvalued and adjust prices downward, hence reducing post-issue stock returns.

The literature offers the behavioral view of Loughran and Ritter (1995) as a potential explanation. This view considers that the issuing firms experience a pre-issuance run-up which makes investors overreact to recent trends in performance. The information conveyed by SEO announcements is then slowly incorporated in stock prices. Carlson, Fisher, and Giammarino (2006) use the real options approach to suggest the rational explanation as an alternative view. They consider that pre-issue run-up reflects growth options moving into the money, encouraging managers to issue equity and exercise growth options by investing into less risky assets-in-place. This investment-related interpretation suggests that lower stock return pattern in post-issue period translates changes in risk.

All these studies focus on common stock offering. However, there is little evidence concerning the long-run performance of unit offerings. To the best of our knowledge, there is only Byoun (2004), who examines the long-run performance of unit offering firms using U.S. data and documents that unit offering firms significantly underperform not only various benchmarks but also similar stock offering firms. This study contributes to the literature on long-run performance of issuers, especially unit seasoned offerings. First, this is the first work to investigate the long-run performance of unit seasoned offerings (USEOs) in the French stock market characterized by more concentrated ownership structure compared to the US. Second, as far as we know, no study has yet investigated the long-run operating performance of unit seasoned offerings. To fill this research gap, our study aims to also analyze the long-run operating performance of unit seasoned offerings. Finally, we study the long-term performance based on the intended use of proceeds to explain the rationale underlying this underperformance. If the rational explanation is valid, we would observe a significant underperformance only when the intended use of proceeds for unit seasoned offerings is investment in a specific project or acquisitions.

The empirical results show that unit seasoned equity offerings firms significantly underperform nonissuing size and book-to-market matching firms and industry portfolio matching firms.

Similar results are found when the abnormal long-run returns are measured by the five-factor model. When we hold both size and book-to-market ratio constant, unit offering firms have lower subsequent returns compared to nonissuers. Analyzing the difference in long-term performance depending on the use of proceeds allows us distinguish between the two potential explanantions: behavioral view and the rational explanation. The results show the long-run underperformance does not seem to depend on the intended use of the proceeds, suggesting that the results are in accordance with the behavioral explanation. Firms issue units when they are on average overvalued, regardless of the intended use of the proceeds. Accordingly, these issuers are expected to underpeform after the offering. We find significant evidence of underperformance.

The remainder of the paper is organized as follows. Section 2 describes the data. Section 3 presents the long-run stock performance whereas section 4 presents the analysis of long-run operating performance. Section 5 analyses the results depending on the intended use of proceeds. Section 6 concludes.

2. Data

The sample consists of units issued by French-listed firms over 1991– 2015. The sample ends in 2015 to be able to compute a 5-year long-term performance. The list of unit offerings are reported in the annual reports of the *Autorité des Marchés Financiers*[2]. Financial and stock price data are from Worldscope and Datastream, respectively. As in previous studies, we exclude financial firms (Standard Industrial Classification (SIC) codes 6000–6999) and regulated utility offerings (SIC codes 4900–4999). The sample ends with 116 unit seasoned offerings (USEO). We manually collect additional information from the registration statements filed with AMF. These information include offer proceeds and the issuers' intended use of proceeds.

For each issuing firm, we choose a non-issuing matching firm. To choose a matching firm, we select all common stocks listed on the Euronext Stock Exchange market that have been traded for at least five years, have not publicly sold new equity during that time period, and have positive book-to-market on Datastream. We select a matched firm such that the sum of the absolute percentage difference between the sizes (at the end of the month preceding the

[2] L'*Autorité des Marchés Financiers* is the French equivalent of the U.S. Securities and Exchange Commission.

offering) and book-to-market ratios of the issuing firm and the matched firm is a minimum[3]. If a matching firm is delisted before the ending date for its corresponding issuing firm, the next closest matched firm is spliced in after the delisting date of the first matching firm. The advantage of this procedure is that it allows the computation of buy and hold returns over identical intervals for both issuing and non-issuing firms and alleviates the problem of survivorship bias. We use also industry portfolio benchmark. We match the event firm with a benchmark firms based upon industry affiliation, relied on the two-digit standard industrial classification (SIC) code.

Table I (Panel A) reports the number of unit offerings by calendar year. Almost one-fifth (19%) of the sample is in 1999–2000, corresponding to the heavy issuance activity associated with the dot-com bubble. Panel B reports the industry classification for the unit offerings sample. Twenty-one percent of the sample firms operate in the computers industry.

3 The book-to-market ratios are calculated by dividing the book value of equity at the end of the last fiscal year preceding the offering by the market value measured at the end of the month preceding the offering.

Table I: Number of Unit offerings by year and industry

The sample includes 116 unit offerings issued by French firms over the period of 1991–2015. Financial institutions and regulated utilities are excluded. Firms must be listed on the Euronext Stock Exchange market, and must have return index, market to book and market value in Datastream database during the five years subsequent to the issue. Also, the firm must have financial data available from Worldscope.

Panel A: Number of Unit offerings by calendar year

Year	Number of sample Units	Percentage
1991	4	3.45%
1992	4	3.45%
1993	3	2.59%
1994	9	7.76%
1995	2	1.72%
1996	3	2.59%
1997	3	2.59%
1998	7	6.03%
1999	6	5.17%
2000	16	13.79%
2001	5	4.31%
2002	6	5.17%
2003	4	3.45%
2004	3	2.59%
2005	6	5.17%
2006	2	1.72%
2007	9	7.76%
2008	6	5.17%
2009	5	4.31%
2010	2	1.72%
2011	3	2.59%
2012	1	0.86%
2013	2	1.72%
2014	3	2.59%
2015	2	1.72%
Total	116	100%

Panel B: Number of Unit offerings by industry		
Industry	Number of offerings	Percentage
Mining/Construction	2	1.72%
Food	2	1.72%
Textile/Print/Publish	6	5.17%
Chemicals	2	1.72%
Pharmaceuticals	2	1.72%
Extractive	2	1.72%
Manf: Rubber/glass/etc	2	1.72%
Manf: Metal	2	1.72%
Manf: Machinery	3	2.59%
Manf: Electrical Equipment	6	5.17%
Manf: Transport Equipment	5	4.31%
Manf: Instruments	4	3.45%
Manf: Misc.	2	1.72%
Computers	25	21.55%
Transportation	4	3.45%
Retail: Wholesale	4	3.45%
Retail: Misc.	9	7.76%
Services	10	8.62%
Other	24	20.69%
Total	116	100%

3. Analysis of long-run stock performance

3.1. Event-time approach

To measure the long-run performance of issuing unit offerings firms, we use the buy and hold abnormal returns ($BHAR$). The $BHAR$ measure the average multiyear return from a strategy of investing in issuing firms and selling at the end of the holding period *versus* a comparable strategy in the matching firms (Mitchell and Stafford, 2000). The advantage of the $BHAR$ approach is that it captures the investor's experience from buying and holding stocks for 3–5 years. However, this measure tends to magnify the mean abnormal performance during the holding period when there is an abnormal return during any period of returns due to compounding (Mitchell and Stafford, 2000). The $BHAR$ is calculated as follows:

$$BHAR_{i,\tau} = \prod_{t=1}^{\tau}\left(1 + R_{i,t}\right) - \prod_{t=1}^{\tau}\left(1 + E(R_{i,t})\right)$$

where $BHAR_{i,\tau}$ is the buy and hold abnormal return for the sample firm i for horizon τ months, $R_{i,t}$ is return for sample USEO i in month t, and $E(R_{i,t})$ is the return in month t of the matched firm associated with each sample USEO firm i.

Table II: Long-run buy-and-hold abnormal stock returns

The *BHAR* is calculated as

$$BHAR_{i,\tau} = \prod_{t=1}^{\tau}\left(1 + R_{i,t}\right) - \prod_{t=1}^{\tau}\left(1 + E(R_{i,t})\right)$$

where $R_{i,t}$ is the return on the USEO firm *i* at month *t*, $E(R_{i,t})$ is the return on the matching firm of *i* at month *t*, in panel A and industry portfolio matching firms in panel B, τ is the holding period considered (36 or 60 months). We use the *t*-stat to test if the mean *BHAR* is significantly different from zero assuming independence and normality of the observations. The Z_w-statistic tests if the median *BHAR* is significantly different from zero using the Wilcoxon matched-pairs signed-ranks test. The sign test is computed as: $(p_\tau – 0.5)/(0.5\times(1–0.5))^{0.5}\times\sqrt{n}$ where p_τ is the percentage of positive *BHAR* at month τ and *n* is the number of observations at month τ. *** statistical significance at the 1% level.

Panel A	36–month	60–month
Mean (%)	–39.20***	–80.56***
t–stat	–5,85	–10.04
Median (%)	–45.22***	–79.21***
Z_w	–4.20	–4.80
Sign test	–12.50	–15.00
Panel B	36–month	60–month
Mean (%)	–35.33***	–75.24***
t–stat	–4,55	–6.33
Median (%)	–36.45***	–65.75***
Z_w	–3.33	–4.56
Sign test	–10.35	–12.23

As it can be seen in Table II, the long-run performance of unit offerings sample is significantly negative at a 1% level. The 36-month mean buy-and-hold abnormal returns is –39.20%. The median is also significantly negative, –45.22%. There is a severe underperformance during the 60 months that follow the offering. The mean (median) buy-and-hold abnormal returns is –80.56% (–79.21%). The results in the French context are comparable to those in the US context. Byoun (2004) finds that unit offering firm stocks show significant and negative excess *BHR* against the value-weighted CRSP index (–66.21%) in the five years that follow the issue.

Mitchell and Stafford (1997) and Fama (1998) criticize the *BHAR* approach. They point out that the *BHAR* can grow with the return horizon even when there is no abnormal return after the first period. To circumvent this problem, we consider the first-year *BHR* computed from month 1 to 12 relative to the event month, the second year *BHR* computed from month 13 to 24, and so on, up to months 49 to 60. We also compute the *BHR* in the year preceding the offerings. The *BHR* is computed as follows:

$$BHR_{i,\tau} = \prod_{t=1}^{\tau}\left(1 + R_{i,t}\right) - 1$$

Table III: Average long-run performance of unit seasoned equity offerings relative to matching firms.

The sample consists of unit seasoned offerings issued by French firms between 1991 and 2015. The buy and hold return (*BHR*) is calculated as

$$BHR_{i\tau} = \prod_{t=1}^{\tau}\left(1 + R_{i,t}\right) - 1$$

for USEO and matching firms in each of the five years following the offerings and in the year preceding the offerings (Panel A) and industry portfolio matching firms (Panel B). The *t*-statistics for the difference in *BHR* are calculated using the difference in *BHR* for each issuer and its matching firm, and assume independence of the observations. The test of the difference in medians is a Wilcoxon rank tests.

Panel A: Matching firms

Year	USEO		Matching firms		*t*-Statistics for difference	*z*-Statistics for difference
	Mean	Median	Mean	Median	Mean	Median
Prior 12-month	82.43	65.05	15.30	17.10	4.35	3.05
1	–12.25	–11.13	–1.15	2.67	–2.15	–2.53
2	–4.79	–2.10	6.46	2.73	–2.27	–4.25
3	–7.48	–6.75	11.10	10.70	–3.25	–3.95
4	4.15	3.14	13.84	13.52	–2.38	–2.96
5	3.36	3.68	12.44	9.48	–2.19	–2.35

Panel B: Industry portfolio matching firms

Year	USEO		Industry portfolio matching firms		*t*-Statistics for difference	*z*-Statistics for difference
	Mean	Median	Mean	Median	Mean	Median
Prior 12-month	82.43	65.05	20.14	21.54	3.84	2.53
1	–12.25	–11.13	2.34	8.12	–2.51	–2.43
2	–4.79	–2.10	3.45	3.52	–2.54	–3.42
3	–7.48	–6.75	10.25	7.54	–3.42	–3.25
4	4.15	3.14	12.52	14.23	–2.75	–2.41
5	3.36	3.68	13.45	10.23	–2.23	–2.75

Table III shows that in the year prior to the offering, the average BHR for USEO issuers is 82.43%. The return is not due to industry runups. However, this trend is inverted in the post-offering periods. The mean (median) BHR in the first, second, third, fourth, and five years after the offering are –12.25% (–11.13%), –4.79% (–2.10), –7.48% (–6.75%), 4.15% (3.14%) and 3.36% (3.68%), respectively. Table 3 also shows that seasoned unit offering firms feature a

sharp run-up in the year prior the offering and exhibit significantly lower returns during each of the five years after issuance compared to their matching firms.

3.2. Fama and French (2015) regression analysis

To alleviate concerns that the *BHAR* technique produces the wrong benchmark for measuring the true systematic risk of issuing firms, we use tests of long-run performance using factor model regressions. Another problem rises with *BHAR*s technique is that it overstates the statistical inferences as it does not control for correlation among offering firms. It is well known that cross-correlations of event returns pose a particular problem in studies of long-term returns (Fama, 1998). Fama (1998) recommend the use of the rolling calendar-time portfolio methodology to reduce the problem of cross-correlation of issuers' returns. The USEO long-run performance is measured in calendar-time using Fama and French (2015) five-factor rolling portfolio regressions. The following model is estimated:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{Mt} - R_{ft}) + s_p(R_{SMB_t}) + h_p(R_{HML_t}) + r_p(R_{RMW_t}) + c_p(R_{AMC_t}) + \varepsilon_{pt}$$

where R_{pt} is the USEO portfolio return in month *t*, R_{ft} is the 3 month-Euribor rate observed at month *t*, and R_{Mt} is the monthly return on the value-weighting portfolio of all firms listed on Euronext Stock Exchange market[4]. To construct the other four factors, we independently sort the sample (1161 firms) to assign stocks to two size groups and to three book-to-market, operating profitability and investment groups[5]. The intercept is interpreted in the five-factor time series regressions as a measure of the abnormal performance adjusted for risk. This measure plays a similar role as the Jensen's alpha in the CAPM framework.

[4] We use Datastream and Worldscope to extract and construct the database. Following Fama and French, financial firms and stocks with negative book-to-market ratio are eliminated from the sample, ending with 1161 firms listed on the Euronext.

[5] As in Desban and Lajili-Jarjir (2018) on the French context, the operating profitability ratio is computed as the revenues minus cost of goods sold, minus selling, general, and administrative expenses [EBITDA: WC18198], minus interest expense [WC01251] all divided by book equity [WC05491].

Table IV: Abnormal returns from five-factor model on seasoned unit offerings

The Fama and French (2015) model is specified as

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{Mt} - R_{ft}) + s_p(R_{SMB_t}) + h_p(R_{HML_t}) + r_p(R_{RMW_t}) + c_p(R_{AMC_t}) + \varepsilon_{pt}$$

where *SMB* is the difference between average return on the small-stock portfolios and the average return on the big-stock portfolios. *HML* is the difference between the average return on the high-BM portfolios and the average return on the low-BM portfolios. *RMW* is the difference between the average monthly stock returns of highest profitable portfolios and the lowest average monthly stock returns. *AMC* is the difference of the average monthly returns on portfolios with high asset growth rates and portfolios with conservative firms. R_{Mt} is the monthly return on the value-weighting portfolio of all firms listed Euronext Stock Exchange market. R_{ft} is the 3 month-Euribor rate observed at month *t*. The dependent variable is the monthly excess return on a portfolio of firms that issue unit seasoned offerings and matching firms during the prior 36 months and 60 months. In parentheses are *t*–statistics based on White's heteroskedastic-consistent standard errors. *** significant at 1%, ** significant at 5%.

	Units		Matching firms		All	
	36–month	60–month	36–month	60–month	36–month	60–month
α_p	–0.0089***	–0.0054**	–0.0012	0.0011	–0.0062**	–0.0045**
	(–2.73)	(–2.31)	(–0.96)	(0.85)	(–2.45)	(–2.16)
β_p	1.172***	1.177***	1.122***	1.165***	1.153***	1.162***
	(15.30)	(21.05)	(12.23)	(19.35)	(14.23)	(18.45)
s_p	0.598***	0.534***	0.568***	0.544***	0.523***	0.532***
	(6.58)	(8.01)	(5.32)	(7.23)	(5.12)	(6.85)
h_p	0.346***	0.267***	0.235***	0.257***	0.324***	0.245***
	(3.63)	(3.84)	(3.03)	(3.56)	(3.23)	(3.75)
r_p	0.021	–0.006	0.025	0.012	0.024	0.001
	(0.22)	(–0.09)	(0.24)	(0.13)	(0.32)	(0.05)
c_p	–0.009	0.025	0.016	0.024	0.010	0.022
	(–0.08)	(0.32)	(0.12)	(0.31)	(0.09)	(0.29)
USEO	–	–	–	–	–0.542***	–0.478***
					(–3.23)	(–3.12)
Adj. R^2	0.66	0.77	0.54	0.65	0.62	0.67
F	67.20	126.99	74.50	62.52	65.25	59.23
p–value	0.00	0.00	0.00	0.00	0.00	0.00

Table IV also shows that the underperformance of French USEOs, estimated by the alpha coefficient, is statistically significant regardless of the horizon considered. When the 36–month horizon is considered, the average abnormal return for unit seasoned issuing firms is –0,89%

per month, which compounds to about –41.51% for a 5-years period[6]. However, the alpha estimates are insignificant for matching firms, suggesting that underperformance concern only USEO firms. The last column of Table IV uses all sample firms and includes an USEO as a dummy variable. The results show that USEO loads negative and statistically significant further reinforcing our conclusions that USEOs underperform at the long-run.

3.3. Fama-MacBeth Regressions

As a test of robustness, the Fama-MacBeth procedure is used to investigate the long-run performance of unit seasoned offerings. Under this approach, cross-sectional regressions of monthly returns of firms listed on the Euronext for which the book value of equity is available on Datastream are estimated. The regressions are estimated separately for each month in the period April 1991 through December 2019.

In Table 5, the average coefficients from 333 cross-sectional regressions with a dependent variable of monthly raw returns on individual stocks:

$$R_{it} = \gamma_0 + \gamma_1 \ln(BM_{it}) + \gamma_2 \ln(MV_{it}) + \gamma_3 UNIT_{it} + \varepsilon_{it}$$

The independent variables are the natural logarithm of the book-to-market ratio ($\ln(BM_{it})$), the natural logarithm of the market value ($\ln(MV_{it})$) and a dummy variable ($UNIT_{it}$) taking on the value of 1 if the firm issued seasoned unit offering within the previous 60 months. The *t*–statistic is computed as follow: $t(\bar{\hat{\gamma}}_j) = \frac{\bar{\hat{\gamma}}_j}{\sigma(\hat{\gamma}_j)/\sqrt{n}}$ where $\hat{\gamma}_j$ is the estimated coefficient, $\bar{\hat{\gamma}}_j$ is the mean coefficient estimate, $\sigma(\hat{\gamma}_j)$ the time-series standard error of the coefficient estimate, and n is the number of months in the period. The advantage of the Fama-MacBeth approach is that it is not based on the assumption of time-invariant risk premiums, an implicit assumption in the calendar-time portfolio approach. Furthermore, Fama-MacBeth approach use cross-sectional data, reducing the concern about then cross-correlation of returns across events.

The regression results are presented in Table V. They reveal significant abnormal returns following unit offerings. The coefficient on $UNIT$ is –0.013, which implies a 60-month

[6] The 60-month compounded return corresponding to –0.89% monthly return is $(1 - 0.0089)^{60} - 1 = -41.51\%$.

cumulative abnormal return of about –78% (60 months ×–1.3%), or a 60-month buy and hold abnormal return of about –54.39% ((1–0.013)^{60} – 1).

Table V: Time-series averages of monthly cross-sectional regressions of returns on stock characteristics

The universe is Euronext Stock Exchange market for which the book value of equity is available from Datastream. Each month from April 1991 to December 2019, the following cross-sectional regression is run across all firms:

$$R_{it} = \gamma_0 + \gamma_1 \ln(BM_{it}) + \gamma_2 \ln(MV_{it}) + \gamma_3 UNIT_{it} + \varepsilon_{it}$$

where R_{it} is the raw return of firm *i* in month *t*, MV equals total number of shares outstanding times stock price per share, BM: book-to-market equal book value of common equity, scaled by MV. $UNIT$ is a dummy variable taking on the value of 1 if a firm conducted a unit seasoned offering within 60 months. This table presents the time series average and *t*–statistics for the coefficient estimates. The *t*–statistics is the mean coefficient estimate multiplied by the square root of the number of monthly regressions ($\sqrt{\mathrm{n}}$) divided by the time-series standard error of the coefficient estimate. *t*–statistics are in parentheses below the coefficients. *** denotes significance at the 1% threshold level.

	Intercept	ln(BM)	ln(MV)	UNIT	Avg. R^2
Coefficient	–0.029	–0.041	0.008	–0.013	0.022
t–statistic	(–0.07)	(–6.36)***	(1.24)	(–3.25)***	

4. Analysis of long-run operating performance

Previous literature documents that seasoned equity offerings have inordinately a decline in operating performance after the offerings. Hansen and Crutchley (1990) examining 109 SEO during 1975–1982 and find a statistically significant decline in return on assets in post issue period. McLaughlin et al. (1996) and Loughran and Ritter (1997) show that the operating performance of issuing firms peaks prior to the offering, but then deteriorates following the offering relative to matching firms. They also show that issuing firms are disproportionately high-growth firms, but seasoned equity offering firms have lower subsequent stock returns than nonissuers with the same growth rate. However, Healy and Palepu (1990, find no post-issue earnings decline relative to the prior year's earnings even after adjusting earnings to the industry median.

To analyze the operating performance of unit seasoned offerings, we follow the algorithm suggested by Barber and Lyon (1996) to choose a matching firm. Candidate matching firms are those French firms listed on the Euronext that have not issued equity during the five years prior the offering date. To select matching firms in the same industry as USEO firms, we use 2–digit SIC codes with total assets at the end of year 0 between 25 percent and 200 percent of the issuer.

Then we rank the by their earnings before interest, taxes, depreciation, and amortization relative to assets (EBITDA/assets). The firm with the closest EBITDA/assets ratio from among these nonissuing firms is selected as matching firm. As Loughran and Ritter (1997), if there are no nonissuers in the same industry meeting the above requirements, we ignore the industry criteria. All nonissuers with total assets within 90 percent to 110 percent of the issuer are ranked by EBITDA/assets and the firm with the closest, or higher, ratio is chosen as the matching firm.

We report median values in examining operating performance as finance ratios are likely to suffer from skewness[7]. Table VI reports the median EBITDA/assets ratio, profit margin, return on assets, EBITDA/sales, and market-to-book.

For USEO firms, a downward trend is observable for all the performance measures. In Table VI (Panel A), for the median USEO issuer, EBITDA relative to assets falls to 6.8% five years after the offering compared to 9.1% in the year preceding the offering. The median profit margin for USEO firms is 2.8% in the year prior the offering, but only 1.5% five years after the offering. The same trend is observable for return on assets. The median market-to-book ratio is higher the year of the offering (2.72), and declines to 1.40 five years after the offering. Table VI (Panel C) reports year-by-year Z-statistics. Except for market-to-book ratios, all other ratios exhibit a significant difference between USEO firms and matching firms five years following the offering. Panel D reports statstically significant deterioration in performance ratios between years –1 and +5 for USEO issuers relative to the matching firms. For instance, the Z-statistic on the change in EBITDA/Sales for USEO issuers relative to matching firms between years –1 and +5 is –3.76.

The overall results from the analysis of operating performance measures for sample firms exhibit long-run underperformance following the unit offerings. These findings are consistent with those in the existing literature of SEO firms such as in Hansen and Crutchley (1990), McLaughlin et al. (1996), and Loughran and Ritter (1997).

[7] Healy and Palepu (1990), Degeorge and Zeckhauser (1993), Jain and Kini (1994), Mikkelson, Partch, and Shah (1997), McLaughlin, Safieddine, and Vasudevan (1996), and Loughran and Ritter (1997), among others, report median values.

Table VI: Long-run operating perforamnce

This table presents operating performance of firms issuing unit seasoned offerings for a 9-year period, 3 years before and 5 years after the offering announcement and the year of offering announcement. The final sample consists of 116 USEO. Matching firms are in the same industry as USEO firms, we use 2-digit SIC codes with total assets at the end of year 0 between 25 percent and 200 percent of the issuer. Then we ranked by their Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) relative to assets. The firm with the closest EBITDA/Assets ratio from among these nonissuing firms is selected as matching firm. We report EBITDA/Assets, Profit margin is net income divided by sales, ROA is net income divided by total assets, EBITDA/Sales and market to book.

Fiscal year relative to offering	EBITDA/ Assets	Profit margin	ROA	EBITDA/ Sales	Market to Book
Panel A: Issuer medians					
–3	6.4%	1.8%	2.3%	8.1%	5.3
–2	8.1%	1.6%	2.8%	7.4%	2.8
–1	9.1%	2.8%	4.6%	10.6%	3.2
0	7.5%	1.8%	2.2%	9.8%	3.9
1	6.1%	0.5%	2.2%	7.0%	4.4
2	6.7%	1.3%	1.7%	6.4%	5.8
3	5.4%	1.4%	1.1%	6.5%	6.0
4	5.8%	1.9%	1.6%	6.1%	6.0
5	6.8%	1.5%	1.9%	6.8%	6.0
Panel B: Matching medians					
–3	7.4%	2.4%	2.8%	9.8%	2.1
–2	8.2%	2.5%	2.7%	10.6%	2.6
–1	8.6%	2.1%	3.6%	8.1%	2.3
0	7.5%	2.7%	2.5%	8.2%	1.9
1	7.9%	2.3%	2.9%	7.8%	1.7
2	8.3%	2.3%	3.1%	8.6%	1.9
3	8.0%	2.1%	2.7%	8.6%	1.8
4	7.9%	2.0%	2.4%	8.4%	1.9
5	7.8%	2.9%	2.7%	8.4%	1.4
Panel C: Z–statistics testing the yearly equality of distibutions between the USEOs and matching firms using the Wilcoxon matched-pairs signed-rank test					
–3	–2.11	–2.22	–1.13	–2.33	2.86
–2	–1.32	–2.45	–0.65	5.21	1.23
–1	2.45	2.44	2.89	3.12	1.52
0	–0.50	–2.65	–1.23	1.56	1.66
1	–3.47	–4.42	–2.67	–2.12	3.45
2	–4.26	–3.21	–3.85	–3.56	4.65
3	–5.12	–3.45	–2.99	–4.14	5.12
4	–4.94	–2.98	–2.56	–5.13	5.32
5	–3.97	–3.57	–2.75	–4.56	5.86
Panel D: Z–statistics testing the yearly equality of distibutions between the change in the ratios from year –1 to year +5 using the Wilcoxon matched-pairs signed-rank test					
Time Period	EBITDA/ Assets	Profit Margin	ROA	EBITDA/ Sales	Market to Book
Year –1 to +5	–3.56	–3.45	–2.98	–3.76	3.65

5. The intended use of proceeds

There are two explanations for the long-run underperformance of SEO firms. (i) A behavioral view considering that managers take advantage of transitory window of opportunity to issue new equities when they are overvalued (Loughran and Ritter, 1995). (ii) A real investment-based rational explanation considers that pre-issue run-up reflects growth options moving into the money, making the issuing firms undertake investment projects and experience a fall in their systematic risk. This leads them to exercise risky real investment options and entails low subsequent returns that mirror risk decline upon investment (Carlson, Fisher, and Giammarino, 2006)[8]. Thus, according to the rational theory, issuing firms are not overvalued at the time of the issue, and SEO firms that invest in a specific project or acquisition should have lower subsequent returns.

To distinguish between the two explanations, we divide our sample into two subsamples according to the intended use of the proceeds in the issuing prospectus: 73 offerings for acquisition and investment in a specific project and 43 for capital structure. As Jeanneret (2005) and Gajewski, Ginglinger and Lasfer (2007), to be classified in the the first subsample, the issuer must specify that the USEO proceeds will be allocated in internal growth projects or in external growth opoortunities (acquisitions). To be classified in the second subsample, issuing firm must specify that their main motives to issue unit offering are improving their capital structure, preserving their financial flexibility, or repaying debt.

Our results would be consistent with the rational explanation if we observe a significant underperformance only for unit seasoned offerings that have investment in a specific project or acquisitions as the intended use of proceeds.

[8] Hertzel and Li (2010) decompose the market-to-book ratio into a misvaluation and a growth option components to find that firms with greater growth opportunities do not underperform in the long-run. In contrast, issuing firms with greater mispricing experience a post-issue stock price underperformance.

Table VII: The difference between two sub-samples with the intended use of proceeds

Two sub-samples are composed according to the intended use of the proceeds in the issuing prospectus: 73 offerings for acquisition or investment in a specific project and 43 for capital structure.

Use of the proceeds	*BHAR* (%) 36–month		*BHAR* (%) 60–month	
	Mean	Median	Mean	Median
Investment	–43.36	–52.47	–75.23	–78.36
Capital structure	–30.88	–28.23	–92.27	–91.26
t–stat /Z_w for mean/median difference	–0.87	–0.97	0.98	1.28

Table VII reports the *BHAR* for 36–month and 60–month after the offering for the two subsamples. There is no significant difference between the two subsamples according to the use of proceeds. The significant underperformance in the long-run of unit seasoned offerings is common to the two sub-samples. The results are, hence, in accordance with the behavioral explanation. Thus, there is an apparent timing motive of USEO firms independantly of the intended use of proceeds. Firms that issue units do that to maximize the proceeds when the market temporarily overvalues their stocks.

6. Conclusion

This paper examines the long-run performance of USEO firms in France between 1991 and 2015. The results suggest a significant underperformance in the long-run of USEO firms. The study uses the buy and hold abnormal returns method and find that USEO firms underperform matching firms by –39.20% over the 36–month horizon and –80.56% over the 60–month horizon. When we use the model of Fama and French (2015), average abnormal return for USEO firms is –0.54% per month, which compounds to about –27.73% for 5 years. The results obtained by using the Fama-MacBeth approach confirm a significant underperformance of USEO firms. The coefficient of –0.013 on the unit issuing firm dummy variable implies that USEO firms underperform by 1.30% per month, or over 15 percent per year, during the next five years. We provide also evidence of post-issue declines in operating performance. These findings are consistent with those in the existing literature of SEO firms (e.g., Hansen and Crutchley (1990); McLaughlin et al. (1996); Loughran and Ritter (1997)).

These results are in accordance with behavioral theories and real option theory. To distinguish between these two theories, we form two subsamples according to the intended use of the proceeds. The significant underperformance in the long-run of unit seasoned offerings is common to the two sub-samples. The results are in accordance with the behavioral explanation.

In turn, this article contributes to extant literature. First, we extend Byoun (2004) findings by adding the analysis of operating performance of USEO firms. Prior literature mainly focuses only on stock performance of USEO firms. Second, we use different methodologies to measure the long-run market performance of USEO firms. Third, we distinguish between two competitive explanantions of underperformance of USEOs firms: the behavioral and rational explanantions.

The results also provide several practical implications for market participants. For investors, our study evidence support the view that investing in USEO firms will be a disaster for investors. Thus units are not offerd to mitigate the agnecy conflicts.

For corporate managers, it is worth mentioning to issue units when the firm is substantially overvalued. Gajewski, Ginglinger and Lasfer (2007) suggest that units are issued mainly to maximize net proceeds.

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