Corporate finance practices in Morocco

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Abstract

Purpose – The purpose of this paper is to examine corporate finance practices in the frontier market of Morocco and compare the practices used by Moroccan companies to those in other countries. It focuses primarily on capital budgeting and real options. The study also examines whether corporate finance practices used in Morocco are consistent with more theoretically superior techniques.

Design/methodology/approach – The study uses a mail questionnaire to gather data from chief financial officers and other senior executives of Casablanca Stock Exchange (CSE) listed companies.

Findings – Moroccan managers generally view the internal rate of return, accounting rate of return, and payback method as more important than the theoretically superior net present value. Few of the responding firms use real options when making capital budgeting decisions. They tend to use less sophisticated techniques to evaluate investment opportunities and calculate the cost of capital than their counterparts in developed countries. The most frequently used techniques by CSE-listed companies to estimate the cost of equity capital are the cost of debt plus an equity risk premium and the accounting return on equity. CSE-listed companies rely heavily on management's subjective judgment to estimate cash flows.

Research limitations/implications – Despite a 40 percent response rate, the number of responses did not permit examining whether differences in firm size, industry, educational background, and other characteristics affect the results. Although non-response bias is a potential limitation, test results show no statistically significant differences between the responding and non-responding companies on any of the five characteristics analyzed. These findings lessen concern about potential non-response bias. Given that the findings relate to a frontier market, they are most likely generalizable to similar countries in the Middle East and North Africa region.

Practical implications – The findings may be useful to various parties including corporate managers, boards of directors, and financial analysts. Given that investment decisions affect shareholder wealth, understanding the practices used by corporate managers is crucial in deciding what projects to undertake. This research raises awareness for management to review their corporate finance practices, compare them with their peers, and examine whether these techniques are aligned with proper allocation of resources and value maximization.

Social implications – Overall, the findings imply that Moroccan firms have room to improve their corporate finance practices. Failing to do so could have serious implications ranging from the inefficient allocation of resources in the economy to the destruction of shareholder value.

Originality/value – To the authors' knowledge, this is the most comprehensive study using survey methodology to investigate corporate finance practices in Morocco. It provides new insights on such topics as capital budgeting, capital structure, cost of capital estimation, and real option techniques.

Keywords Capital structure, Risk analysis, Real options, Morocco, Capital budgeting, Cost of capital

Paper type Research paper

Introduction

Corporate finance focuses on making investment, financing, and dividend decisions. Although all three decisions are important, good financing and dividend decisions are unlikely to add as much value as good investment decisions (Brealey *et al.*, 2013). As Baker

and English (2011) note, both financing and investment decisions have become more integrated and remain crucial for any company's capital investment decision making.

Corporate finance is of critical importance because of its effect on firm value creation. According to Baker *et al.* (2011a), proper alignment of capital budgeting, capital structure, cost of capital estimation, and real options with finance theory benefits shareholders. Other studies confirm this result in Spain (De Andrés *et al.*, 2014), the USA (Graham and Harvey, 2001), and Europe (Brounen *et al.*, 2004). Nevertheless, corporate finance practices vary from one context to another. In other words, such practices often differ across projects, firms, and countries (Yasotharalingam, 2016).

Most corporate finance studies examine developed countries due to the availability of data. By contrast, far less evidence is available on emerging and frontier markets. Bekaert and Harvey (2014) contend that corporate finance research is typically based on assumptions that fit developed markets more so than developing markets. According to Uyar and Kuzey (2014), developing countries have much weaker legal regulations and low information availability, which results in creating a gap between financial managers and shareholders in terms of information flow.

Studying emerging markets has attracted scholars because of the insights gained (Hassan *et al.*, 2006). Between 1985 and 2012, the gross domestic product (GDP) of emerging markets increased from about 10 to 30 percent of the world GDP (Bekaert and Harvey, 2014). Despite the contribution of emerging economies to the growth of the world economy, relatively few studies examine the rationale for this growth (Baek, 2015).

Not surprisingly, frontier markets receive relatively little attention from academic researchers. A frontier market is a type of developing country that is more developed than the least developing countries, but is too small to be generally considered an emerging market. To enhance understanding of corporate finance practices in a frontier market, this study focuses on Morocco. Specifically, the study surveys corporate executives of companies listed on the Casablanca Stock Exchange (CSE) to determine their financial practices related to capital budgeting and real options.

Established in 1929, the CSE is the third oldest and largest stock market in Africa and one of the most important stock markets in the Middle East and North Africa (MENA). The Casablanca Stock Exchange (2016) has three main objectives: to contribute to the economic development of Morocco; to provide issuers, investors, and market operators with a modern and transparent market; and to make the CSE a competitive leader in Africa. Today, the stock market has 75 listed securities.

Morocco is part of MENA region countries, which have similar characteristics. The Kingdom of Morocco is a monarchy where King Mohammed VI is the head of state. During the last decade, Morocco also attempted to position itself as the next African economic superpower, just behind South Africa and Nigeria. Morocco aggressively exploited its geostrategic competitive advantage to become a potential business and finance hub and a gateway to West Africa. In an official speech on August 20, 2014, the King Mohammed VI said that his country's development model has reached maturity and deserves to join the group of emerging nations once and for all (Alaoui, 2014).

With its strategic location between Europe and Africa, Morocco's political stability and its skilled but relatively cheap labor force offer an attractive location for foreign investors (Country Watch Incorporated, 2016). Renewable energy projects, tourism industry, promising aeronautics, automobile manufacturing, and electronics are attracting many investors (World Bank, 2015).

Moroccan firms are often family-owned businesses that hire unqualified family members for senior positions (Aguenaou *et al.*, 2013). Based on survey evidence, Baker and Jabbouri (2016) contend that the recognition of the existence of agency problems in the Moroccan market by executives of CSE-listed companies may reflect the depth and severity of these problems.

Weak investor protection as well as low transparency and information disclosure encourage the expropriation of stockholder rights and wealth (Farooq and Jabbouri, 2015; Jabbouri, 2016).

The study of corporate finance practices in Morocco is limited. In this study, we investigate four major research questions:

RQ1. What are the most important techniques that CSE-listed companies report using to evaluate investment opportunities?

RQ2. To what extent do CSE-listed companies use real options when evaluating capital budgeting projects?

RQ3. Do corporate finance techniques differ among CSE-listed companies compared with those in other countries?

RQ4. Are corporate finance practices in Morocco consistent with more theoretically superior techniques?

Our research contributes to the corporate finance literature in several ways. To our knowledge, this is the most comprehensive study using survey methodology to investigate corporate finance practices in Morocco. As such, it provides new insights on such topics as capital budgeting and real options. The findings may be useful to various parties, especially those in the MENA region, including corporate managers, boards of directors, and financial analysts. The study also compares the corporate finance practices used by Moroccan companies to those in other countries. Given that investment decisions affect shareholder wealth, understanding the practices used by financial managers is crucial in deciding what projects to undertake. Finally, this research raises awareness for management to review their capital budgeting practices, compare them with their peers, and examine whether these techniques are aligned with proper allocation of resources and value maximization.

The remainder of this study proceeds as follows. The next section provides a theoretical basis for assessing project evaluation methods followed by a review of relevant survey-based literature related to corporate finance practices. A discussion of research methodology, sample selection, and potential limitations follows. Subsequent sections discuss the main findings and compare them to results from other surveys. The final section offers a summary and implications of the results.

Literature review

Theoretically, the financial goal of the firm is to maximize shareholder wealth. To be consistent with theory, financial practices should contribute to achieving this goal. For example, in making capital budgeting decisions, the literature indicates that managers should use discounted cash flow (DCF) techniques to maximize shareholder wealth. Of the available DCF techniques, net present value (NPV) is recognized as the theoretically superior technique to achieve shareholder wealth maximization. The main purpose of NPV is to analyze the profitability of a future project or investment. According to the NPV rule, financial managers should accept projects with positive NPVs because such projects are expected to increase shareholder wealth and reject negative NPV projects because they are expected to destroy firm value.

The static trade-off theory, which contends that capital structure reflects a trade-off between the expected costs of bankruptcy and the tax advantages of debt, also suggests that managers should evaluate normal-risk capital budgeting projects using WACC but should use risk-adjusted discount rates for projects with greater or lesser risk than normal. In determining the weights to use in calculating WACC, the theoretically superior weights are target weights followed by market and book weights.

Real options valuation (ROV) is often contrasted with more standard techniques of capital budgeting, such as DCF analysis. The NPV framework implicitly assumes that management is "passive" about its capital investment once committed. That is, commonly used valuations, such as traditional NPV analysis, fail to account for potential benefits provided by real options. Traditional techniques also assume that managers must make the investment either now or never. By contrast, ROV enables management to adapt and revise its strategies in response to changing economic circumstances, technological developments, and market conditions that cause cash flows to deviate from their original expectations. Management may choose to expand, change or curtail projects based on changing conditions. Factoring in real options affects the valuation of potential investments (McDonald, 2006).

Various surveys show that financial practices often deviate from theory even in developed markets. Such deviations between theory and practice are likely to be even greater in frontier markets such as Morocco. This section presents the results of some survey-based studies published since 2000 that examine corporate finance practices, especially capital budgeting practices. It begins by reviewing evidence from developed markets (e.g. Australia, Canada, France, Germany, Spain, the Netherlands, the UK, and the USA) followed by emerging markets (Brazil and India), and a frontier market (Namibia).

Arnold and Hatzopoulos (2000) examine 300 UK companies involving their capital budgeting practices. Their findings show that DCF techniques are dominant. Regardless of firm size, the most commonly used techniques are NPV and internal rate of return (IRR). The majority of responding firms (67 percent) report using more than three evaluation techniques. About 85 percent of the responding firms use sensitivity and scenario analysis.

Graham and Harvey (2001) survey both Canadian and US executives and focus on three areas: capital budgeting, capital structure, and cost of capital. The responding firms report using the following techniques to evaluate capital budgeting projects: IRR (76 percent), NPV (75 percent), hurdle rate (58 percent), payback period (PB) (58 percent), and real options (26 percent). Large companies and highly levered firms are more likely to use NPV and IRR than small companies and those with low debt ratios. Their survey also asked several questions about the characteristics of chief executive officers (CEOs). Graham and Harvey find that CEOs holding an MBA degree are more likely to use NPV than non-MBA CEOs. Overall, their results confirm a strong relation between the choice of a specific capital budgeting technique and firm size, leverage, and CEO education.

Additionally, Graham and Harvey (2001) find that the most popular method of computing the cost of equity is the capital asset pricing model (CAPM). They report that the main users of the CAPM are public companies with low leverage and small management ownership and firms with high foreign sales. Their study finds that some firms use the CAPM or NPV incorrectly because they use their firm's overall discount rate instead of a project-specific discount rate to evaluate a project. Regarding capital structure, the major factors influencing debt policy are financial flexibility, credit ratings, and earnings and cash flow volatility. Recent stock price appreciation and earnings per share dilution are the major factors influencing equity issuance.

Brounen et al. (2004) survey four countries – the UK, France, the Netherlands, and Germany – about capital budgeting, cost of capital, capital structure, and corporate governance. The majority of responding chief financial officers (CFOs) report using PB more often than NPV or IRR, which is inconsistent with financial theory. Private companies, small companies (except for the UK), and those managed by executives with the highest age cluster prefer the PB method. About 45 percent of respondents report using the CAPM to estimate their cost of equity capital. This preference tends to increase with company size, CEO tenure, and the importance attached to maximizing shareholder wealth. Brounen et al. also find the overall debt level is low for European firms and that its primary determinants

are financial flexibility and pecking order theory. Pecking order theory states that because of information asymmetries, managers send signals to investors via their financing choices. This theory suggests that managers prefer financing choices that are least likely to send signals to investors. Hence, when raising capital, managers should prefer internal financing, low-cost debt, and then issue new equity, respectively. Truong *et al.* (2008) survey Australian listed companies to determine both their capital budgeting and cost of capital practices. Their results show that Australian financial executives frequently use NPV (94 percent), IRR (91 percent), and PB (80 percent) to evaluate projects. Small companies tend to use PB more often than large companies. Almost a third (32 percent) of respondents report using real options and only 9 percent categorize them as of moderate importance. The authors also find that 72 percent of responding firms report using the CAPM to estimate the cost of capital and 47 percent report using their cost of debt plus some equity premium. About 84 percent of responding firms report using the WACC primarily using target weights (60 percent).

Using a mail survey with 88 large Canadian firms, Bennouna *et al.* (2010) evaluate current techniques in capital budget decision making, including real options. They find that Canadian firms tend to use sophisticated techniques such as NPV and IRR, but 17 percent still do not use DCF techniques. Overall, some firms fail to correctly apply certain aspects of DCF. Only 8 percent of the responding firms report using real options.

Baker *et al.* (2011a, b) also survey Canadian executives about their firms' corporate finance practices. Their evidence shows that responding managers strongly prefer NPV (75 percent), followed by IRR (68 percent), and PB (67 percent). Regarding risk analysis, respondents report depending mainly on subjective judgment when estimating the cost of capital, adjusting the discount rate for risk, and forecasting a project's future cash flows. The survey results show that more than 50 percent of respondents use WACC as a discount rate for evaluating average risk projects. Concerning capital structure, survey responses provide high support for the static trade-off theory. This theory suggests an optimal capital structure exists with an optimal weight of debt. Additionally, real options are as popular in Canada as they are in Europe and the USA.

Baker *et al.* also find that firm size, CEO's tenure, level of education, and other characteristics affect corporate finance practices. CEOs managing large companies and holding MBAs use the most sophisticated corporate finance techniques.

De Andrés *et al.* (2014) examine capital budgeting practices in Spain and the relation with firm and managerial factors. The results show that the most widely used capital budgeting techniques are PB (75 percent), IRR (74 percent), and NPV (66 percent). About 14 percent of responding CFOs report using real options. Large companies tend to use NPV, IRR, PB, simulation, and sensitivity analyses. Real estate firms generally use IRR and NPV but manufacturing companies rely on PB. In this study, CFO characteristics such as age, tenure, and level of education do not seem to influence the choice of capital budgeting techniques.

Szűcsné Markovics (2016) provides a comprehensive overview of capital budgeting methods preferred by corporate managers in some European countries and in the USA. The main observations are as follows: the PB is popular among a considerable number of European and US corporations; the NPV and IRR are the two most frequently used DCF methods; companies in France and Hungary used the profitability index (PI) more often than companies in other surveyed countries.

De Souza and Lunkes (2016) investigate the use of capital budgeting practices by large Brazilian publicly traded companies. Their findings reveal that managers of Brazilian companies use mainly the PB (71 percent), NPV (65 percent), and (IRR) (61 percent). The study also reports that the most frequently practice used in setting the minimum rate of return is WACC (63 percent). Concerning risk analysis, the results show that the most widely used techniques are scenario analysis (68 percent) and sensitivity analysis (55 percent).

Batra and Verma (2017) examine responses from 77 Indian companies listed on the Bombay Stock Exchange. Their evidence reveals that corporate managers largely follow the capital budgeting practices proposed by academic theory. DCF techniques of NPV and IRR and risk-adjusted sensitivity analysis are most popular. Managers also favor WACC as the cost of capital. Yet, the theory-practice gap exists in adopting specialized techniques of real options, modified internal rate of return (MIRR), and simulation. Managers also consider non-financial criteria in selecting projects.

Katjiruru (2016) uses a structured questionnaire to investigate the use of capital budgeting techniques in 26 Namibian state-owned enterprises (SOE). The results show that the most popular capital budgeting techniques are the benefit/cost ratio (23 percent), NPV (23 percent), and IRR (23 percent). Hence, the majority of companies use sophisticated DCF techniques. The least used capital budgeting techniques by SOE are the average rate of return (8 percent) and the PB (8 percent). To assess risk, 48 percent of the SOEs conduct formal risk analysis.

Research methodology
This section provides a discussion of the study's survey design, sample, and potential limitations.

Survey design
We use a mail survey modeled after Baker *et al.* (2011a) to gather data from CFOs and other senior executives of CSE-listed companies. The survey has three sections. The first section includes questions about capital budgeting techniques, cost of capital, and capital structure. Most of these questions use a five-point frequency scale where $0 =$ never, $1 =$ rarely, $2 =$ sometimes, $3 =$ often, and $4 =$ always. The next section contains six questions about real option techniques and the reasons for using them. The final section seeks information about the background and educational level of respondents.

Sample
In April 2016, we mailed a cover letter and survey to the 75 CFOs of the CSE-listed companies. The cover letter requested recipients not actively involved in their firm's financial decisions to give the survey to someone who was actively involved or to return an unanswered questionnaire. To increase the response rate, the cover letter confirmed the study's confidentiality and assured recipients that we would use information about individual companies only in summary form. By September 2016, we had received 20 responses, representing a 26.7 percent response rate. To improve the response rate and to reduce potential non-response bias, we called non-respondents to ask them to complete the survey. These efforts yielded ten additional responses increasing the response rate to 40.0 percent.

Potential limitations
One limitation of the study is that the number of responses precludes analyzing respondents by firm size, industry, educational background, and other characteristics. Another limitation is the possibility of non-response bias. To assess whether significant differences exist between the 30 responding and 45 non-responding companies, we examine five characteristics: total assets, market capitalization, market-to-book value, return on assets, and dividend yield. To test for equality of variances, we use a *t*-test assuming equal variances and non-equal variances at the 0.05 and 0.10 levels. Table I shows no statistically significant differences between the responding and non-responding companies on any of the five characteristics at the 0.05 level. These findings lessen concern about potential non-response bias.

	Total assets (MAD)	Market capitalization (MAD)	Market-to-book value (%)	Return on assets (%)	Dividend yield (%)
Mean (SD)					
Respondents	28,981,565 (79,023,451)	9,421,086 (20,434,268)	2.44 (1.34)	3.34 (8.07)	5.19 (2.89)
Non-respondents	29,110,322 (77,675,591)	6,903,598 (12,567,573)	2.34 (2.77)	5.68 (9.36)	3.98 (4.42)
Test for equality of variances					
t-Test for equality of means (equality of variances assumed)	0.995	0.551	0.862	0.011	0.227
t-Test for equality of means (equality of variances not assumed)	0.995	0.581	0.848	0.009	0.198

Notes: This table provides descriptive statistics for 30 responding and 45 non-responding firms based on five characteristics – total assets, market capitalization, market-to-book value, return on assets, and dividend yield – gathered from the CSE and *Financial Times* for 2015. Total assets and market capitalization are in Moroccan Dirhams (MAD), but the remaining three characteristics are in percentages. Total assets are the value of a firm's assets shown on its balance sheet. Market capitalization is share price multiplied by the total number of outstanding shares. Market-to-book value is the ratio of a company's current market value to its book value on a per share basis. Return on assets is net income divided by total assets. Dividend yield is dividends per share divided by price per share

Table I.
Characteristics of
survey respondents
and non-respondents
for CSE-listed
companies

Results and discussion
This section begins by providing a profile of respondents and firms, followed by the survey results involving capital budgeting techniques, cost of capital, capital structure, capital rationing, and forecasting project cash flows. The final section focuses on real options.

Profile of respondents and firms
The respondents represent the following industry groups: real estate/property (30 percent), consumer goods (13 percent); banks, insurance, and other financial institutions (10 percent); energy (10 percent); services (10 percent); telecommunication (7 percent); and other industries (20 percent). Regarding educational background, 63 percent of respondents hold an MBA degree. Almost all respondents (97 percent) indicate they are actively involved in the financial decisions of their firms. The positions held by respondents are CFO (77 percent), CEO (13 percent), and head of internal audit (10 percent).

Capital budgeting techniques
Table II shows the use of nine capital budgeting techniques by CSE-listed companies based on their mean rankings. The four most highly ranked techniques are IRR, ARR, PB, and NPV. In fact, 64 and 63 percent of respondents report their firms always use IRR and ARR, respectively, when evaluating capital budgeting projects. Graham and Harvey (2001) also report IRR as the most popular capital budgeting technique among their sample of mainly US firms. By contrast survey evidence of both Canadian (Baker *et al.*, 2011a) and Australian (Truong *et al.*, 2008) firms reveals that the most frequently used capital budgeting technique is NPV. In theory, NPV is preferred to IRR owing to IRR's shortcomings. De Souza and Lunkes (2016) find that Brazilian listed firms continue to use traditional practices such as PB and ARR. They contend that managers use such methods to screen projects or because managers traditionally or culturally use the simplest practices that involve lower costs, are easy to calculate, and necessitate less effort compared to other methods.

| S. No. | Capital budgeting techniques | Frequency of use (%) | | | | | | | |
		None 0	Rare 1	Sometimes 2	Often 3	Always 4	Mean	SD	Rank
S7	Internal rate of return	14	0	1	11	64	3.11	1.45	1
S1	Accounting rate of return	17	13	0	7	63	2.87	1.66	2
S2	Payback	18	4	7	18	54	2.86	1.56	3
S4	Net present value	18	0	14	36	32	2.64	1.42	4
S6	Profitability index	39	11	21	14	14	1.54	1.50	5
S3	Discounted payback	39	18	14	11	18	1.50	1.55	6
S5	Adjusted present value	46	21	7	7	18	1.29	1.56	7
S9	Modified internal rate of return	54	14	11	11	11	1.11	1.45	8
S8	Real options	82	0	11	0	7	0.50	1.17	9

Note: This table shows the survey responses on the use of capital budgeting techniques by CSE-listed companies ranked by their means

We examine the use of DCF techniques by CSE-listed companies. The findings show that most respondents (87 percent) report using DCF techniques, which is consistent with finance theory. In fact, 60 percent of respondents use DCF techniques as a primary tool while 37 percent use them as a secondary tool. The findings are consistent with survey evidence by Baker *et al.* (2011a), who report that 84 percent of respondents from Canadian-listed firms use DCF techniques to evaluate new investment opportunities.

Table III presents the frequency of using DCF techniques in eight different situations ranked by their means. The top ranked use of DCF techniques occurs when making decisions involving expanding new operations, followed by foreign operations, mergers and acquisitions, and replacement projects.

Next, we examine issues involving how respondents deal with the riskiness of capital budgeting projects. The survey evidence shows that 79 percent of respondents differentiate between the riskiness of capital budgeting projects. Of these respondents, 74 percent measure project risk individually while 26 percent group projects into risk classes. Moreover, 50 percent of respondents report adjusting the discount rate but only 5 percent report adjusting the cash flow. Yet, 40 percent adjust both the discount rate and the cash flow and 5 percent use another procedure to assess the riskiness of capital budgeting projects.

Table IV shows evidence on the risk analysis techniques reportedly used by CSE-listed companies to assess investment projects. The findings indicate that the highest ranked techniques are judgment, sensitivity analysis, scenario analysis/decision trees, and measuring

| S. No. | Situation | Frequency of use (%) | | | | | | | |
		None 0	Rarely 1	Sometimes 2	Often 3	Always 4	Mean	SD	Rank
S3	Expansion: new operations	7	0	7	27	60	3.33	1.09	1
S5	Foreign operations	13	3	7	23	50	3.10	1.58	2
S4	Mergers and acquisitions	20	7	3	10	60	2.83	1.66	3
S1	Replacement projects	10	3	27	27	33	2.70	1.26	4
S2	Expansion: existing operations	17	0	23	30	30	2.57	1.38	5
S6	Abandonment	40	7	10	10	33	1.90	1.79	6
S7	Leasing	27	17	30	13	13	1.70	1.37	7
S8	Other	90	0	3	0	7	0.33	1.06	8

Note: This table shows the use of DCF techniques by CSE-listed companied in eight different situations ranked by their means

| S. No. | Risk analysis techniques | Frequency of use (%) | | | | | | | |
		None 0	Rarely 1	Sometimes 2	Often 3	Always 4	Mean	SD	CSE
S4	Judgment	13	10	0	13	63	3.03	1.52	1
S1	Sensitivity analysis	14	4	11	14	57	2.96	1.48	2
S2	Scenario analysis/decision trees	14	0	21	21	43	2.79	1.40	3
S9	Measure risk in a portfolio context	25	21	7	11	36	2.11	1.69	4
S3	Simulation analysis	32	0	14	36	18	2.07	1.56	5
S6	Adjust the payback period	37	30	7	3	23	1.47	1.59	6
S8	Change the required return	59	0	11	30	0	1.11	1.40	7
S5	Mathematical programming	68	11	18	0	4	0.61	1.03	8
S7	Certainty equivalents	82	11	4	4	0	0.29	0.71	9

Note: This table shows the responses of CSE-listed companies on using various risk analysis techniques ranked by their means

Table IV.
Risk analysis techniques used by CSE-listed companies to assess investment projects

risk in a portfolio context. According to Table IV, 76 percent of respondents report that their companies often or always use judgment, followed by sensitivity analysis (71 percent), scenario analysis/decision tree (64 percent), and simulation analysis (54 percent). The least frequently reported techniques are mathematical programing and certainty equivalents, with 68 and 82 percent indicating no use, respectively.

Cost of capital
Table V shows the responses of CSE-listed companies on the frequency of using different discount rates to evaluate new projects. Consistent with finance theory, respondents rank the company's overall discount rate (WACC) as the most used discount rate, with 68 percent reporting always using this approach. The next most commonly used discount rates are the cost of specific funds planned for financing the project and a rate based on management's experience. The survey results also show that the least used discount rates are a risk-matched discount rate for a particular project, a different discount rate for each cash flow that has a different risk characteristic, and a divisional discount rate.

The survey evidence also shows that 50 percent of respondents report that their companies use WACC as a discount rate to evaluate projects. Of these respondents,

| S. No. | Discount rate methods | Frequency of use (%) | | | | | | | |
		None 0	Rarely 1	Sometimes 2	Often 3	Always 4	Mean	SD	Rank
S1	The company's overall discount rate (weighted average cost of capital)	0	0	0	33	67	3.67	0.48	1
S2	The cost of specific funds planned for financing the project	7	4	7	50	32	2.96	1.10	2
S4	A rate based on management's experience	25	7	4	21	43	2.50	1.69	3
S5	A risk-matched discount rate for this particular project	25	21	36	7	11	1.57	1.26	4
S6	A different discount rate for each cash flow that has a different risk characteristic	36	39	14	7	4	1.04	1.07	5
S3	A divisional discount rate	64	7	18	11	0	0.75	1.11	6

Note: This table provides survey responses on the discount rates used CSE-listed companied to evaluate new projects

Table V.
Discount rates used by CSE-listed companied to evaluate new projects

60 percent report using book value weights to compute WACC. The least used weighting schemes are market weights (24 percent) and target weights (16 percent). The predominant use of book weights is inconsistent with finance theory, which favors using either market or target weights over book weights.

The findings show that 83 percent of respondents estimate the cost of equity capital. This percentage is higher for Moroccan firms than for firms in Canada (75 percent) (Baker *et al.*, 2011a) and in the USA (64 percent) (Graham and Harvey, 2001), as well as in Germany (53 percent), the Netherlands (60 percent), France (59 percent), and the UK (57 percent) (Brounen *et al.*, 2004).

For those CSE-listed companies estimating the cost of equity, Table VI reports the frequency of each technique used. Based on their means, the two most highly ranked techniques are the cost of debt plus an equity risk premium (3.43) and accounting return on equity (ROE) (3.28). The next most highly ranked methods are the earnings price ratio (2.46), average historical returns on common stock adjusted for risk (2.17), and the CAPM (1.73). By comparison, Canadian companies tend to rely more on judgment followed by using the cost of debt plus an equity premium (Baker *et al.*, 2011a) whereas US and European firms rely most often on the CAPM (Graham and Harvey, 2001; Brounen *et al.*, 2004).

Capital structure

When asked about whether their firms have a target capital structure (debt/equity ratio), the majority of respondents (63 percent) report affirmatively, which provides strong support for the trade-off theory of capital structure choice. By comparison, Baker *et al.* (2011a) report that 65 percent of responding Canadian firms has a target capital structure. According to Graham and Harvey (2001), 83 percent of their responding US firms use a target capital structure. Survey evidence by Brounen *et al.* (2004) finds the following percentage of respondents indicating their firms have a target capital structure: the Netherlands (83 percent), Germany (75 percent), the UK, (60 percent), and France (45 percent).

For the 63 percent of CSE-listed companies that report having a target capital structure, the survey asked them to indicate the level of flexibility of their capital structure. Similar to Canadian firms (Baker *et al.*, 2011a), the majority of respondents from Moroccan companies have a somewhat tight target (53 percent) while

		Frequency of use (%)							
		None	Rarely	Sometimes	Often	Always			
S. No.	Statements	0	1	2	3	4	Mean	SD	Rank
S5	Cost of debt plus equity risk premium	4	0	9	22	65	3.43	0.99	1
S7	Accounting return on equity	8	0	4	32	56	3.28	1.14	2
S6	Earning/price ratio	21	17	8	4	50	2.46	1.72	3
S8	Average historical returns on common stock adjusted for risk	17	8	42	8	25	2.17	1.37	4
S3	CAPM	18	41	5	23	14	1.73	1.39	5
S1	Judgment	25	46	0	13	17	1.50	1.44	6
S4	Multi-factor asset pricing model	23	45	5	18	9	1.45	1.30	7
S9	Based on what our investors tell us they require	50	8	13	13	17	1.38	1.61	8
S2	Dividend growth model	65	4	9	13	9	0.96	1.46	9
S10	Regulatory decisions	27	59	9	0	5	0.95	0.90	10

Table VI.
Techniques used by CSE-listed companies to estimate the cost of equity capital

Note: This table presents survey responses of CSE-listed companies on techniques used to estimate the cost of equity capital ranked by their means

32 percent have a flexible target and only 16 percent have a tight target. For US firms, Graham and Harvey (2001) find about 34 percent of respondents have a somewhat tight target and 37 percent have a flexible target.

Capital rationing
We also inquired about the extent of capital rationing faced by CSE-listed companies. Specifically, the survey asked about the percentage of time their companies have more acceptable projects than available funds to invest. The mean response was 50 percent, which is greater than the 40 percent reported by Canadian firms (Baker *et al.*, 2011a).

Forecasting project cash flows
Another area of concern is the importance that respondents attach to different methods of forecasting project cash flows. As Table VII shows, respondents report strongly relying on management's subjective judgment. In fact, 80 percent of respondents indicate their firms have a moderate or high dependence on this method, followed by consensus of expert opinions (73 percent) and reliance on quantitative methods (64 percent). By comparison, survey evidence by Baker *et al.* (2011a) for Canadian firms reveals that about 70 percent of respondents rely strongly on quantitative methods while only 43 percent use consensus of expert opinions.

Real options
This section reports survey results on the use of real options by CSE-listed firms and compares them to survey evidence from other countries. Most respondents (70 percent) report that their companies do not use real options and only 20 percent report using them to make capital budgeting decisions. Similarly, Baker *et al.* (2011b) find that 79 percent of respondents from Canadian firms do not use real options. More recently, Mahmoud and Neale (2016) survey 73 firms from the British Automotive Components Manufacturers. They report that 49.3 percent of responding companies indicate that they do not use real options formally in the investment process and 50.7 percent fail to answer the question, which indicates that this concept was new to them. This result confirms the findings reported by Truong *et al.* (2008), Bennouna *et al.* (2010), and Hartwig (2012).

Survey evidence shows that using real options is greater in developed markets. In Australia, Truong *et al.* (2008) report that 32 percent of survey respondents indicate using real options but none rank them as a highly important method to evaluate new investment projects. Graham and Harvey (2001) report that about 27 percent of respondents from US firms always or almost always use real options when making capital budgeting decisions. Brounen *et al.* (2004) report greater usage of real options in several European countries than in Morocco: the UK (29 percent), the Netherlands (37 percent), Germany (44 percent), and France (53 percent).

Of those CSE-listed companies using real options, the survey asked about the reasons for doing so. As Table VIII shows, two reasons tied as the most highly ranked for using real

		Frequency of use (%)						
S. No.	Methods of forecasting project cash flows	None 1	Low 2	Moderate 3	High 4	Mean	SD	Rank
S1	Management's subjective judgment	7	13	33	47	3.20	0.92	1
S2	Consensus of expert opinions	3	23	33	40	3.10	0.88	2
S3	Quantitative methods	10	27	7	57	3.10	1.12	3

Note: This table presents survey responses on the level of importance of various methods used to forecast project cash flows ranked by their means

S. No.	Reasons for using real options	Frequency of use (%)				Mean	SD	Rank
		None 1	Low 2	Moderate 3	High 4			
S6	Provides a management tool to help form the strategic vision	0	0	33	67	3.67	0.52	1.5
S3	Provides a long-term competitive advantage through better decision making	0	0	33	67	3.67	0.52	1.5
S1	Incorporates managerial flexibility into the analysis	0	0	67	33	3.33	0.52	3.5
S4	Provides an analytical tool to deal with uncertainty	0	0	67	33	3.33	0.52	3.5
S2	Complements traditional capital budgeting techniques	0	33	50	17	2.83	0.75	5
S5	Provides a way of thinking about uncertainty and its effect on valuation over time	0	40	40	20	2.80	0.84	6

Note: This table indicates why CSE-listed companies use real options when making capital budgeting decisions ranked by their means

options: real options provide a management tool to help form the strategic vision (3.67), and real options provide a long-term competitive advantage through better decision making (3.67). The next two most important reasons also resulted in a tie: real options incorporate managerial flexibility into the analysis (3.33) and real options provide an analytical tool to deal with uncertainty (3.33). Thus, real options appear to complement traditional capital budgeting techniques and provide a way of thinking about uncertainty and its valuation effects. Using an open-ended question, the survey also asked the six Moroccan companies using real options to give other reasons for doing so. Respondents indicate that the most important reason is that real options help them to improve decision making through better understanding of investment projects. A few respondents mention that real options help management formulate a strategic investment planning model.

The survey also asked the six respondents using real options to identify the types of real options used. The findings show that the majority of respondents report using right to deter and growth options. A few others mention using abandonment, entry, and exit options.

Table IX shows that the most important reasons respondents report for not using real options are their complexity to apply in practice (3.59), followed by the difficulty of estimating inputs (3.14), lack of applicability to their business (3.00), and lack of expertise or knowledge (2.90).

S. No.	Reasons for not using real options	Frequency of use (%)				Mean	SD	Rank
		None 1	Low 2	Moderate 3	High 4			
S5	Too complex to apply in practice	0	0	41	59	3.59	0.50	1
S3	Difficulty of estimating inputs	7	10	45	38	3.14	0.88	2
S4	Lack of applicability to our business	10	23	23	43	3.00	1.05	3
S1	Lack of expertise or knowledge	3	45	10	41	2.90	1.01	4
S6	Requires many internal resources	3	28	48	21	2.86	0.79	5
S8	Limited support for real-world applicability of real options models	17	24	55	3	2.45	0.83	6
S7	Does not help managers make better decisions	28	21	38	14	2.38	1.50	7
S2	Requires unrealistic assumptions	45	0	38	17	2.28	1.22	8

Note: This table indicates the importance that CSE-listed companies attach to reasons for not using real options

By contrast, a survey of Canadian managers by Baker *et al.* (2011a) shows that the most important reasons for not using real options are a lack of expertise or knowledge along with the lack of applicability of this technique to the business. When asked directly about the major reason for not using real options, respondents of CSE-listed companies note the complexity of applying real options in practice and a lack of expertise and knowledge. Other respondents state that capital budgeting techniques are centralized at the level of the parent company and real options do not help managers to make better decisions.

Summary and implications
This study provides the first survey evidence on corporate finance practices in Morocco. It focuses mainly on capital budgeting, real options, and related issues. Although some results are consistent with finance theory, others are not.

The first research question attempts to identify the most important techniques that CSE-listed companies use to evaluate investment opportunities. The respondents generally view IRR, ARR, and PB as more important than the theoretically superior NPV. Survey respondents in Graham and Harvey (2001) rank NPV second whereas Canadian (Baker *et al.*, 2011a), Australia (Truong *et al.*, 2008), and Indian (Batra and Verma, 2017) respondents rank NPV first. The responses to the second research question, which asked about the extent to which CSE-listed companies use real options when evaluating capital budgeting projects, show that only 20 percent of respondents report using real options for this purpose.

The third research question examines whether corporate finance techniques differ among CSE-listed companies compared with those in other countries. The results are mixed. For example, some similarity exists between Moroccan and Canadian practices about using DCF techniques and real options as well as capital structure decisions. Respondents from both Moroccan and US firms give top ranking to IRR as a capital budgeting technique, which differs from results reported in Canadian (Baker *et al.*, 2011a), Australian (Truong *et al.*, 2008), and Indian (Batra and Verma, 2017) surveys, and which give the highest ranking to NPV. Other differences exist among various surveys. For instance, responding companies from the USA and some European countries rely more often on the CAPM (Graham and Harvey, 2001; Brounen *et al.*, 2004) whereas CSE-listed companies show a greater tendency to estimate the cost of equity based on the ROE. Another important difference concerns the estimation of cash flows. CSE-listed companies tend to rely on management's subjective judgment whereas Canadian firms generally estimate cash flows based on quantitative methods.

The final research question examines whether corporate finance practices in Morocco are consistent with more theoretically superior techniques. Not surprisingly, the results are mixed. Although the finance literature typically regards NPV as the most theoretically superior capital budgeting technique, it ranks fourth in terms of frequency of use behind IRR, ARR, and PB. Nonetheless, 68 percent of respondents report using NPV either often or always. In assessing the riskiness of investment projects, respondents rank judgment first over several theoretically superior techniques such as sensitivity, scenario, and simulation analyses. Respondents also tend to rank less theoretically superior techniques for estimating the cost of equity capital above the CAPM, which ranks fifth in frequency of use. Only half of the respondents report that their companies use WACC as a discount rate in evaluating investment projects. Respondents also report relying on book value weights rather than market value or target weights to calculate WACC.

Our study has both practical and social implications. From a practical perspective, the findings may be useful to various parties including corporate managers, boards of directors, and financial analysts. However, given that we study a frontier market, our findings are most likely generalizable to similar countries in the MENA region. Given that investment decisions affect shareholder wealth, understanding the practices used by corporate

managers is crucial in deciding what projects to undertake. This research raises awareness for management to review their corporate finance practices, compare them with their peers, and examine whether these techniques are aligned with proper allocation of resources and value maximization.

From a social perspective, the findings imply that Moroccan firms have room to improve their corporate finance practices. Failing to do so could have serious implications ranging from the inefficient allocation of resources in the economy to the destruction of shareholder value. De Souza and Lunkes (2016) maintain that the non-use, improper or incorrect use of capital budgeting and risk analysis practices can produce disastrous financial results for companies, especially considering that capital expenditures involve substantial resources and a long-term commitment. Furthermore, this study helps identify the aspects in which CSE-listed firms can improve to boost their growth and future productivity (Olawale *et al.*, 2010).

Another important point to highlight is that corporate finance theories, models, and methods typically are based on assumptions that are coherent with developed markets (Bekaert and Harvey, 2000). Consequently, such theories, models, and methods may serve as poor guides to business decisions in emerging and frontier markets having different characteristics and circumstances (Jabbouri, 2016). This fact could explain some of the differences between corporate finance practices in Morocco and in emerging and developed markets. For example, the prevalence of non-discounted methods such as ARR and PB may stem from their ease of use and interpretation and also because they do not require particular mathematical skills. Another reason relates to corporate characteristics that are country specific. For countries with many small- and medium-sized enterprises, managers without extensive economic or financial educational backgrounds often make investment decisions. Given the current state with Morocco, the most theoretically correct techniques and approaches may not necessarily be the most useful. Future research could focus on determining the rationale for existing corporate finance practices and potential obstacles to adopting the more theoretically sound approaches in emerging and developing markets. Additionally, researchers could conduct similar surveys in other MENA countries and compare them with our findings in Morocco.

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