Valuation of brand equity and retailer growth strategies using real options

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Abstract

In marketing, significant attention has been devoted to the study of drivers and outcomes of strategic flexibility drawing on real options theory. However, research that quantifies the specific value of flexibility reflected in a bundle of strategic real options is lacking. To remedy this gap, we develop a real options-based framework that takes account of brand expansion and extension options to value brand equity and retailer growth strategies. We show how to value the bundle of strategic real options associated with a flexible marketing strategic vision and how to assess the growth strategies related to the corporate brand of an international retailer. We apply our method to estimating the brand equity of Starbucks both under growth and adversity conditions. The results reveal that our method can more reliably incorporate the growth potential of the brand under uncertainty conditions. Comparisons with other brand valuation approaches are discussed. Our study helps clarify the links among management's strategic plans, brand-based marketing strategies and share price, and allows to better monitor the impact of retailer strategic choices on long-term brand equity value.

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Introduction

The internationalization of retail firms is a phenomenon that reflects the strategic global growth ambitions of these firms. Growing globalization pressures, along with attractive foreign market opportunities and technological developments, have induced many retailers to enter overseas markets and leverage their strong international brands (Reinartz et al. 2011). Being an intangible asset that can shape a firm's competitive advantage, a strong brand underpins the health and loyalty of customer relationships, the attainment of premium prices, and the realization of long-term brand equity value (e.g., Srivastava, Shervani, and Fahey 1998; Srivastava, Fahey, and Christensen 2001). Hence, proper assessment of an international retailer's activities both as regards the value of producing assets-in-place as well as brand-enabled market growth strategies is key for effective strategic retail management. Common brand valuation measures that employ different variants of the discounted cash flow (DCF) or net present value (NPV) method in estimating future earnings ascribed to the brand, such as those used by Interbrand and BrandFinance, and the revenue premium approach of Ailawadi, Lehmann, and Neslin (2003), focus on short-term earnings or the cash-generating ability of the brand. Little attention was given to the flexibility associated with alternative product–market choices, the brand's future potential and the strategic growth options facing the retail firm.

Broadly, in view of the heightened uncertainties and changing customer needs and product opportunities in the retail environment, such as those arising from digitalization and technological innovation, there is a growing need to incorporate flexibility and future growth potential in assessing a domestic or international retailer's brand value and growth strategies. Flexibility concerns the retail firm's ability to adapt its future brand-enabled strategic growth plans—manifest as a bundle of brand expansion and extension options—to future developments concerning customer needs, product–market opportunities, and other competitive conditions. Taking account of the retailer's growth

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options in a specific market enables the firm to be more adaptable to changing market conditions and better satisfy customer needs. A retailer's market expansion and extension options would also help assess the value of its specific market growth strategy choices and their impact on the firm's share price. Nonetheless, compared to retailers in the domestic market, retail firms involved in international operations face different economic, political, technological, regulatory and socio-cultural environments and, in turn, different consumer attitudes and behavior (Spyropoulou et al. 2018).[1] Effective brand valuation should take account of the particular features of the foreign market environment that dictate the growth opportunities and constraints in target markets overseas and make international retail operations more uncertain than domestic ones (Katsikeas, Skarmeas, and Bello 2009).

To deal with uncertainty, managers may pursue more flexible brand portfolio strategies that embed various expansion and extension options available to the firm (Aaker 2004a; Fischer 2007). Enhancing brand-enabled flexibility requires proper recognition and assessment of the bundle of brand-embedded real options related to the retailer's products and markets. As an example, the German discount retailer Lidl has recently pursued a real growth option to enter the U.S. market through large stores located outside urban areas, which might dilute its "simple and easy to shop" brand image and affect sales adversely. Lidl's adjustment of its core strategy of smaller shops in high traffic areas has shown signs of success. A successful exercise of this brand expansion option in the U.S. would create a subsequent growth option to leverage Lidl's brand in Canada as well as growth options in Mexico and South America. Likewise, in 2012 McDonald's exercised a brand extension option by opening its first vegetarian outlet in India, which created follow-on expansion options in other countries globally including Sweden and Finland in the E.U. market in 2017. In 2018, Amazon similarly exercised a brand expansion option via a new distribution channel when the firm introduced Amazon Go, the first-of-its-kind physical store without cashiers or checkout lines—items are scanned and shoppers' accounts charged as they leave the store—allowing to complement its online with physical shopping.

Real options theory (ROT) has been used extensively in business and management as a framework and valuation metric that accounts for the value of flexibility and future growth potential under conditions of uncertainty (e.g., Dixit and Pindyck 1993; Trigeorgis 1996). In marketing, the bulk of research draws

on ROT to conceptualize or empirically investigate drivers and outcomes of "market-oriented strategic flexibility" —a bundle of strategic options aimed to address customer needs and competitive capabilities. The term has been used (Grewal and Tansaj 2001; Javalgi et al. 2005) at the intersection of two concepts: "strategic flexibility", referring to the acquisition and management of a bundle of strategic real options (Pauwels and Matthyssens 2004; Kurt and Hulland 2013), and "market orientation", which refers to a focus on customer needs and competitive capabilities to improve firm performance (Jaworski and Kohli 1993). Studies using real options logic in marketing examine links among factors including: environmental uncertainty (e.g., Hibbard, Hogan, and Smith 2003; Combe et al. 2012); market-oriented culture (e.g., Day 1994; Combe 2012); strategic flexibility (e.g., Johnson et al. 2003; Kurt and Hulland 2013); firm behavior or marketing choices such as market entry and phased rollout (Pennings and Lint 1997); international joint venture versus non-equity governance structures (Li, Boulding, and Staelin 2010); improved business ties (e.g., Hibbard, Hogan, and Smith 2003; Rese and Roemer 2004); and performance outcomes such as customer satisfaction, loyalty, and lifetime value (e.g., Javalgi et al. 2005; Haenlein, Kaplan, and Schoder 2006).

Notwithstanding the significance of ROT in conceptualizing and testing drivers and outcomes of strategic flexibility in marketing, there is little systematic research on real options in this field that explicitly quantifies the value of flexibility reflected in a bundle of strategic real options related to the brand and its financial impact on the share price. The primary purpose of this study is to demonstrate how conceptualizing and quantifying the value of the brand and brand-enabled strategies, viewed as a bundle of real options, makes a difference in assessing the growth strategies of an international retailer operating in an uncertain global environment and in estimating the firm's share price. We address two challenging questions: how can an international retailer's brand be assessed and leveraged as a *flexible* platform for pursuing brand expansion and extension opportunities? How much is flexible brand equity worth and what is its impact on firm share price? To answer these, we revisit brand valuation and management from a strategic flexibility perspective from the angle of an international retailer (Starbucks), merging ideas from marketing and strategy with finance tools based on ROT to value brand equity and flexible brand growth strategies.[2] We use ROT methodology to value the bundle of strategic expansion and extension options emanating from the brand and add that to the discounted value of incremental cash flows (attributed to the brand) from a strategy committed to management's expected plans, thus assessing how much flexible brand equity is worth including its future growth potential. This leads to a better estimate of the value and share price of branded firms. Hence, the study extends work examining links between marketing or

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[1] Despite the fact that our real options approach can be applied to a domestic retailer's brand (e.g., Kroger) and to the brands of other firms in other industries competing in uncertain market environments, the choice of an international retailer like Starbucks pursuing strategic growth in a high-potential overseas market (i.e., China), is much richer, more informative, and more interesting. In introducing this new brand valuation method, our focus on Starbucks' growth strategy in China and internationally is an appealing aspect in that, although we need to consider the particular expansion and extension options in the firm's growth strategy and the degree of riskiness associated with these options, this work can as well be relevant to research across disciplines. This 'broadness' in the nature of our study and approach makes it particularly attractive for generalizability purposes.

[2] Since our approach enables linking management's vision and retailer plans to brand growth options from a strategic perspective, "strategic flexibility" is an appropriate theoretical lens to adopt for introducing our ROT brand valuation method to the marketing field—already exposed to the notion of strategic flexibility.

strategic initiatives and value creation for measuring intangibles (Ailawadi, Lehmann, and Neslin 2003; Gupta, Lehmann, and Stuart 2004; Mizik and Jacobson 2008). It is also a response to calls for more analytical work on financial brand equity (e.g., Keller and Lehmann 2006; Raggio and Leone 2007, 2009).

This study contributes in a number of ways. First, it develops a new, ROT-based approach to valuing the bundle of a branded global retail firm's growth options, thus quantifying the value of brand equity, and applies this to the prototypical case of Starbucks under various growth and adversity conditions over a decade. Starbucks is one of the most recognizable brands in the world and most of the value of its growth options emanates from its brand. Starbucks' increased saturation in the U.S. made it essential for the firm to pursue a global expansion strategy, aiming to recreate a consistent Starbucks customer experience in each foreign market it enters. Global market developments and environmental turbulence inadvertently influence the firm's brand options and value. We herein model the process of developing and leveraging Starbucks' brand and the resulting bundle of brand expansion and extension options, addressing a key challenge posed by Keller and Lehmann (2006): how to identify and assess the option value of a brand's growth potential. Our 'brand option premium' approach can help guide retail management narrowing the gap between retail strategy and performance outcomes, thus improving marketing effectiveness (Petersen et al. 2009).

Second, our study demonstrates that the value of flexible brand management, proactive marketing strategy design and execution adaptability is contingent on alternative future economic scenarios facing the firm, thus linking strategic marketing plans, brand equity value creation, and share price performance. Our methodology enables managers to assess the value impact of alternative brand growth strategies viewed as bundles of growth options, thus responding to Keller and Lehmann's (2006) question as regards how to build and manage a brand as a growth platform. Contrary to traditional brand valuation logic, investing resources in brand equity-related growth options enhances the firm value of a global retailer particularly in highly uncertain environments. Our approach fulfills fundamental criteria for effectively assessing financial brand equity (Ailawadi, Lehmann, and Neslin 2003; Fischer 2007). Thus, our study not only helps gain a better understanding of brand-based marketing metrics and their link to financial outcomes, but also highlights their link to strategic flexibility and adaptive marketing strategy.

Third, we add to and reinforce key notions and insights in the literature on market-oriented strategic flexibility. This is the first normative study that quantifies the growth potential of a brand using ROT and captures the impact of management's strategic plans on the brand's equity value and share price. Translating managerial plans into a bundle of real options underscores the relevance of managerial perceptions and decision frames in supporting flexibility and how managerial perceptions of options can be a key determinant of strategic flexibility (Matthyssens, Pauwels, and Vandenbempt 2005). Our 'brand option premium' approach thus provides guidance on how marketing and retail managers can conceive of and value bundles of options (Johnson et al. 2003). The valuation of Starbucks in a down market further

confirms that established firms may be stuck in existing frames and market conceptions and be slow to adapt, particularly in a crisis situation (Grewal and Tansuhaj 2001).

Many domestic and international retailers (and firms in other sectors) face dynamic and uncertain market conditions. However, these conditions are likely to differ from one firm to another, depending on the particular characteristics of and opportunities in the market in which the firm competes, the sector in which it operates, and the strategy deployed by the firm to exploit expansion and extension options identified in the target market. As the application of our ROT approach is firm-specific, we sought to consider the specific market conditions most relevant to Starbucks' international retail growth strategy, with a focus on the unique Chinese market characterized by dynamism and uncertainty along with distinct consumer characteristics, attitudes, and behavior. Although our study has obvious implications for retail companies, our ROT approach is also applicable to growth firms in other sectors operating in dynamic industries—thus demonstrating broader external validity. This extension is possible by translating managerial plans involving expansion, contraction, abandonment or redeployment opportunities as a bundle of strategic real options as demonstrated in this paper.

Valuation approaches

Standard valuation approaches based on a variant of NPV or DCF have inherent difficulty valuing intangible assets such as the corporate brand (Barth, Beaver and Landsman 1998; Mizik and Jacobson 2009; Vomberg, Homburg, and Bornemann 2015).[3] To the extent that NPV and DCF significantly misvalue the bundle of real options arising from parent brand expansion and extension prospects, in part because of the constant perpetuity growth and constant discount rate assumptions, the resulting valuations can be substantially off. These approaches may be problematic for growth firms and global retailers in dynamic industries or when valuing intangibles such as the corporate brand. Global retailers deal with multiple factors that shape overseas customer attitudes and behavior (Reinartz et al. 2011). Thus, effective brand valuation should take into account these unique aspects of the foreign retail market environment that dictate the growth opportunities and constraints in the targeted overseas market.

Our ROT approach explicitly considers the available expansion and extension options in the strategy of global retailers operating in uncertain foreign markets. In contrast, current brand valuation methods based on NPV consider growth as future commitments, rather than as options that may be exercised sequentially or not at all, and fail to recognize changes in the riskiness—and discount rate. The inability of DCF-focused methods to account of expansion and extension opportunities as options is evident both through Starbucks'

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[3] Direct valuation using DCF or NPV analysis presumes an objective asset value based on the expected cash flows derived from its use and their riskiness—typically reflected in a constant discount rate (e.g., Damodaran 2002). However, cash flow riskiness (the discount rate) and opportunity generation are not constant across stages in the asset's life or in different (good or adverse) future scenarios when various options are involved.

value-destroying excessive growth during the crisis of 2018 and in its decision to grow in the Chinese market without proper accounting for the degree of riskiness. This is often the case for retail firms that pursue high growth strategies in uncertain market conditions—which typically underpins the engagement in international business operations (Katsikeas, Skarmeas, and Bello 2009).

Further, Sinclair and Keller (2014) note a wide discrepancy among consulting firms' DCF-based valuation of top company brands. Starbucks' brand, for example, was valued in 2016 at $7.49 billion (B) by Interbrand, $25.62B by Brand Finance, and $43.60B by Millward Brown. Table 1 provides valuations of the Starbucks brand for 2007 (under a growing market), 2008 (during the global financial crisis), and 2018 (under the latest Starbucks strategic plan). As was the case in 2017, Starbucks' valuation for 2018 by Interbrand was about one fourth of that of BrandFinance ($9.62B vs. $39.27B). There is not much strategic logic for these widely divergent valuations. The wide discrepancy in valuation estimates arising from otherwise similar income-based standard DCF approaches highlights the need for a more accurate, robust and theory-grounded methodology to quantify the value of the brand and provide more precise estimates of the growth potential of branded retailers. Our aim is not the development of a new theory on brand valuation. Rather, we propose a brand valuation approach based on real options theory (ROT). In this sense, our approach is theory-grounded. Our approach is aimed at highlighting aspects of a brand's strategy not captured by existing brand metrics, such as the aspect of flexibility and dynamism in the retailer strategy, the quantification of the value of brand expansion and extension options, and the relationships of management's strategic vision for the brand and the development, management and exercise of brand-related options with financial value creation (market capitalization).

The last column in Table 1 gives an overview of the Expanded-Brand Equity Value (E-BEV) estimates for Starbucks using our 'brand option premium' approach: $9.85B in 2007, $1.10B in 2008, and $28.18B in 2018, in comparison with the published values of the Starbucks brand by Interbrand and BrandFinance. We discuss how these estimates are derived in the next section. Since the BrandFinance method is not straightforward to replicate, we also provide our own estimation (in the next-to-last column) based on the royalty relief method (RRM) widely used for valuing financial brand equity.[4] Using the RRM, Starbucks' brand was worth $9.84B in 2007, $7.33B in 2008, and $23.67B in 2018. [SA1 explains this RRM estimation for

2018 and provides a step-by-step guidance for implementing RRM vs. our 'brand option premium' approach.] We also considered the revenue premium approach, estimating the difference in revenues between a branded and a comparable unbranded product.[5] These income-based approaches give very different valuations for the same company brand, underscoring the degree of subjectivity in these methods.

Interbrand and BrandFinance may misestimate the brand's real option value due to limitations inherent in DCF or NPV methodology. In Table 1, Interbrand seems to underestimate the brand value of Starbucks compared to BrandFinance, RRM, our approach, and relative to its enterprise value (EV). Our 'brand option premium' valuations are generally closer to those of BrandFinance, on average amounting to about 37 % of Starbucks' EV, and are higher than those of Interbrand.[6] Instead of merely valuing the brand based on its cash-generating ability, we focus on the challenging task of valuing the bundle of the branded retailer's expansion and extension options. Our valuation thus focuses on flexible brand strategies for exploiting the corporate brand through strategic flexibility in marketing strategy design. The difference in value from DCF-based methods arises from the more flexible marketing strategy valued as a bundle of real options rather than as a commitment to preset future growth plans. When a rigid marketing growth strategy is no longer profitable, it can destroy value, as per our valuation of Starbucks in the more adverse environment in 2008. Growth rigidity—which treats future growth as a commitment rather than as a discretionary option and hence fails to recognize the value of flexibility and growth options—does not add to brand value. Besides the unique ability to put appropriate real options numbers in this complex brand valuation problem, the rationalization of alternative strategic marketing plans and their link to value creation are noteworthy benefits of our approach.

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[4] The RRM projects royalty streams that would have been received if the brand were licensed out to a third party. Royalty streams are determined by multiplying a royalty rate, derived from past comparable market transactions, by the firm's forecasted sales over a long horizon (typically a 15-year tax amortization period granted in the U.S.) after taxes. The present value of these royalty streams and a terminal value estimate discounted at the firm's cost of equity gives the brand's value. A 5% royalty rate was used based on the mean and median of comparable market transactions obtained by RoyaltySource Intellectual Property Database, completed in the coffee retail store sector in the 1999−2017 period. The other input parameters (tax rate, cost of equity, long-term growth rate) were the same as in Starbuck's standard DCF valuation.

[5] We followed the revenue premium approach to value Starbucks' brand in 2015 using Green Mountain Coffee Roasters as a private label. We focused on 2015 as the unbranded company was bought and became privately held from that year onwards. In 2015 Starbucks reported revenues of $19.16B while Green Mountain Coffee Roasters reported $4.52B, thus yielding a revenue premium of $14.64B. Revenue premium is a number easy to calculate and monitor, but it does not explicitly account for and quantify a brand's extendibility and future growth potential. Further, there may not exist a truly a comparable firm in the same sector, as is the case for Starbucks. If the comparable firm is smaller in size, the difference in revenues cannot be attributed solely to the brand. Finally, to be comparable to the other methods in Ailawadi, Lehmann, and Neslin (2003), this method would need to be adjusted to estimate the difference in the present value of the stream of cash flows between the branded product and private label.

[6] Interbrand relies on the income split method based on the economic value added (EVA) variant of NPV, whereas BrandFinance relies on the RRM variant of NPV. Interbrand's EVA uses a measure of a company's "economic profit," the after-tax operating profit of the brand, minus "a charge for the capital used to generate the brand's revenue and margins." The two approaches make somewhat different assumptions about long term market growth, specific brand growth, the proportion of revenue attributable to the brand, and the implied cost of capital. A potential reason that Interbrand valuations are lower than our valuation and that of BrandFinance is that EVA is more reliant on the constant implied cost of capital (constant return) assumption leading to potential undervaluation of the brand's future potential and strategic growth options. There is also more reliance on a subjective human factor concerning the role (attribution) and the strength of the brand, estimated by experts from industry panels.

Table 1
Comparative valuation of the Brand Value of Starbucks.

| Year | Firm Value (EV) ($B) | Interbrand (*) | | BrandFinance (*) | | Royalty Relief Method (**) | | Brand Option Premium (E-BEV) | |
		Brand Value ($B)	% of EV	Brand Value ($B)	% of EV	Brand Value ($B)	% of EV	Brand Value ($B)	% of EV
2018	85.07	9.62	11%	39.27	46%	23.69	28%	28.18	33%
2008	7.67	3.88	51%	4.14	54%	7.33	96%	1.10	14%
2007	15.19	3.63	24%	5.60	37%	9.84	65%	9.85	65%
Average			29%		46%		63%		37%
Average 2006-2018			20%		38%				

(*) Based on values published by Interbrand and BrandFinance.
(**) Calculated following RRM methodology.

Relative firm valuation methods are often used as an alternative to the income-based DCF approaches. These methods presume that comparable assets are priced similarly and an asset's value can be inferred from comparable traded assets. Similar firms are identified whose value is linked through a multiplier to a common value driver, such as earnings or sales (Damodaran 2002). The multiplier (e.g., price-to-earnings) converts the value driver into an estimated firm value. This reduces a complex relation involving forecasted cash flows and discount rates to a simpler linear relation: the current level of the value driver (e.g., income) times a multiplier (Liu, Nissim, and Thomas 2007). This bypasses the need to make projections or estimate growth rates. However, the market may not accurately value comparable benchmark firms. If market analysts do not know how to value growth options or intangibles generally, the use of relative valuation methods is limited. Identifying true comparable firms often is challenging: one needs to identify all relevant characteristics that make firms comparable, besides being a typical firm in the same industry (Bojraj and Lee 2002). It is not enough to have the same growth in revenues if firm size and profitability vary or the extent of uncertainty, growth option potential or other intangible assets differs.

Brand assets may have both a direct short-term effect reflected in the value driver (e.g., revenues) and a long-term impact capturing future growth potential affecting the multiplier itself (e.g., enterprise value-to-sales). The latter "multiplier premium" of a branded firm may partly reflect a 'brand option premium' from leveraging the corporate brand via a portfolio of brand expansion and extension options. We show how the value of a branded firm is linked to management's vision and strategy to leverage its corporate brand, not only by expanding its scale of operations (resulting in a volume premium) but also by extending the menu of its product offerings (a product extension premium). Much of this potential value may only be realized contingent on management's development and timely exercise of future brand options under the right market and competitive conditions. If future conditions turn unfavorable, such potential value may not materialize. Hence, it cannot be fully reflected in current revenue premiums or accounting-based measures.

There is no single objective value of a branded firm based on cash-flow fundamentals as DCF or constant multiple approaches presume. Value derives from strategic plans as to how to utilize the corporate brand under future contingent circumstances.

There may not be a constant multiple to use from an average of "comparable" firms in the industry. Not only is each brand unique, nontraded and illiquid, but also what is comparable should reflect not just a comparable level of size, sales or profit, but also of uncertainty, growth options value, and management quality and vision. For branded firms, the link between value creation and uncertainty is likely nonlinear (see Fig. 5 Panel A in this study). This is due to (1) the adaptation flexibility that firms need to have to reorganize their operating activities in response to adverse market conditions (e.g., Holthausen and Watts 2001), and (2) the enhancement in equity values arising from growth options in case of favorable developments and high profitability (e.g., Trigeorgis 1996; Del Viva, Ragozzino, and Trigeorgis 2020), as in the present context. The true link between branded firm value and a value driver such as revenues is likely also nonlinear as it embeds a complex portfolio of brand growth options affected by market uncertainty, managerial vision, strategic flexibility, and competitive reactions, whose collective value impact depends on future contingent developments. As the brand's value and role as insurance or growth options provider depends on uncertainty in a nonlinear fashion, the multiplier depends on both brand strength and its value drivers including both revenues and uncertainty.

Thus, we argue that a brand's value as an intangible asset is *not* an 'objective' performance outcome, but rather it critically depends on the best way the asset can be used by a creative and flexible management under the right future circumstances. Our approach thus links brand value creation to management's vision, strategic plans, and contingent future scenarios in the firm's environment. The resulting valuation, associated strategic plans, and contingent brand management policies under alternative future economic circumstances are thus more transparent, intuitive, and credible to senior management. Our approach highlights aspects of a brand's strategy that are not captured by existing brand metrics. These include the aspect of flexibility and dynamism in the retailer strategy and the quantification of the value of brand expansion and extension options. Our approach also uniquely highlights the link between management's strategic vision for the brand and the development and exercise of brand-related options, as well as it traces the impact of these options on brand equity value and share price.

Next, we discuss brand development and leveraging viewed as options, followed by Starbucks' brand valuations under dif-

ferent conditions—a growth environment, subsequent adverse conditions, and the new 2018 growth strategy focused on its expansion in China.[7] We conclude with managerial and theoretical implications. [SA2 examines current brand equity measures and shows how our brand approach is positioned.]

Brands as options

An international retailer over its life cycle would build (or acquire) and then leverage corporate brand equity (Park, Jaworski, and MacInnis 1986; Farquhar 1989; Aaker 2004b). Brand equity development typically follows a three-stage cycle: parent brand building via *launch* and *reinforcement* stages, followed by brand leveraging or exploitation via *expansions* and *extensions* (e.g., Aaker and Keller 1990; Broniarczyk and Alba 1994; Lane and Jacobson 1995; Randall, Ulrich, and Reibstein 1998). Embedded in this process are *options to launch* the brand, *reinforce* it, and subsequently *leverage* it via *brand expansion* and *extension options* involving current or new products. Parent brand equity can be leveraged by (a) expanding brand activities involving *existing* products in new markets (*brand expansion options*), and (b) extending the parent brand to *new* product lines or new categories and markets (*brand extension options*). The retailer may exercise these *brand expansion* and *extension options* contingent on favorable future market conditions. This amounts to viewing brand equity as a platform generating a bundle of growth and extension options.

Extending Ansoff (1957) product-market matrix, Fig. 1 Panel A describes an Expanded Brand Equity Value (E-BEV) criterion examining brand building and leveraging options across two dimensions: (a) existing versus new markets and customers (vertical axis), and (b) existing versus new products (horizontal axis). The lower-left region (quadrant i) represents the current brand strategy (existing products to existing markets), including parent brand building options concerning the launch and reinforcement phases of the brand equity cycle. The top-left quadrant (ii) represents brand equity leveraging options in the form of brand *expansion* of existing products into new markets that may involve (1) new geographic areas, (2) new market segments, and (3) new distribution channels. Line (4) and new category (5) brand *extension* options are shown in the lower- and upper-right quadrants (iii, iv) of the E-BEV matrix of Fig. 1A. Fig. 1B shows how this matrix is applied to the case of Starbucks. In Figs. 1A and B, the arrow from new categories extends both straight up to new markets (customers) and halfway to the left (with a second arrow head) toward existing markets (customers). E-BEV estimations are based as much on "cross-selling" to existing customers as on capturing new ones. For example, selling music CDs in the Starbucks stores or downloading music from its web-

site while in the store are used mostly by existing customers rather than new ones.

Brand equity is thus viewed as incorporating a portfolio of strategic real (growth) options. Successful brand management presupposes the ability to proactively tackle uncertainty and adapt to contingent environmental changes. Real options enables capturing the value of flexible brand strategy capitalizing on opportunity or protecting against adversity, recognizing the embedded growth or abandonment opportunities (e.g., via staging) and accounting for their contribution to Brand Equity Value (BEV).

The basic structure in this brand development cycle, including brand leveraging expansion and extension options, can be viewed as a multi-stage option bundle (Fig. 2, Panel A). Investing in brand development generates a set of staged call options to proceed to the next phase. The launch of a branded premium product (phase I) creates a follow-on *reinforcement* option (phase II), creating a subsequent option to *leverage* or exploit the brand (phase III) via a bundle of strategic brand expansion and extension options. Brand equity building during the *launch* and *reinforcement* stages enables follow-on leveraging via such *brand expansion* and *extension options* (Farquhar 1989). The three subcategories of brand expansion are represented as branches (1), (2), (3) at the top right of Fig. 2 Panel A, while line and new category extensions are shown as branches (4), (5) at the bottom.

Growth options arising from brand equity building and leveraging strategies are of expansion-type. The payoff of such options is of the form: $E^i = \max(-I_i + e_i V; 0)$.[8] The operator max(; 0) operationalizes the basic asymmetric nature of an option, being the right to exercise the option by incurring a cost to obtain a positive payoff when beneficial to do so, with no obligation to exercise the option and hence limiting losses to 0, thus obtaining the best (max) of these two scenarios. I_i is the discretionary investment cost that needs to be incurred to exercise the specific brand-related option i, V is the present value of cash inflows from unbranded sales (the underlying gross asset value), and e_i is a multiplicative expansion (or extension) factor for option i applied to the above underlying asset (V). This option payoff structure applies to both types of brand *leveraging* options whether of expansion or extension type. A *brand expansion option* is indicated as E^{EXP}, with PBV, ^eEXP and I_{EXP} as underlying asset, expansion factor and marketing investment, respectively. Expansion of the existing branded product portfolio provides the firm with growth options in new geographic regions, new segments or via new distribution channels. *Brand extensions* involve options to leverage the parent brand with *new* products in existing or new markets. Two main types of *brand extension options* (E^{EXT}) can be exercised: a *line extension*, which incrementally extends the existing parent brand to a new product version within current categories (e.g., use of a different packaging, flavor or providing the same product in warm conditions); and a *category extension* to an entirely new product

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[7] We choose to concentrate on Starbucks' latest China-focused strategic growth plan unveiled at the 26th annual meeting of shareholders on March 21, 2018, by the new CEO Kevin Johnson. The new growth strategy was primarily aimed at leveraging the strong connection with the Chinese market (3,300 stores operated at the time) with plans to open 600 new stores annually and a long-term target of a total of 6,000 outlets in China.

[8] For the formula indicating an expansion option, we refer to Trigeorgis (1996) and Baldi and Trigeorgis (2020).
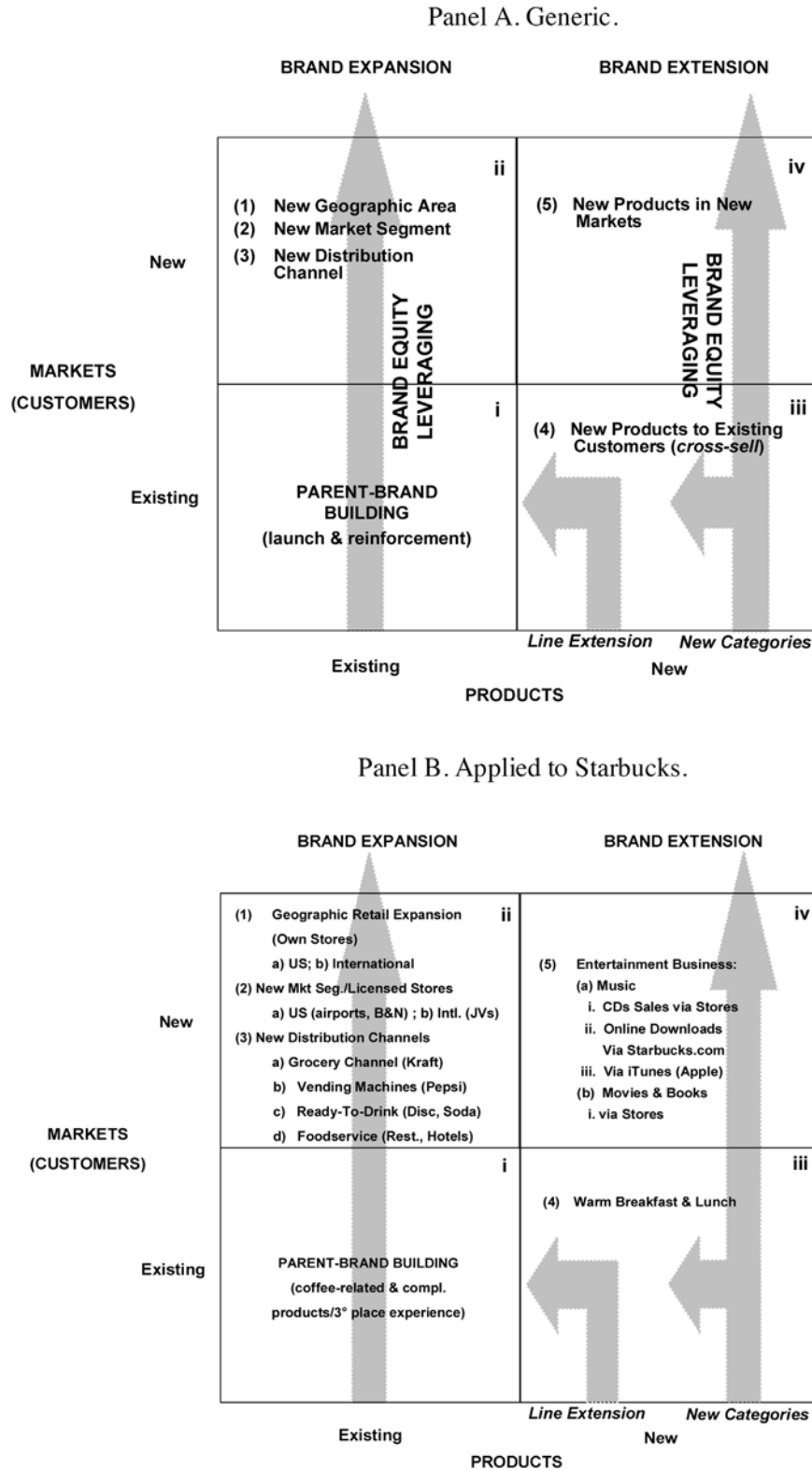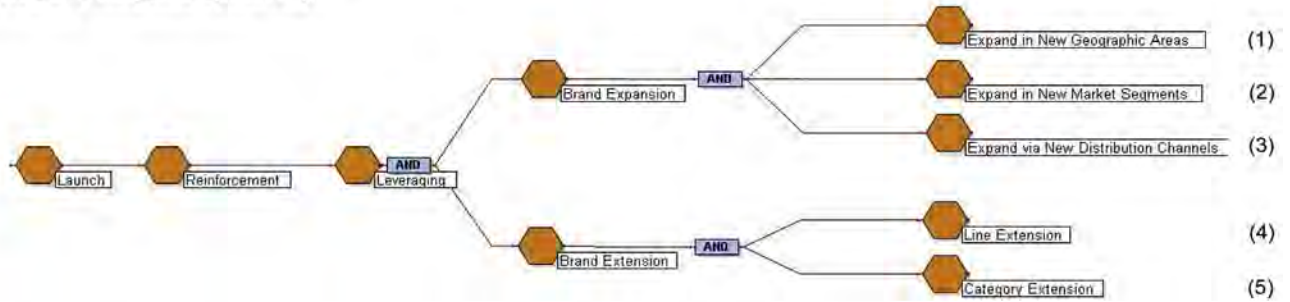
Fig. 1. Expanded Brand Equity Value (*E*-BEV) Matrix.

category, potentially targeting new customers. Payoffs of brand extension options differ in terms of the underlying asset (V). Fig. 2 Panel B summarizes the basic brand options architecture involving various options (and their payoffs) embedded in the brand development and leveraging process.

Assessing the *expanded* value of a firm's parent brand requires considering the staged (compound option) nature of its development and the portfolio nature of its leveraging processes. This entails accounting for all options in the firm's portfolio and assessing their value considering the time of execution, con-

Panel A. Basic compound option map.

PARENT BRAND BUILDING OPTIONS   BRAND LEVERAGING OPTIONS

Panel B. Basic brand options architecture.

Fig. 2. Brand development life-cycle as a multistage option.

tingent on optimal exercise of all follow-on options within a backward option valuation process. The resulting E-BEV is:

$$E\text{-}BEV = PBV + E^{EXP} + E^{EXT}$$

Parent Brand Value   Brand Leveraging Options (PVGO)   (1)

Parent brand value (PBV) represents the cash-generating ability of the corporate brand; it accounts for the present value of expected incremental cash flows associated with the corporate brand given the firm's existing business plan commitments, determined using traditional methods (e.g., royalty relief or other variant of discounted cash flow). Expanded brand equity value (*E*-BEV) also includes the present value of growth opportunities (PVGO) from leveraging the corporate brand via a bundle of strategic expansion and extension options. This "stand-alone" *E*-BEV is part of total or expanded equity value (*E*-EV). This is the base DCF reflecting the cash-generating ability of the firm's net assets in place (and PBV), plus the PVGO of brand leveraging options, as follows:

Expanded Equity Value =

E-BEV

Value of Net Assets in Place + PBV + *Brand Leveraging Options*

Base DCF   Growth Options (PVGO)   (2)

In line with the equity-like nature of brand value, the *Expanded* (Equity) Value can thus be estimated as the sum of two main components: (1) the base DCF (or NPV) component,

accounting for the present value of cash flows from net assets in place (including PBV); and (2) a growth options component (PVGO), representing the value of the portfolio of brand leveraging expansion and extension options.[9] Specifically, brand leveraging options in eq. (2) are modeled as the portfolio of brand expansion and extension options (PVGO) emanating from the brand. In Fig. 2, Panel A indicates the various growth options (from 1 to 5) and Panel B the specific modeling equations for these brand expansion and extension options. Fig. 3 shows, for the Starbucks brand, the full portfolio of brand growth options emanating from leveraging the parent brand that alone only captures the value of cash flows from existing assets in place (Base DCF box). The total value of the brand expansion and extension options is shown above the AND. A brand's intangible value is that of its future expansion and extension options, beyond the value of expected cash flows resulting from the brand's existing assets. This is what Keller and Lehmann (2006) referred to as the brand's growth potential or viewing the brand as a growth platform, and Ailawadi, Lehmann, and Neslin (2003) as the brand's long-term financial value. Ailawadi, Lehmann, and Neslin (2003) and Gupta, Lehmann, and Stuart (2004) also referred to such link between strategic/marketing initiatives and intangible value.

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[9] The value of net assets in place drives enterprise value. If adjusted for net debt, it yields the firm's equity value. The base DCF is estimated under a no-further-growth policy. The second value component represents all growth options associated with brand leveraging.
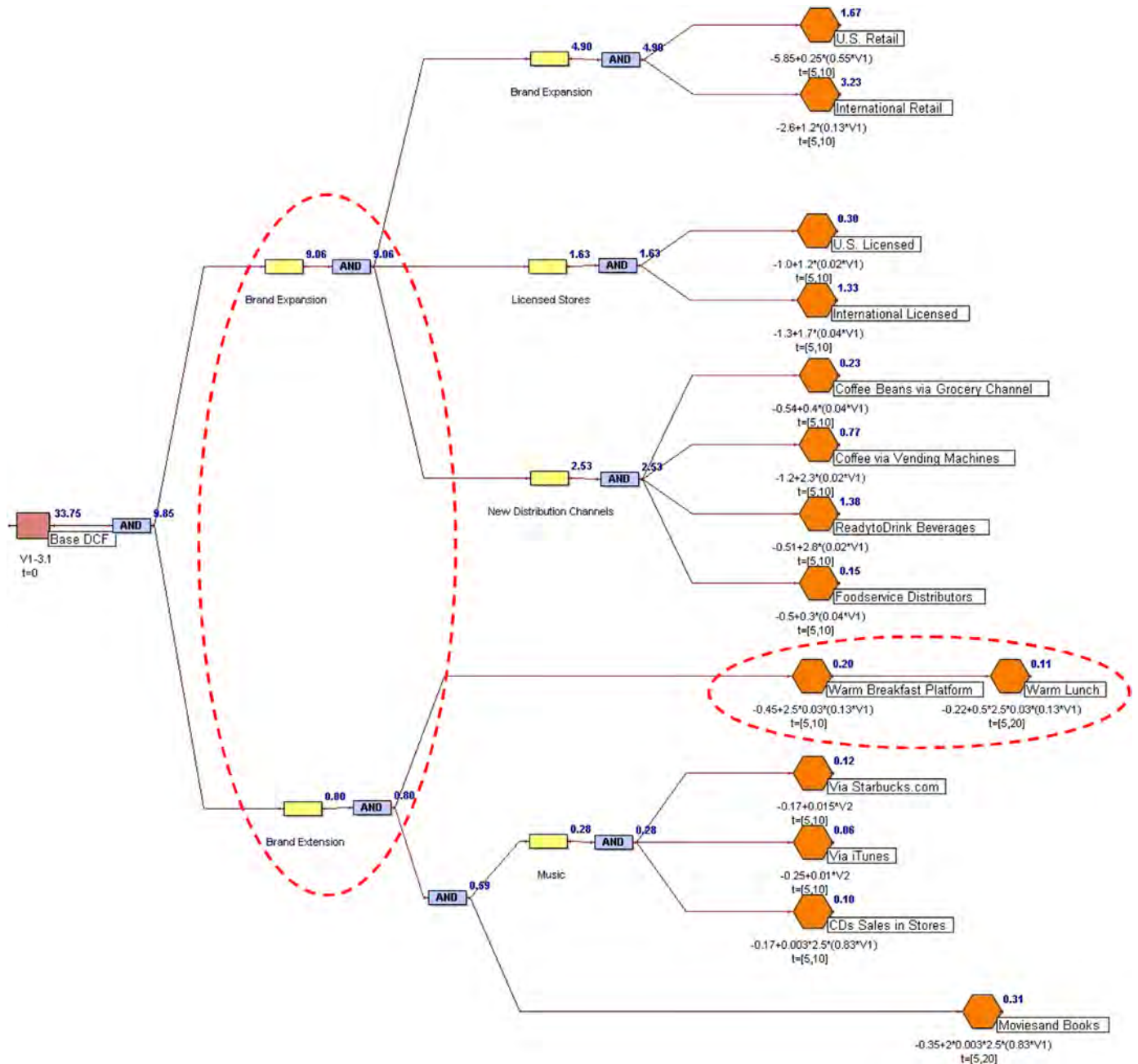
Fig. 3. Brand options map for Starbucks under growth (June 2007).

The present value of growth options (PVGO) emanating from the brand is higher in a more uncertain global retailer environment as firm management has the right to exercise the brand's growth options if future uncertainty is resolved favorably, with no obligation to do so in adverse future conditions. PVGO is also higher for staged investments, and can be assessed as a bundle of strategic growth options. The brand options portfolio value depends on its fit with the broader firm asset portfolio and must be assessed incrementally. It is the difference in the firm's value with versus without the brand-enabled growth options or the difference between the growth options of a branded retailer and

those of a comparable private label. A proper real options valuation would thus recognize the embedded brand-enabled growth options and account for their contribution to *E*-BEV and EV. *Expanded* BEV and EV are estimated using standard option valuation methods (see Cox, Ross and Rubinstein 1979; Trigeorgis 1996). [SA3 explains the option valuation methodology.] To help apply our proposed methodology, SA4 provides a list of financial and operational data items needed for the two main types of retailers (brick-and-mortar and e-retailers). We next estimate *Expanded* BEV in a valuation of Starbucks at three different periods and market environments over a decade: first, under the

initial growth strategy in the up market of June 2007; second, under various forward brand strategies when market conditions deteriorated in December 2008 during the last financial crisis; and, more recently, under the new China-focused growth strategy in March 2018. The first two phases show how retailer growth strategies and brand option values can be significantly affected by favorable versus adverse growth conditions and global environmental turbulence. The third, most recent phase further epitomizes the impact of heavy international reliance on a particular market (China) and the expansion opportunities opened by digitalization along with a strong brand. SA5 lists all sources of Starbucks' business model and growth strategies.

Valuing the brand equity and growth strategies of Starbucks

According to its website, Starbucks is the world's leading specialty coffee retailer with one of the most recognizable brands. With 83 % of U.S. adults being aware of Starbucks and 85 % of its customers willing to recommend the retailer to others, Starbucks represents an experiential, would-be "master brand". Much of its success stems from a unique customer experience in its coffeehouse stores offering a variety of quality coffee and complementary products with quality customer service in an appealing trendy environment (https://stories.starbucks.com). Starbucks' broader coffee-related "third place experience" (outside of home and work) creates an emotional connection with consumers not easily replicable. It is an example of consumer demand for a tangible product enriched with *intangible* attributes for a strong brand image. Starbucks successfully replicated its business model at new locations in the U.S. and around the world, enlarging its product range from refined and enlarged food menus to new product categories ranging from appliances, CDs and WiFi services, to movies and books (Baird, US Equity Research, Nov. 2006). Fig. 2 Panel B shows an application of *E*-BEV matrix to Starbucks, summarizing its brand leveraging options via market and product development.

The global dimension in selecting Starbucks is highlighted by the global geographical reach of the Starbucks stores and the focus of its recent strategic plan on expansion in China. The dependence of Starbucks' brand on global developments and environmental turbulence is epitomized with the hit on its brand value (from $10 billion down to $1 billion) in the span of a year-and-half during the financial crisis in 2008 (our second valuation in a down market), and is most evident today as a result of its exposure to China and the current coronavirus pandemic.

Starbucks' initial brand growth strategy in the upmarket of June 2007

We first evaluate the brand equity of Starbucks using real options as of June 1, 2007, when the firm pursued its initial growth strategy in a growing market in June 2007. We follow a bottom-up approach, identifying and valuing the bundle of strategic growth options embedded in Starbucks' current and planned future businesses (ThinkEquity Partners, Dec. 2006; William Blair, Equity Research, Oct. 2006). As the global retailer's parent brand was built and already reflected in current assets in place, the growth options exercisable in the long-term (beyond a 5-year planning horizon) are the brand expansion and extension options. These options are in addition to (and contingent on) the "base DCF" value (i.e., the assets-in-place under no-further growth). Fig. 3 exhibits a growth "option map" of Starbucks' brand expansion and extension options under its original strategy.

Leveraging the brand creates growth options in Starbucks' main business divisions, retail and specialty (licensed stores). The first step, before determining the "intangible" value of Starbucks' embedded future growth options, is to confirm a standard DCF or NPV analysis. We use an estimated terminal growth rate g of 6% (SA6, Panel A). We then derive a "base DCF" by performing a variant of DCF analysis if Starbucks were to follow a no-further-growth policy (i.e., maintaining its assets in place by pursuing a steady-state policy merely reinvesting at present depreciation levels to sustain current operations), that is, with g = 0 and investment (Capex) set equal to depreciation. This is to avoid double counting for growth prospects (beyond the committed 5-year plan); we will later add the PVGO, assessed as a portfolio of real options on the firm's "base DCF" asset value. This is a key part of our methodological value-added. The standard DCF estimate of Starbucks' EV (assuming an average terminal or perpetual growth rate g of 6% and a weighted average cost of capital (WACC) of 8.8 %) is $21.3B, close to the market capitalization as of June 1, 2007, of $21.6B. Base EV (or base DCF) under a no-further growth policy (g = 0%) was lower at $15B (SA6, Panel B).[10]

The long-term total investment for exploiting Starbucks' brand expansion and extension options (after the 5-year committed horizon) is estimated at $15.1B (as of 2012 or year 5), or at about $12B in present value terms (as of June 1, 2007 or t = 0). These optional investment outlays were to be incurred in pursuing long-term growth opportunities beyond the committed 5-year business plan horizon. The PVGO will replace use of the cash-flow perpetual growth rate g (of 6%) in the standard terminal value DCF calculation.

The base DCF firm (asset) value or base Enterprise Value (EV) is net of all capital investment (*I*), including that to pursue growth options beyond the 5-year business plan (base EV = NPV = *V* − *I*). Total firm or EV is the cash-flow or NPV component of brand equity value plus the related growth options. The underlying base asset for the above growth options is the gross present value of expected cash flows from the tangible cash-generating assets in place, including the parent brand (Base *V* = Gross Value of Assets in Place + PBV). This base gross asset value is estimated at $27B (*V* = base EV + *I* = 15B + 12B).[11]

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[10] Standard DCF, applied to a 5-year business plan (2007−2012), is based on: risk-free rate r = 4.7%, β = 1.1, market risk premium = 5%, cost of equity = 10.2%, cost of debt = 5.5%, tax rate = 38%, target debt ratio D/(D+E) = 20%, *WACC* = 8.8%, terminal (perpetuity) growth rate g (U.S.) = 5%, g (International) = 7% (average global perpetuity growth rate g = 6%) (see SA7, Panel A).

[11] Gross asset (firm) value is adjusted for current net debt including capitalized value of operating leases ($3.1B), yielding a base gross equity value (gross value of net tangible assets and parent brand) of $23.9B.

To apply eq. (1), estimating the *E*-BEV for Starbucks, we first determine the total value of its brand expansion and extension options portfolio using ROT. To do so, we identify the set of brand leveraging growth options for Starbucks' expansion and extension opportunities globally in June 2007 (described in Fig. 1 Panel B). An "option map" (see Fig. 3) shows the timing and interconnections among Starbucks' brand growth options. Each expansion (or extension) option has an expansion-type payoff of the form $-I_i + e_i V$, with all inputs (I_i, V, e_i) determined from a detailed examination of Starbucks' operations in each business area. The operator Max(; 0) is implied by the option nature of each hexagon. I_i is the future optional investment outlay to exercise that option (i) and e_i is the expansion factor (multiplying the underlying asset V).[12] [Details on how parameters (I_i, e_i, V etc.) were estimated are in SA8.]

The expansion factors for each business (e_i), shown in the second term of the payoff expressions below each option, are derived from an in-depth investigation of each business' expansion prospects. The expansion factor for retail stores in the U.S. over a 5-year horizon (after 2012 or $t = 5$) was estimated at $e_{us} = 0.25$. Exercise of the U.S. expansion option would enable Starbucks to expand by 25 % its existing U.S. retail store business (being 55 % of the underlying base company asset value, V_1). The investment to exercise this U.S. retail store expansion option (as of year 5) was $I_{us} = \$5.85B$. The current ($t = 0$) value of the U.S. retail store expansion option (shown above the relevant option hexagon) is \$1.67B. The expansion factor for Starbucks' international growth via own stores (1.2) is calculated by analogy with U.S. outlets. Starbucks' specialty business of licensed stores and new distribution channels (being 13 % of its revenues and expected to reach 18 % in 5 years) provided additional strategic options expanding the brand to new markets and channels outside firm-operated stores. Starbucks leveraged its brand equity through partnerships and alliances distributing its products across various channels (e.g., grocery, vending machines, ready-to-drink beverages), depicted in the four sub-branches of the third branch in the option map of Fig. 3. Related expansion factors are 0.4, 2.3, 2.8, and 0.3.

In terms of brand *extension* (Fig. 3, lower main branch in option map), the retailer planned to extend its business across markets via line extension and new product category extension options. Regarding line extension (top sub-branch), Starbucks aimed to create new food options complementing the core business. Following its cold sandwiches lunch program, Starbucks considered further extension of its food line by launching a "warming platform" program. This would create a staged (compound) option as the retailer may not only expand the warming platform to breakfast items in new geographic markets, but also have a follow-on option to offer warm lunches, especially in its

own retail stores internationally. Further, Starbucks embarked on a new category extension in the entertainment business (Fig. 3, last branch in option map). The retailer viewed music, books and movies as complementary and enhancing the coffeehouse "third place" experience, aiming to leverage its loyal customer base and brand equity in the entertainment sector. The entertainment category consisted of two main subareas: music, and movies and books. The music subarea itself consisted of 3 subcategories (sub-branches): CD sales via own stores, its website, and iTunes in partnership with Apple.

As to the brand extension option regarding the sale of CDs in retail stores, the payoff structure depended on: (1) the underlying asset representing the whole retail channel (own retail and licensed stores) accounting for 83 % of the whole business ($0.13*V_1$); (2) a multiplier giving the (same) CD sales revenue as % of total retail store sales as currently (0.003); and (3) a prospective CD sales multiple of 2.5x, estimated as the ratio between projected CD sales in 2012 and 2007. The two extension options involving digital music online sales via Starbucks own website and via iTunes in cooperation with Apple depended on a second underlying variable, the value of the global digital music downloads business (V_2). The expansion factors into digital music business via Starbucks.com and Starbucks Entertainment Store are linked to the retailer's expected market shares, 1.5 % and 1 %. The option to extend the parent brand to the production and distribution of movies and books through the retail channel ($0.83 \times V_1$) was twice the scale of CD sales through retail stores.

We used standard binomial option valuation to value the above options for Starbucks as of June 1, 2007 (see Cox, Ross and Rubinstein 1979; Trigeorgis 1996). Most options are U.S.-type with a five-year maturity (2012), except for the warm lunch and movies and books extension options that have maturity of 20 years. The forward-looking implied volatility of Starbucks' main business (V_1), inferred from near at-the-money (EX = \$30) call option contracts on the retailer's shares with sufficient liquidity and long maturities, is 30 %. The business volatility of the digital music business (V_2) is 60 %. [Basic inputs for option valuation are summarized in SA7 Panel B.] Fig. 3 (top of hexagon) shows the valuation for each option and any follow-on options along that branch (as of $t = 0$ or June 1, 2007).

The combined value of the portfolio of all Starbucks' growth options (PVGO) is \$9.85B—\$9B for brand expansion and the rest for brand extension (\$9.06B is the value of brand expansion options and \$0.80B is the value of brand extension options, respectively-shown above the AND in the options map of Fig. 3). With 782,800,000 shares outstanding, this is \$12 a share (43 % of then price of \$29 or 30 % of long-term estimated value of \$42 a share). This is roughly equal to the \$13 share differential between analysts' target price of \$42 and the then current price of \$29. Overall, the *Expanded* Equity Value (EV) of Starbucks as of June 1, 2007, made up of the firm's DCF-based (gross) equity value of expected cash flows from its net tangible assets and the parent brand (\$23.9B) plus the incremental growth option value of its brand expansion and extension options portfolio (PVGO

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[12] The capitalized value of all additional investment outlays to fund long-term growth as of terminal year 2012 (year 5), estimated at \$15.1B, is allocated to the options in Starbucks' business areas according to their relative weight in the firm's prospective revenue mix. This allows estimating the investment cost or exercise price (I_i) of each option within each business area shown in the first term of the option's payoff expression in Fig. 3.

of $9.85B), is $33.75B or $43 a share, close to the analysts' median target of $42.

Brand strategies and financial impact in adverse conditions during the 2008 crisis

Starbucks faced positive trends in its international business but experienced a weakening in the U.S. Since the previous valuation its shares dropped by two-thirds from $29.13 on June 1, 2007, to $9.46 on December 31, 2008. This sharp decline was in part due to the global economic slowdown and price raises in 2007 to mitigate dairy cost increases. Starbucks also faced market share erosion as McDonald's and Dunkin' Donuts came with cheaper premium coffee and breakfast items. Ultimately, founder Howard Schultz fired the CEO Jim Donald and took over. Although investment bank analysts considered Starbucks' near term rather challenging, some believed Schultz could offer a good value proposition benefiting from easing of commodity prices and countering risks of further traffic reduction and competition. But, other analysts were more cautious. Morgan Stanley noted that neither reducing growth nor closing stores were "panacea" strategies and believed Starbucks' key opportunity lied in capturing low-frequency coffee consumers through down-scale market initiatives (Morgan Stanley, Oct., Nov. and Dec. 2008). Others (e.g., Deutsche Bank) maintained that over-expansion by Starbucks was destroying value (Deutsche Bank, Dec. 2008).

In light of such adverse changes in the business and Starbucks' scaled-down growth strategy, we performed a second valuation under the more severe economic conditions as of December 31, 2008. A revised standard DCF valuation of Starbucks' equity gave $6.7B, yielding a share price of $9.00, close to the market price of $9.46. Base equity value under a no-growth policy was higher, $6.9B, yielding a share price of $9.32.[13] That is, should Starbucks maintain its current (even though scaled-down) growth strategy, it would be destroying share value (of about $0.32 per share) under the worsened conditions. Cost-cutting measures involving moderate store closings, improved operational performance, and further beverage and food innovations seemed inadequate for company recovery under the new economic landscape. Analysts argued that better high-priced food or espresso would not bring enough consumers back, and offered various suggestions: reduce focus on coffee as consumers reached their coffee-consumption limit; expand selectively by acquiring select premium coffee rivals to contain competitive brand erosion; and expand into "upscale meals", leveraging its customer base with quality meals (Meyer 2008).

Given the worsened outlook for Starbucks, we re-estimated the value of its current cash-generating assets in place and the parent brand (under a no further-growth scenario) or base gross

equity value (Base $V(t_2) = 13.7B$).[14] We also accounted for a competitive erosion yield, δ, of 5%. The revised volatility of Starbucks' main business ($V_1(t_2)$), implied from current near at-the-money option contracts on its shares, had now risen to 80 %. The volatility of the digital music business ($V_2(t_2)$) also rose to 120 %.

Brand equity value is contingent on an active and flexible brand strategy to adapt internal organization and marketing plans to changing conditions. In revising the brand leveraging options platform (including expansion factors and investment outlays) according to the new business conditions, the Expanded BEV (*E*-BEV) would differ depending on the brand leveraging strategy management may choose to implement. We thus consider a menu of option-based brand strategies underlying alternative *committed* or *flexible* managerial brand leveraging approaches. Each of these focuses on one type of brand expansion/ extension option. Fig. 4 summarizes these option-based brand strategies, the brand expansion/ extension type involved, the associated brand portfolio strategy style, the retailer (total and per share) value deriving from that brand strategy and the associated growth option value creation PVGO (or destruction). Seven alternative strategies are depicted in Table 2 and Fig. 4 (denoted **S1** to **S7**) and discussed in SA9.

Sensitivity analysis confirms the option-like behavior of the seven brand leveraging strategies (S1–S7). Fig. 5 Panel A shows how the *Expanded* Equity Value (*E*-EV) of Starbucks' revised base strategy to keep all growth options though scaled down (S5*) increases nonlinearly with business uncertainty (σ_1). Panel B confirms that the EV-to-sales multiplier is not constant, as the *Expanded* Enterprise Value (EV) is a nonlinear (convex) function of sales, cautioning against naïve use of such multiples for branded or high-growth firm value estimation. The multiplier (curve's slope) increases with sales (from 1.3x to 4x to 6x) and differs for strong versus weak branded firms. Table 3 provides EV/sales multiples for comparable unbranded (private label) and branded (listed) specialty coffee retailers over the period, confirming that branded retailers command a higher EV/sales multiple not stable over time. Our option-based results on EV/sales for Starbucks are close(r) to comparable branded firm market estimates. This suggests higher uncertainty is non-linearly related to higher brand option values for a given industry (with different curve patterns of high or low growth sectors).[15] Thus investing resources in brand equity-related growth options under uncertainty may enhance the retailer's value, which may be greater at higher uncertainty levels. This is a unique feature of our real options approach that sets it apart from other brand equity valuation methods.

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[13] Revised DCF, in a new 5-year plan (2009−2013), uses: risk-free rate r = 4.2%, β = 1.05, market risk premium = 5%, cost of equity = 9.45%, cost of debt = 6.25%, tax rate = 34%, target debt ratio D/(D+E) = 29%, WACC = 7.9%, terminal growth rate g (U.S.) = 1.5%, g (Intl) = 2.5% (average global perpetuity growth = 2%).

[14] Inputs of the revised DCF valuation, along with those used by Morgan Stanley and Deutsche Bank, are given in the Supplementary Appendix SA7, Panel A. Panel B summarizes inputs used for our option valuations.

[15] A convex nonlinear pattern between value and uncertainty from empirical data on Starbucks' branded industry rivals bears resemblance to the convex relation between Starbucks' value and the degree of uncertainty it faces in its industry if it follows the revised base strategy (S5*) (shown in Fig. 5 Panel A).

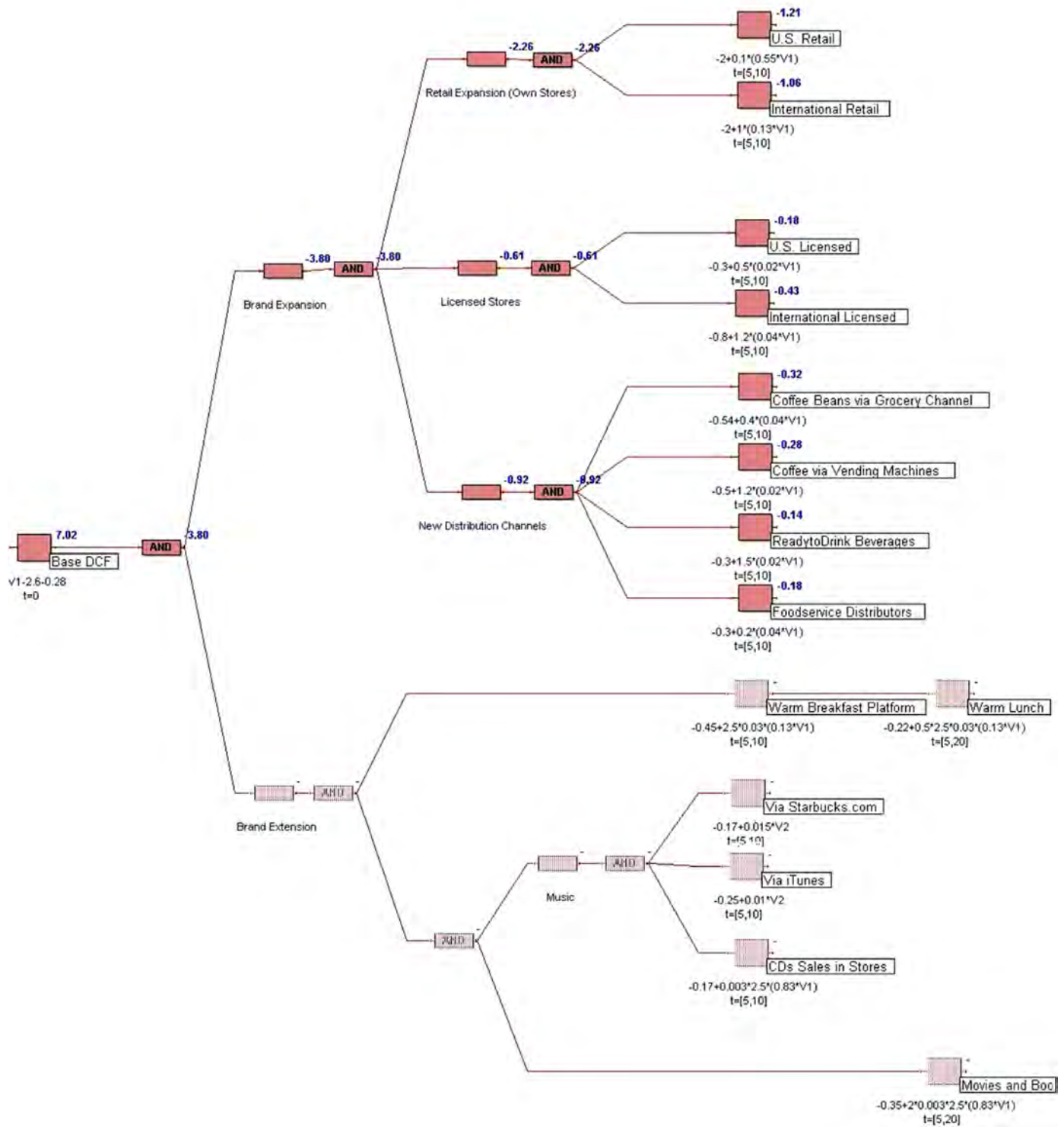Panel A. Revised NPV or commitment strategy (S2).

Fig. 4. Revised brand strategies in different scenarios (S_2, S_5, S_7) under worsened market environment (December 2008).

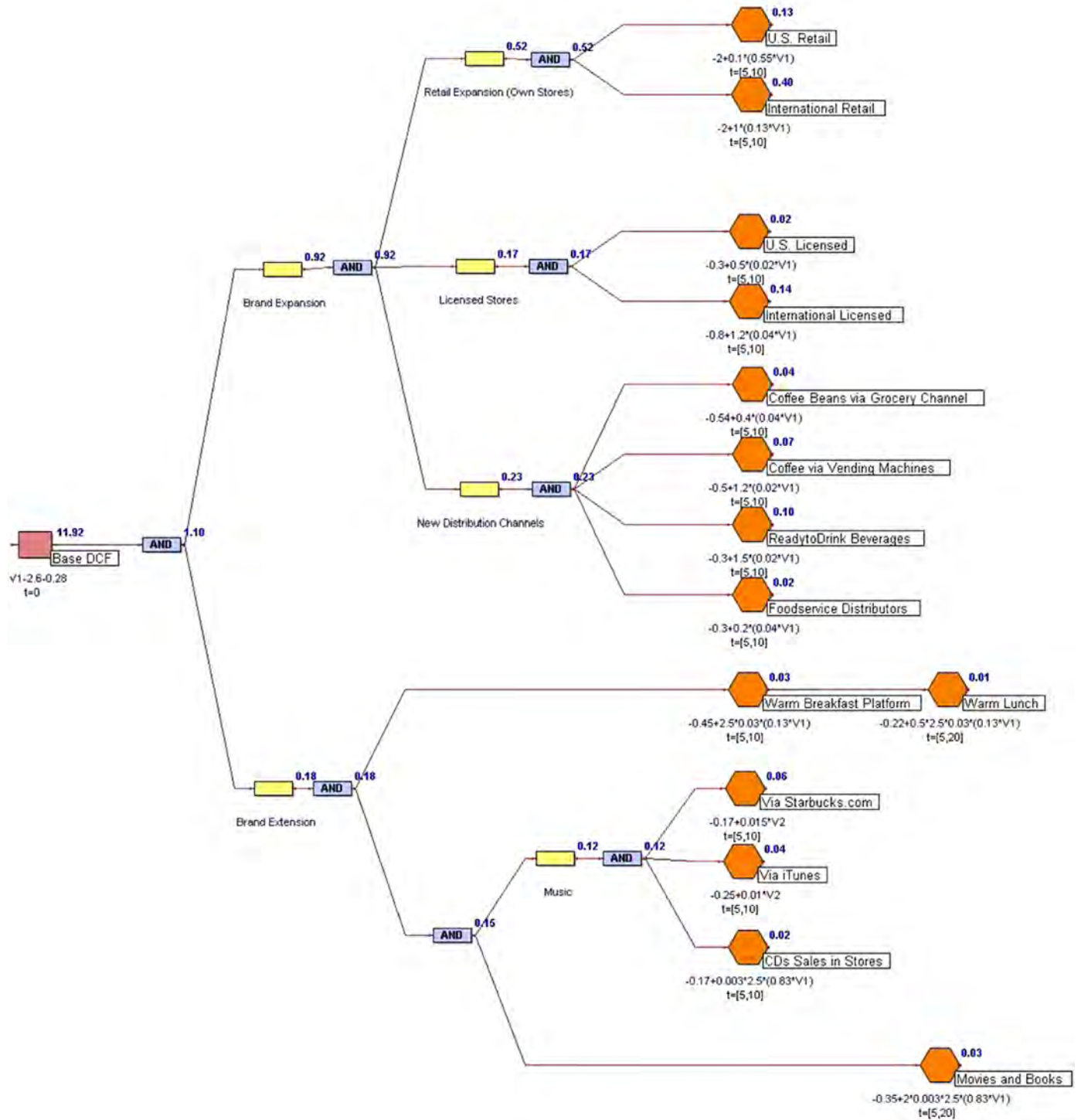### Panel B. Revised Brand (Expansion & Extension) Strategy (S₅*).
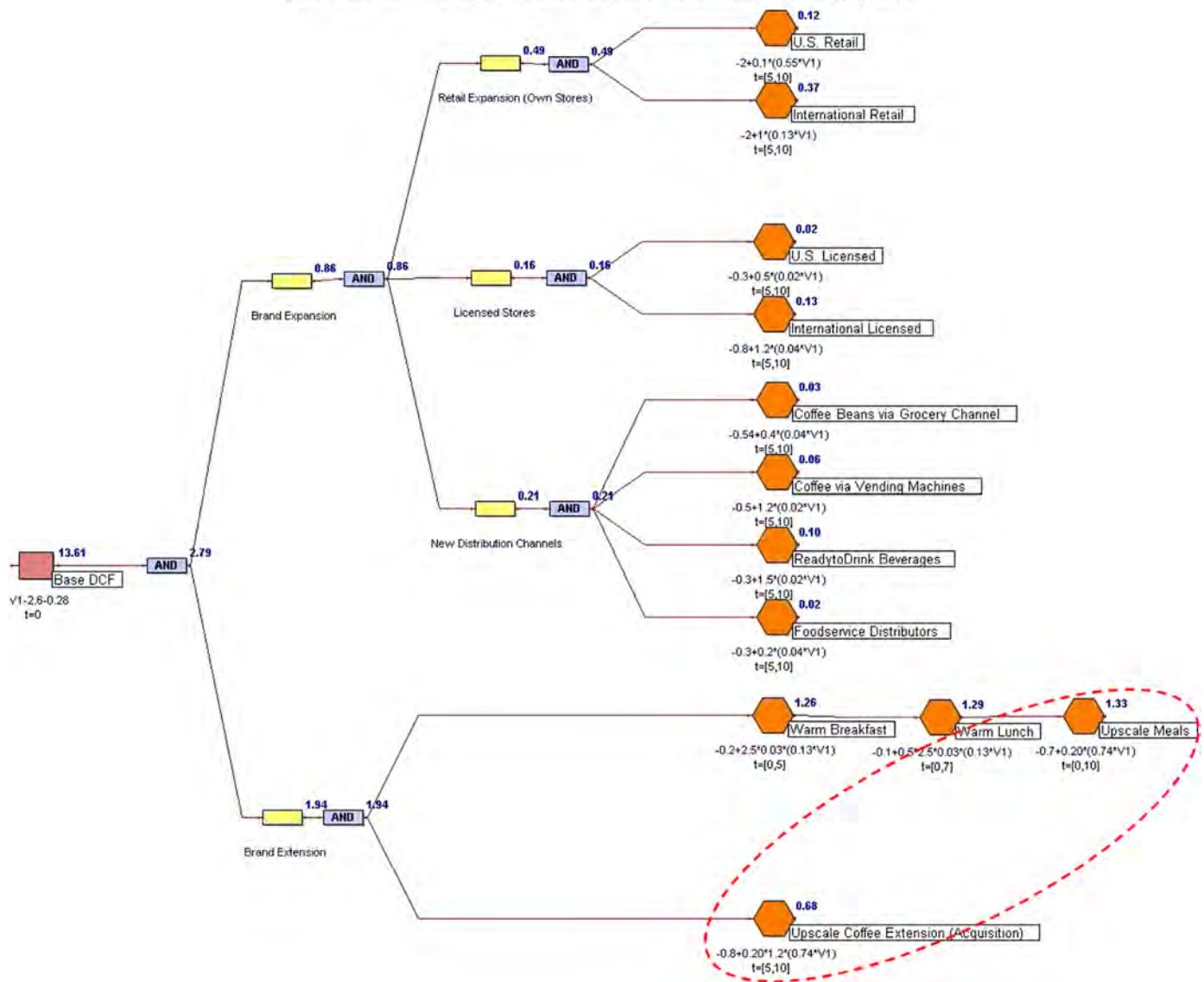

Fig. 4. (*Continued*)

Fig. 4.   (*Continued*)

Starbucks' new China-focused growth strategy in 2018

We next provide a third valuation of Starbucks based on the new China-focused growth plan. In April 2017, Kevin Johnson became the new CEO with Schultz shifting to executive chairman. A year later, Johnson unveiled Starbucks' new strategic growth plan at the annual shareholders' meeting on March 21, 2018 (https://investor.starbucks.com). Few months later Schultz retired as executive chairman, with Johnson taking full charge of implementing the new plan that relies on two key initiatives: aggressive retail expansion in China and digital relationships (Starbucks Annual Report 2018). The new growth strategy was primarily aimed at (1) leveraging the strong connection with the Chinese market (3300 stores operated currently) with plans to open 600 new stores annually from 2019 with a long-term target of 6000 outlets; and (2) building personalized digital relationships with customers through a series of digital innovations (e.g.,

Mobile-Order-and-Pay) and loyalty programs. We applied our 'brand option premium' approach to obtain an updated valuation of Starbucks' brand in March 2018 to assess the value contribution to *E*-BEV of the new growth opportunities associated with the new strategic growth plan.

A revised standard DCF valuation of Starbucks' equity in March 2018 assuming a terminal growth rate of 3.5 % and a WACC of 7% (see SA7 Panel A) gives an estimate of $85.0B, yielding a share price of $58.20, close to the market price of $58.50 as of March 21, 2018. Base equity value under a no-growth policy (with net debt of $0.3B) was $62.2B. The updated underlying base asset for the above growth opportunities (the PV of committed asset cash flows, V_1') is now estimated at $71.3B ($V'(t_3)$ = base EV' + I' = 62.5B + 8.8B). A competitive erosion yield, δ, of 2% is applied to account for anticipated competition in the Chinese market from domestic rival Luckin Coffee. Inputs for the updated DCF and option valuation in March 2018

Table 2
Brand strategies in economic downturn during crisis (December 2008).

	STRATEGY	TYPE OF BRAND EXPANSION/EXTENSION	BRAND STRATEGY STYLE	BRAND PORTFOLIO STRATEGY	VALUE CREATION/DESTRUCTION	COMPANY VALUE (*EXPANDED* EQUITY VALUE)	SHARE PRICE
S₁	Commit to All Growth Plans (Scaled Down)	-	STATIC PORTFOLIO	No New Offering (NPV)	- $ 4.55 B	$ 6.27 B	$8,45
S₂	Commit to Expansion Options & Skip All Extension Options	-	STATIC PORTFOLIO	No New Offering (NPV)	- $ 3.80 B	$ 7.02 B	$9,46
S₃	Expansion Options Only (Skip All Extension Options)	Brand Expansion		No New Offering	$ 0.86 B	$ 11.68 B	$15,74
S₄	Expansion Options + Original Warm Lunch Extension	Horizontal Line Extension		Branded House	$ 0.95 B	$ 11.77 B	$15,86
S₅ ★	Keep All (Expansion & Extension) Options	Horizontal Line Extension, Horizontal Category Extension	DYNAMIC PORTFOLIO	Branded House, Subbrand	$ 1.10 B	$ 11.92 B	$16,06
S₆	(Scaled Down) Expansion Options + Upscale Meals Extension	Horizontal & Vertical Line Extension		Branded House, Endorsed Brand	$ 2.11 B	$ 12.93 B	$17,43
S₇	(Skip Entertainment) Expansion Options + Upscale Coffee & Meals Extension	Horizontal & Vertical Line Extension, Vertical Category Extension		Branded House, Endorsed Brand, House of Brands	$ 2.79 B	$ 13.61 B	$18,34

Table 3
Enterprise value/sales multiples for unbranded (private) and branded (listed) coffee retailers.

	June 2007	December 2008	July 2012
UNBRANDED (PRIVATE) LABELS		EV/Sales	
Caribou Coffee	0.6	0.1	0.7
Peet's Coffee & Tea	1.6	1.1	2.0
Green Mountain Coffee Roasters (1)	2.5	2.1	1.1
Average EV/Sales	**1.6**	**1.1**	**1.2**

COMPARABLE BRANDED FIRM			
McDonald's	3.2	3.4	3.7

|	June 2007	December 2008	July 2012
Starbucks	EV/Sales (actual) (based on market data)		
	2.8	0.9	3.1
	EV/Sales* (Brand Options Value)		
	3.9 *	1.4 *	

(1) Fiscal year end (September). (*) Based on brand option value estimated with our real options model.

are summarized in SA7 (last column, Panels A and B, respectively).

Based on the new strategic plan, we obtain a revised growth option map highlighting Starbucks' brand leveraging options embedded in the new growth initiatives announced by Johnson (Fig. 6). Compared to the first option map of June 2007, previous growth options already exercised by management became committed operating plans (boxes), and are thus incorporated into the updated value of assets in place (V_1'). This applies to options linked to various distribution channels as well as in-store sales of warm breakfast and lunch items. Certain options linked to the entertainment business are now also committed as they now represent actual cash-generating assets, accounting for the upgrade of these early initiatives (e.g., the replacement

Panel A. *Expanded* Equity Value (EV) of revised base strategy (S5*) vs. volatility.
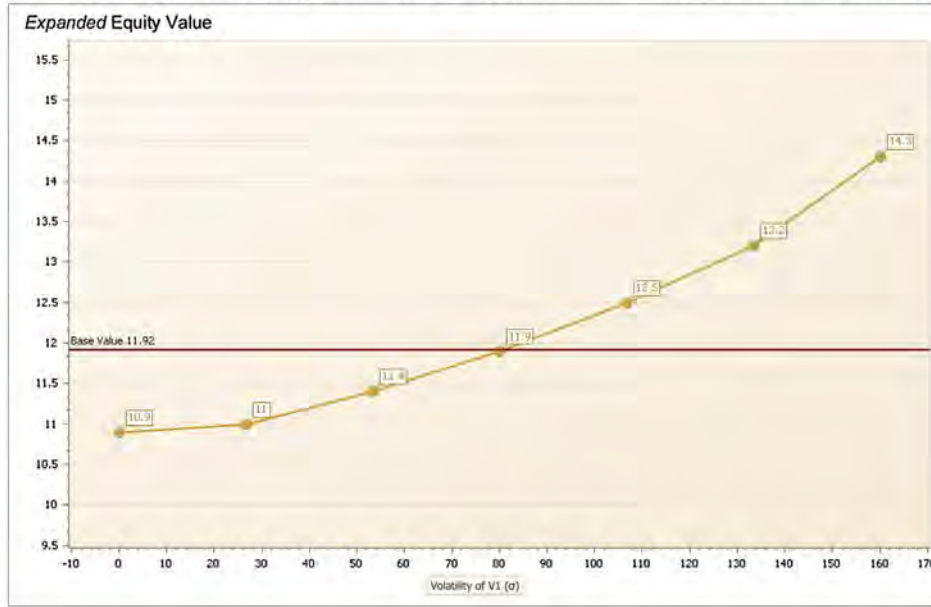
Panel B. Estimated enterprise value (EV) vs. value driver (sales) (June 2007).
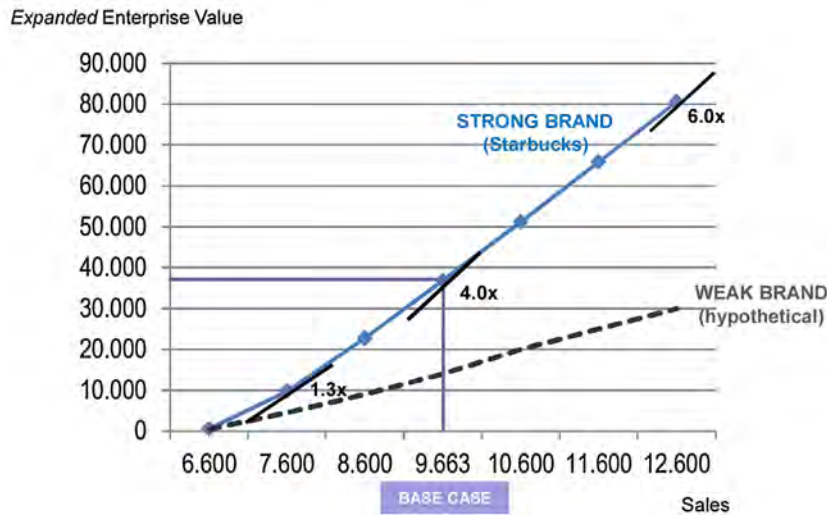

Fig. 5. Sensitivity of Starbucks value to volatility and sales.

of Starbucks.com with Starbucks App, the addition of Spotify to iTunes in playlist tools). By contrast, certain brand extension options initially envisioned by management in June 2007 that were since abandoned (e.g., sales of CDs) are removed. This leads to a revision of the retailer's brand options portfolio solely involving brand expansion via own retail and licensed stores (the value of already exercised options turned into cash-generating assets-in-place is accounted for in the updated higher asset value V_1' of $71.3B).

The highlight in the updated option map is the planned aggressive retail expansion in China shown as a stand-alone option (besides other international retail business, such as

EMEA). In the revised valuation on 21 March 2018 (see Fig. 6), this contributes the most to E-BEV ($14.96B). Digital relationships contribute less ($2.41B). PVGO, representing the combined value of all of Starbucks' new brand growth options, is $28.18B. The *Expanded* Equity Value of Starbucks as of March 21, 2018, amounts to $99.18B (after subtracting net debt of $0.3B). With 1,461B shares outstanding, this yields a target price of $67.90 per share (close to a target of $64 provided by J.P. Morgan in February 2018). The value of the brand options portfolio of $28.18B justifies a price of $19.30 per share (28 % of Starbucks' target price of $67.90 and 33 % of Starbucks' EV).
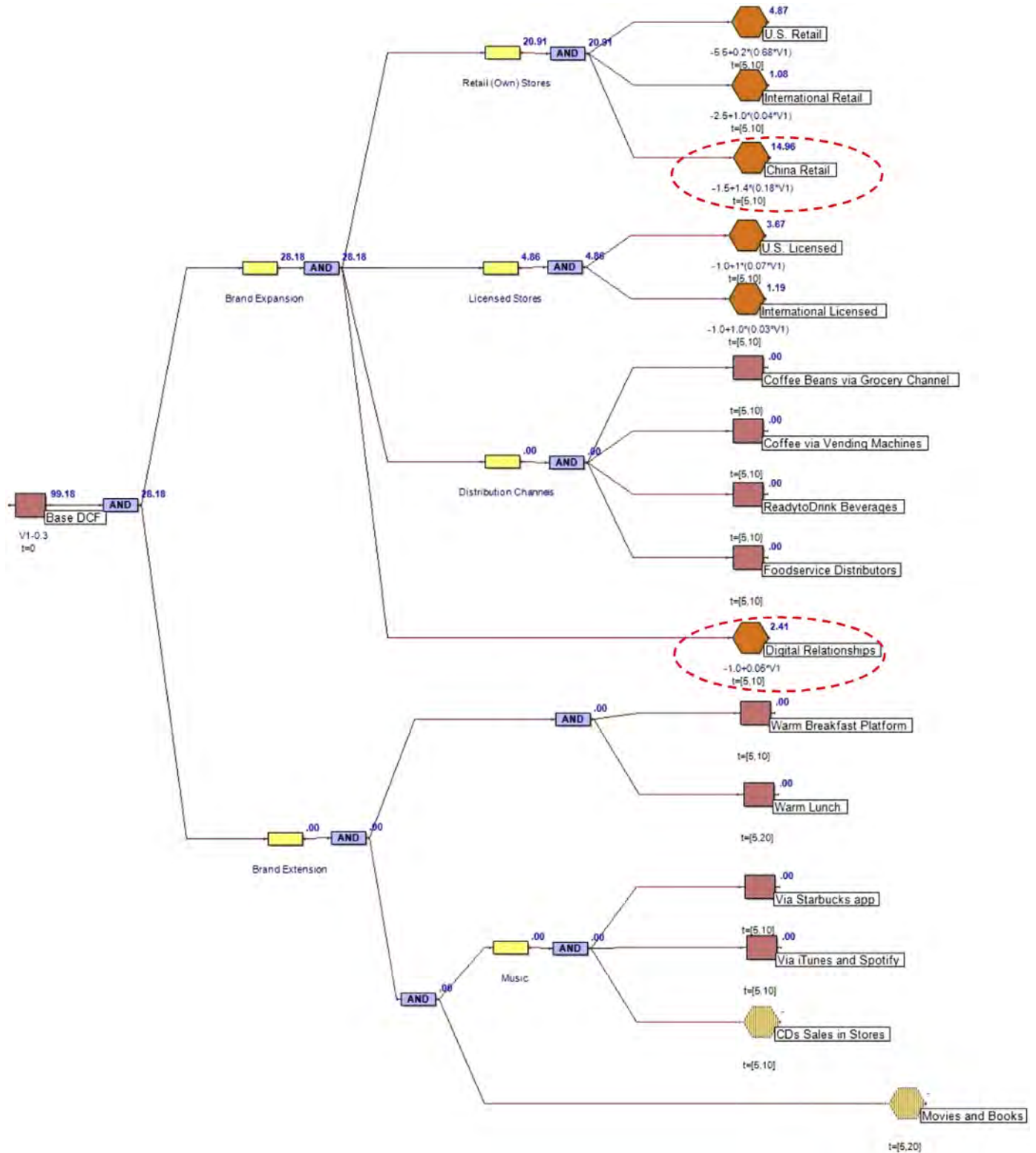
Fig. 6. Brand option map for Starbucks' new growth strategy focused on China expansion (March 2018).

Discussion

Attempts by standard brand equity measures to capture long-term potential do not explicitly consider the role of brand strategy and market-oriented strategic flexibility. Our 'brand option premium' approach, quantifying brand growth options, integrates key elements of both product-market and financial performance outcome measures (Katsikeas et al. 2016). It helps better quantify the brand's extendibility and future growth potential, while elucidating the links among a global retailer's strategic

plans, brand value creation and share price, and better monitor the impact of strategic choices on long-term brand equity value. It embraces the subjective nature of brand equity value as it is intrinsically linked to the quality of the retailer's management and strategic plans of how to best use the brand in future contingent situations.

Our brand value estimates capture the value of conceiving *ex ante* and implementing *ex post* a more flexible international marketing strategy. In contrast to prior brand valuation methods, these estimates reflect the value of more proactive and flexible managerial thinking. Such flexibility in marketing strategy may not be fully reflected in current market prices. Management may be locked in a preset growth strategy and thereby not realizing the full value of strategic flexibility in exploiting the corporate brand, potentially destroying value (as happened in the 2008 crisis).

There may not be an objective benchmark to compare our brand strategy valuation since value is a function of flexibility in marketing strategy design and implementation (partly reflecting the quality of management), as well as using proper methodology—real options rather than NPV. There is value in using ROT to an already complicated problem of valuing a brand, brand strategy or a retailer whose value is essentially driven by its brand. There is also value in recognizing the link between marketing strategy design and implementation and value creation (or destruction). Both are critical and difficult aspects to carry out as the alternative benchmarks (among strategy experts and brand rating agencies) are wanting. Unlike prior research in marketing, we contribute by quantifying the strategic flexibility benefits of linking marketing strategy and flexible implementation of strategic options to financial value creation.

We acknowledge the difficulty in comparing our ROT valuations of Starbucks to the DCF-based valuations of Interbrand and BrandFinance, as value depends on how flexibly management designs and executes its strategy to use the brand to expand its business in various ways. Further, different approaches may have different aims, thus yielding different results. For example, Ailawadi, Lehmann, and Neslin (2003) revenue premium approach aims to determine the difference in revenue between a branded good and a private label based on volume and price premia, which differs from estimating the value added by the brand. Our analysis shows the connection of flexible marketing strategy design and execution with value creation based on ROT. In addition to providing more accurate numbers (especially as Interbrand and BrandFinance are far off agreeing on a brand's DCF estimate), the approach informs marketing strategy and allows quantifying the value of market-oriented strategic flexibility in assessing alternative growth strategies. Our approach would thus be a useful addition to existing valuation approaches as it offers attributes that other approaches do not.

We also revisited challenging research issues at the interface among marketing, strategy, and finance (Srinivasan and Hanssens 2009). Our study sheds new light on key questions such as accessing the value of a brand's extension potential and how a brand should be developed, managed, and leveraged as a growth platform (Keller and Lehmann 2006). In effectively applying our approach, it is vitally important to deeply under-

stand the business and industry context, key uncertainties and optional decision choices, and how to translate strategic growth plans into a growth options platform—similar to the 'option maps' underlying alternative strategies for Starbucks. The estimation of key input parameters, particularly volatilities (σ), growth rates (trends), competitive erosion (δ), and expansion factors (e_i), also requires focal attention.

As the value of a brand growth option may depend on other options present (Trigeorgis 1993), it must be assessed as the difference between the values of the entire brand equity portfolio with and without the specific option at hand. Thus, there is no "objective" value to a specific brand option, as its incremental contribution to the brand equity bundle and the retailer's value may depend on which other options, resources, and capabilities make up the firm's entire options portfolio. Similarly, brand options may be interdependent in that a successful brand extension may help further build or strengthen the brand, facilitating further extensions. Berk and Kase (2010) value human resource training flexibility in a rapidly growing market based on emerging technology as the difference with versus without the HR training option. The empirical analogue is considering two comparable firms in the same industry using the same technology but differing in their brands (one with a private label used as benchmark), with the difference in market values attributable to their brand equity differences. However, our Starbucks' valuation was able to capture the brand's extendibility and growth potential without requiring identification of another otherwise identical benchmark firm (without the brand). Instead, a unique key feature was that our valuation of the branded firm with a bundle of strategic growth options was benchmarked on itself, using a base DCF estimate without the growth option potential of the brand.

Practitioner implications

Our 'brand option premium' approach has several advantages for managers. First, it helps address the challenge raised by Ailawadi, Lehmann, and Neslin (2003): "Current methods for valuing future potential depend on subjective multipliers or on the swings of the supposedly "efficient" stock market. . . Further research should quantify the long-term financial value of a brand." This is even more so, when a brand's future growth potential is not properly priced by investors due to difficulty in valuing brand equity using conventional tools (e.g., DCF) or to market sentiment. Product-market measures only account for the impact of brand strength on immediate revenue or cash flow. Financial performance outcome measures assess the short-term impact of brand assets via an accounting value driver (e.g., earnings), and seek to estimate the brand's long-term potential. The linear link between branded firm value and the underlying driver via a constant multiplier is often simplistic, as it does not fully capture the nonlinear characteristics of the complex bundle of brand growth options arising from *active* brand management and market-oriented strategic flexibility. As the value of a retailer's brand options is higher in uncertain environments and for more staged marketing initiatives, brand value should be assessed as a portfolio of brand-related growth options. We caution though

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against naïve use of constant multiples (e.g., EV/sales), in line with Keller and Lehmann (2003) contention that the investment multiplier depends on the brand's growth potential that is higher for high-branded firms in growing sectors. Our approach thus enables better assessing the utility of competing approaches in valuing and managing a brand as a growth platform.

Viewing the brand as a platform for developing and exploiting growth options requires a "dynamic" view of brand equity management effectively recognizing the value of strategic flexibility. The brand growth option potential may be substantial, as indicated in Starbucks' valuation. In line with product-market measures, our approach helps quantify the current value of future brand expansion and extension options, also capturing the enhanced volume effects related to brand expandability and extendibility. Like financial performance measures, it assigns a dollar-value to the future potential of the bundle of various staged brand growth options. It thus offers a theoretically grounded methodology to enable managers in retail firms to estimate the brand's equity contribution and track changes in brand value under uncertainty.

Our approach can help retail managers think differently about how to capitalize on uncertainty to enhance the value of their brand, which contrasts with existing approaches that view uncertainty in a negative light. The value of a firm's brand derives from its portfolio of cash-generating assets in place (e.g., existing own stores) and the portfolio of the brand expansion and extension options. Generally, managers think of uncertainty as damaging to their business. However, uncertainty is generally beneficial in regards to the firm's future options to expand or extend the brand, as it may decide to exercise these options in favorable future circumstances with no obligation to do so in adverse future scenarios. The usefulness of our approach can further be enhanced by related brand risk exposure analysis. A strong brand is known to provide protection or mitigate risk in adverse external circumstances (Gelb and Rangarajan 2014; Vomberg et al., 2015). However, it offers little guarantee against internal value destruction from misguided brand strategies pursued by overconfident managers committing to growth plans that may be unwarranted in adverse conditions, as in the case of Starbucks during the economic downturn of 2008. Our methodology can measure the resulting brand value destruction and adverse impact on the share price. The choice of alternative brand strategies may expose the retailer to higher or lower brand equity risk under different economic scenarios. Monitoring brand option sensitivity might provide a complementary tool to help managers assess and compare brand-related risks and opportunities under alternative conditions or brand strategies. We view brand management as a dynamic, multi-stage process where brand equity is *actively* managed and reassessed as an ongoing indicator of long-term brand value. A dynamic view of managing and leveraging the retailer brand exposes managers to considerable growth opportunities as well as risks. Our approach should thus help managers value and dynamically adapt brand strategies to market developments.

Our methodology adds value by offering a robust way to evaluate the embedded brand growth options and capitalize on market uncertainty by recognizing that brand development and exploitation represents a bundle of optional rights but no obligation to grow. It allows managers to translate various brand strategies into a contingent plan and growth option map. When managers visualize how they can actively manage the company brand leveraging option-like features and how alternative brand strategies get converted into brand equity and share value, they can better appraise what the brand equity potential is worth. Besides its specific valuation advantage under uncertainty, ROT offers better guidance on how to manage and leverage the corporate brand strategically. The Starbucks application illustrates how retail managers can design and assess brand-enabled strategies and managerial visions and trace their impact on the share price. Our approach responds to calls for more theory-based work on brand equity valuation (e.g., Raggio and Leone 2007, 2009). It is thus well suited for the effective assessment and management of the staged process of developing and exploiting the bundle of brand equity options. This type of analysis can be of real value for brand strategy design and decision-making processes for a retailer operating in an uncertain global retail environment.

Limitations and implications for researchers

There are certain limitations inherent in our approach, which provide opportunities for future research. First, this analysis applies to branded firms where growth option value can be attributed to exploiting the brand via expansion and extension options rather than to other intangible value sources (e.g., human capital). Future research can focus on other intangible assets (e.g., human and social capital). This study could help guide future studies on human capital options viewed as bundles of expanding, extending, and redeploying human resources across organizational boundaries (e.g., via contracting, outsourcing or HR alliances). However, to the extent that various firm intangible assets and options interact or play a complementary role, valuation focused only on one type of intangible asset without properly accounting for interaction effects will be limited. A second issue is the proper estimation of business volatility, a key driver of brand growth option value, and more broadly understanding the wider and potentially ambiguous role and impact of uncertainty of different types (e.g., market vs. technological uncertainty). A third limitation relates to likely portfolio option interactions and path dependencies, both among different brand-related options and with other types of intangibles, like technology options (e.g., patents) and human capital. Due to non-additivity of brand growth options arising from potential interactions within the firm's brand options portfolio (Trigeorgis 1993), growth options and brand value must be carefully estimated. A firm's brand equity value may thus depend on other options, resources, and capabilities already in place. Finally, while our approach is robust for a firm and specific context, it may not always be the case with changes in the context and nature of business, such as when IBM was transformed from a computer hardware manufacturer to a service provider. However, market changes in the same type of business can be handled by reconfiguring the firm's bundle of strategic options under the new conditions, as this study shows during the adverse condi-

tions of a financial crisis or a new business plan more heavily focused on expansion in China.

Notwithstanding these limiting issues, the current work may help pave the way for further brand valuation research. On a small scale, researchers may validate the real options approach with similar in-depth analysis involving other case applications of branded retailers, where we know what marketing plans they followed and what the stock market impact was. With larger datasets, researchers may empirically estimate the implied value of the growth options portfolio (e.g., see Trigeorgis and Lambertides 2014) embedded in the market value of leading brands across various industries. Such work is useful to ascertain which industries or business contexts are generally endowed with high brand option values and which types of brand-related options prevail in different business contexts or industries.

It would also be enlightening if future research considered explanatory variables based on real option logic in large-scale studies involving cross-sectional or panel data to investigate linkages among uncertainty, brand value, and firm performance. The impact and role of different types of uncertainty merit particular attention, especially how the interaction between market and technological uncertainty influences brand value. How is firm value affected by the interdependence between brand options (of long-term maturity) and technological options (of shorter or uncertain maturity)? Further, the impact of uncertainty on a branded firm's value may differ for brands in the same industry but varying in their scope, for example, those involved in exploration will be more "option-like" compared to those in exploitation (more "asset-like"). Relevant factors in determining firm value using our analysis include: the cash generation ability of a branded compared to an unbranded firm, the degree of volatility or turbulence in the firm's industry and its global environment, the degree of flexibility in the retailer's strategy, and the firm's scope and strategic plans in terms of managing a mix of cash-generating assets-in-place (focused more on commercial exploitation) and growth options (engaged in exploration). Executive Summary

Significant attention has been devoted to the study of drivers and outcomes of strategic flexibility in the field of marketing. More attention is needed to constructs and methods that can help conceptualize and quantify the specific value of flexibility reflected in a bundle of strategic real options associated with a retailer's brand. A strong brand underpins the health and loyalty of customer relationships, the attainment of premium prices, and the realization of long-term brand equity value. Hence, proper assessment of an international retailer's activities as regards the value of producing assets-in-place, as well as brand-enabled market growth strategies, is key for effective strategic retail management.

We develop a real options-based framework that takes account of brand expansion and extension options to value brand equity and help marketing executives assess the flexibility value of retailer growth strategies. We particularly show how to value the bundle of strategic real options associated with a flexible marketing strategic vision and how to assess the growth strategies related to the corporate brand of an international retailer.

We show how our method can be applied to estimating the brand equity of Starbucks and its growth strategies both under growth and adversity conditions, with particular emphasis on its recent expansion plans in China. The findings show that our method can more reliably incorporate the growth potential of the brand under uncertainty conditions. In comparison with other brand valuation approaches that focus mostly on the earnings and cash-generating ability attributed to the brand, our approach also pays attention to the value of future growth opportunities arising from the brand expressed as a bundle of brand expansion and extension options. Our approach can thus help managers think differently about how to capitalize on uncertainty to enhance the value of their brand, which contrasts with existing approaches that view uncertainty in a negative light.

As the value of a retailer's brand options is higher in uncertain environments and for more staged marketing initiatives, brand value should be assessed as a portfolio of brand-related growth options. Our framework offers a theoretically-grounded methodology to enable managers in retail firms to estimate the brand's equity contribution and track changes in brand health under uncertainty. Our study helps clarify the links among management's strategic plans, brand-based marketing strategies and share price, and allows to better monitor the impact of retailer strategic choices on long-term brand equity value.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.jretai.2021.01.002.

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