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Abstract

In this article, we discuss many aspects of the concept, measurement, creation, and macro and micro consequences of marketing investments and the intangible capital they create.

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During the early and mid-20th century, several economists called for the systematic study of the social benefits of the rapid escalation in marketing: advertising, branding, promoting, selling and trademarking (for example, Shaw 1912). Braithwaite (1928, p. 16) observed that “goods cost as much to market as they do to manufacture.” Coase (1937, p. 394) went so far as to conclude “the introduction of the firm was primarily due to the existence of marketing costs.” According to the *persuasive* or *prestige* view of marketing efforts—around since at least Marshall (1919) and argued famously by Bain (1955) and Galbraith (1958)—brand-driven preferences might make consumers less price-elastic, creating barriers to entry and raising the market power of incumbent firms. Moreover, if advertising by one firm does nothing but offset advertising by other firms, then such spending may be socially wasteful.

However, an alternative view of marketing gradually emerged. Under the *informative* view, as in Stigler (1961) or Telser (1964), marketing serves primarily to make consumers aware of the product and/or of its attributes. Such information reduces search costs and makes markets more competitive. Under a related *complementary* view, consumption of known brands enters directly into the utility function. These approaches suggest that marketing can raise welfare.

Although the dispute between these views has neither been resolved nor completely died out, we believe the more recent economics literature has unduly neglected intangible marketing and brand capital and its many micro and macro implications in its studies of industry structure, productivity, and aggregate output. For mostly technical reasons, the emerging literature on general equilibrium analysis during the mid 20th century worked with models of perfectly competitive markets, with a freely flowing distribution of information and goods from sellers to buyers and no role for investments in marketing. Perhaps more surprising was the explicit omission of brands from the so-called “characteristics approach” to demand modeling during the 1970s. The literature focused on objective, physical product attributes, dismissing any objective role for marketing other than to identify the seller of a product. In his seminal study of the hedonic framework, Rosen (1974, p. 36) writes: “The terms ‘product,’ ‘model,’ ‘brand,’ and ‘design’ are used interchangeably to designate commodities of given quality or specification.”¹ This oversight is significant, considering the scale of marketing investments. Corrado et al. (2005) estimated investment in intangible capital in the US economy, including a broad array of assets such as databases, capitalized R&D, new copyrights and licenses, brand equity, and better organizational structures. In the early 2000s, total investment in intangible capital in the US economy reached about 12 percent of US GDP and nearly one-fifth—roughly \$500 billion in 2021—was attributed to marketing expenditures that build and sustain brand equity.

Furthermore, intangible investment is rising as a share of GDP and relative to tangible investment (as discussed in this symposium by Corrado, Haskel, Jona-Lasinio, and Iommi). The share of both total employment and payroll accounted for by occupations that manage brand capital (SOC codes 11-2XXX: sales, marketing, or public relations managers) increased 20%-25% between 2005 and 2019.

¹ Rosen (1974, p. 37) further adds: “If two brands offer the same bundle, but sell for different prices, consumers only consider the less expensive one, and the identity of sellers is irrelevant to their purchase decisions.”

In this article, we discuss many aspects of the concept, measurement, creation, and macro and micro consequences of marketing investments and the intangible capital they create.

Some Facts about Marketing Spending and Intangible Brand Capital

What is Intangible Brand Capital?

We begin with the concept of a brand. For the purposes of this article, we focus on product brands as opposed to corporate brands, though in many settings the two are synonymous. For instance, Apple has a strong corporate reputation as an employer, as well as a strong consumer brand reputation. The historic practice of branding consisted primarily of the literal burning of a logo or mark of ownership on a firm's products. However, contemporary marketing experts like Farquar (1989, p. 24) define a brand more broadly as “a name, symbol, design, or mark that enhances the value of a product beyond its functional purpose” where the added value of these enhancements to the basic product are often broadly termed “brand equity.”

Brand equity consists of the intangible capital that generates sustainable, incremental profitability to the firm owning the commercial rights to the brand. The expertise, or *human capital*, of the firm's employees in creating and maintaining such brand equity is a related critical economic competence.

Firms brand products through marketing programs that “teach consumers ‘who’ the product is – by giving it a name and using other brand elements to help identify it – as well as what the product does and why consumers should care.” (Kevin L. Keller, 2020, p. 38). Branding arises from marketing investments that make consumers aware of the product and persuade them of its benefits and differences relative to the competition. Branding can form associations in the consumer's memory that assist with recall and consideration of the branded product. Branding can also generate perceived differentiation, tangible or intangible, between products.

In this article, we do not discuss the sophisticated strategic steps associated with the design of a brand architecture and its corresponding elements. Instead, we focus on the investments made to communicate and build intangible brand equity. These marketing communication instruments consist of *advertising, promotion* (like in-store displays, samples and merchandising typically near the point of sale), *direct marketing* (including mail, catalogues, and telemarketing), *personal selling* (via the salesforce), *events* (like trade shows) and *public relations* (including media relations, sponsorships, and other mechanisms). According to a survey of chief marketing officers, marketing budgets now represent almost 12 percent of companies' total budgets, on average, up by over 1 percentage point since 2012 (CMO Survey 2022). In consumer goods industries, marketing budgets regularly approach 25 percent of spending. In our analysis below, we focus primarily on advertising and promotional expenses, as these data are most readily available across firms. There are also good reasons to exclude other potential types of branding investment because direct marketing and personal selling can serve many other non-branding functions, including distribution and pricing.

In the following subsections, we document several recent trends in brand-related investments. In particular, we show that U.S. companies have accelerated their expenditures on advertising, a leading brand-building activity. These investments represent growth in a corresponding aggregate intangible brand capital stock. Over this same period, U.S. firms have also grown their recruiting and payroll shares on the employment of in-house marketing-related personnel.

Advertising and Aggregate Brand Capital

Advertising represents one of the leading instruments for brand investment. According to the most recent IRS Statistics of Income database (Internal Revenue Service, 1954-2018), U.S. corporations expensed \$354 billion in advertising spending in 2018, or 1.7 percent of GDP, near the historical average of 1.9 percent. Substantial as it is, this value does not include spending on non-advertising-related brand investments (like public relations, promotional transfers to retailers) nor branding investments made inside the firm (like paying internal employees to design marketing strategies or manage customer accounts). By way of comparison, total tangible nonresidential investment in the national accounts has typically totaled around 13 percent of GDP. It is clear that marketing investments are an important part of firms' efforts to build their capital stocks. Regarding those stocks, we use the IRS data to extend Corrado et al. (2016)'s aggregate advertising-driven brand capital series through 2018. We estimate the total 2018 US brand capital stock to be around \$350 billion, more than double the \$160 billion estimated (real) stock in 1995. Given that real GDP grew about 75 percent over the same period, advertising-driven brand capital appears to have grown faster than the economy over the past quarter century.

The size of the advertising-driven brand capital stock relative to advertising spending depends on two key assumptions: 1) the capitalization rate for advertising spending and 2) the depreciation rate for advertising capital. The advertising spending capitalization rate consists of the fraction of spending that builds capital that lasts beyond the current period to yield marginal revenue in future periods. The remainder is used up in the current period, and as such represents an expense rather than an investment. Choosing the right capitalization rate is challenging. In practice, firms' brand spending may be a multiple of advertising, capturing other non-advertising sources of marketing, all of which can be incorporated into the capitalization rate. Similarly, the capitalization rate might seek to capture the potential indirect effects of advertising, such as the reinforcing feedback effect of habit formation, brand loyalty and other persistent responses to advertising. On the other hand, many aspects of a firm's advertising may be transitory, such as the promotion of a temporary price discount or of a promotional product with only temporary distribution. Following Corrado et al. (2016), we assume the capitalization rate is 0.6.

The advertising capital depreciation rate measures the longevity of intangible brand capital stocks. Academics have debated the magnitude of this decay rate since at least the 1960s (for an early survey, see Comanor and Wilson 1979). The debate has by no means been resolved, with some studies finding highly persistent effects and others failing to detect effects lasting more than a few weeks or months. For example, in a cross-section of 55 randomized advertising field experiments for consumer packaged goods (fast-moving pre-packaged, consumer nondurables including food, beverages, health and beauty, and cleaning products), Lodish et al. (1995) not only find that the

effects of successful TV ad campaign persist more than two years, but the longer-term magnitudes are more than double the immediate-run effects. On the other hand, using a cross-section of 432 digital display-advertising field experiments, Johnson et al. (2017) find that advertising decays at an astonishingly rapid rate of 23 percent per day. A meta-analysis of older econometric studies finds that 90 percent of the long-run advertising effect (the “duration interval”) materializes within 6-9 months (Leone 1995). Taking a longer-term view of a consumer’s lifetime brand experiences, Bronnenberg et al. (2012) estimate an annual brand capital depreciation rate of only 2.5 percent for a cross-section of over 230 product categories of consumer packaged goods.

Perhaps this dispersion of estimates is not surprising. Different forms of advertising may exhibit different degrees of longevity. A short-run price promotion may be quickly forgotten. Yet at the same time it is easy to think of brands—perhaps built through decades of past marketing investments—that now reside virtually permanently in consumers’ minds without the need for a lot of explicit repeat prompting. For instance, Coca-Cola was one of the most recalled 2001 SuperBowl ads in the Wall Street Journal-Harris interactive poll, even though Coca-Cola did not broadcast an ad that year (Quick 2001). If we follow Corrado et al. (2016)’s assumption that advertising-driven brand capital depreciates at an annual rate of 55 percent, the calculated advertising capital stock is roughly the same size as current advertising spending in spite of the capitalization ratio and rapid depreciation rate.

Regardless of potential debate around the details, advertising spending and the resulting capital stock are substantial in size. This willingness to expend considerable resources on both the immediate and future effects of advertising indicates that firms perceive such expenditures as valuable. We look at this issue in more detail next.

Brand Valuations at the Firm Level

Measuring the full value of brand capital to a firm is notoriously difficult. Conceptually, the value should be defined relative to the counterfactual discounted sum of future profits to the firm *but-for* the commercial rights to the brand and its trademark. This counterfactual raises two challenges. One challenge consists of the appropriate definition of the counterfactual. Do the brand and its trademarked brand elements cease to exist? If so, does the firm build or acquire a different brand instead in the but-for world? Or does the brand get transferred to another (competitor) firm? Another challenge is that, irrespective of the right counterfactual, the but-for profit stream is seldom observed and needs to be imputed or estimated.

Commercial vendors do attempt to compute metrics of brand value, which are widely used by companies in practice. Each vendor uses slightly different methods, but they all involve a mix of forecasts and judgment. We focus on the method used by BrandFinance, a leading brand valuation consultancy, that seeks to estimate the net present value of royalties received from owning a brand, which is close in spirit to the but-for reasoning above.²

² BrandFinance first assembles a database of observed industry-specific royalty rates from industry reports. It divides this range into 100 parts. Second, it selects a value from this range, guided by a proprietary brand-strength index, much like a credit rating, that combines the estimated strength, risk, and future potential of a brand relative to its competitors. This

Figure 1 shows two representations of the value from 2007-2021 of the 100 most valuable brands in the world, as computed by BrandFinance (BrandFinance 2007-2021).³ The left panel presents the joint value in U.S. dollars, while the right panel normalizes this value by the firms' reported joint value of property, plant, and equipment. The total brand value represented by these 100 most valuable brands is estimated to be \$4.14 trillion in 2021 (more than the entire tangible capital stock of Belgium) and has been growing at an average annual growth rate of 8.1 percent. The right panel shows that brand value rose from 29 percent of property, plant, and equipment in 2007-2009 to 47 percent of PPE in 2018-2020. This increase reflects an annual growth rate of 4.8 percent, although this average masks periods of contraction after the Great Recession and at the start of the Covid-19 pandemic.

Even allowing for considerable measurement error, these numbers are still strikingly large and indicate the importance of brands to the companies that own them. They are also rising faster than GDP and the companies' reported tangible capital. We find similar patterns even if we restrict our attention to the subset of U.S.-based brands.

These measures do depend on a number of strong assumptions, not to mention the fact that we have selected the world's most valuable brands. Nevertheless, other recent research confirms this large value of brand capital, finding that intangible brand capital stocks may represent between 6 percent and 25 percent of a firm's overall book value using publicly traded U.S. companies (Belo, Gala, Salomao, and Vitorino 2022). In a detailed econometric case study of the stacked chips category, Borkovsky et al. (2017) measure the brand value of Pringles at \$1.6 billion in 2006, nearly 60 percent of the \$2.7 billion for which the Pringles company was sold in 2012. In that study, the brand value was measured relative to a counterfactual market simulation in which Pringles is stripped of its brand equity today, but is permitted to invest in building another brand in the future.

In sum, brand capital stocks constitute an economically large intangible asset to companies. Furthermore, these intangible assets have been growing over time, in spite of mixed findings in the contemporaneous advertising literature regarding the incremental effects of local changes in advertising spending on sales.

Labor and Marketing Expertise as Human Capital

Historically, most companies outsourced the creation of brand capital to consulting firms and advertising agencies. According to a survey of chief marketing officers, approximately one-third of companies' digital marketing is handled by third parties (CMO Survey 2022). We now document a

brand strength index is scaled from 0 to 100. If a brand's score is X , the brand specific royalty rate is set to the value of the X^{th} increment of the observed royalty rates in the industry to which the brand belongs. Third, to compute the net present value of royalties, BrandFinance's valuation method estimates future revenues from historic revenues, equity analyst forecasts, and economic growth rates, and applies the royalty rate to this forecast. Finally, the post-tax forecasted royalties are discounted to a net present value. For details, see <https://brandirectory.com/methodology>. For additional information, see ISO Standard 10668 "Brand valuation."

³ For the sake of comparison, we obtained similar brand valuations for the top 100 global brands from 2007-2021 from another leading vendor, Interbrand (see, <https://interbrand.com/best-global-brands/>). While there are some differences, the correlation between the valuations by BrandFinance and Interbrand is 0.88.

recent trend of in-sourcing brand marketing and the creation of the highly understudied source of internal marketing expertise, an overlooked source of human capital.

We use the Occupational Employment and Wage Statistics data from the U.S. Bureau of Labor Statistics (Bureau of Labor Statistics, 2005-2019), which produces employment and wage estimates annually for nearly 800 occupations each year, to measure corporate investment in internal marketing. Table 1 reports the labor share and payroll share associated with managers who most closely oversee brand capital: sales, marketing, and public relations managers (SOC codes 11-2XXX). We use the years 2005, 2012 and 2019, because occupation codes were reported at a less granular level prior to 2005.

We observe a strong upward trend in marketing personnel both in terms of headcount and payroll share. Payroll share levels are higher, as marketing professionals tend to be white-collar management positions. Most industries experienced double-digit growth rates between 2005 and 2019, with the overall economy experiencing 20 percent growth in marketing managers' labor share and 25 percent growth in their payroll share. These growth rates do not appear to be subsiding with marketing teams at U.S. firms growing by 12% between 2021 and 2022 and 10% of firms anticipating continued growth into 2023 (CMO Survey 2022).

In addition, our focus on branding communication investments that arise through marketing management excludes the potentially large role in intangible relational capital building of other marketing investments, such as salesforce efforts (relationships between sales reps and their customers) and distribution and retailing efforts (relationships with the *trade*).⁴ As one example, salesforce costs represent an additional 5 percent of GDP, or \$800 billion (Zoltners et al. 2013), and span over 13 million employees in 2020, close to 10 percent of the US labor force.

These trends coincide with a growing push towards in-sourcing marketing decisions and capabilities. A recent survey by the Association for National Advertisers (2018) finds that 60 percent of U.S. companies have some form of internal marketing, and 78 percent of advertisers have in-house agencies (see also Visser, Sheerin, and Field 2018). These trends suggest a departure from the traditional model of partnering with advertising agencies outsourcing branding and creative services along with the purchase of advertising media. These trends also appear to be less pronounced in industries where businesses primarily sell to other businesses, where outsourcing of marketing still predominates (as reported by Sweeney 2020).

Brand Capital Investment Theories

Brands would likely exist even in the absence of systematic advertising or other corporate investments in brand-building. After all, consumers frequently rely on a brand's reputation or its trademarked elements, such as logos and colors, to help identify desired products and services. We

⁴ The *trade* spans the array of trade partners in the distribution channel between the manufacturer and the end-user consumer, such as wholesalers and retailers. Jointly, these account for 13.7 percent of 2020 U.S. value added and 14.1 percent of European value added (<https://unstats.un.org/unsd/snaama/Basic>).

now discuss established academic theories regarding a firm's private benefits from investments in branding, such as advertising and promotion, that potentially explain the magnitude of economy-wide marketing investments.

Not all advertising and marketing contribute per se to a persistent brand capital stock. For instance, some advertising serves purely to inform consumers about transitory information, as in the case of newspaper feature advertising of a temporary discount at a retail outlet. While these discounts may generate feedback effects—for instance, through brand-buying habits—we focus herein on marketing that contributes directly to persistent brand capital stocks.

We discuss various mechanisms through which marketing investments affect consumer demand and industrial market structure along with the persistence in these effects, reflecting the role of marketing-related intangible capital stocks. We focus on three mechanisms suggested in the literature: 1) reputation and the role of prestige and/or quality; 2) the reduction in transaction and search costs; and 3) competition and the role of strategic interaction and investment escalation. We refer the interested reader to Bronnenberg and Dubé (2017) and Bronnenberg et al. (2019) for more comprehensive discussions of the academic literature on the economics of brands and branding. Additionally, Aaker (1991) and Keller (1992) offer rigorous treatments of the perceptual representation of brands in a consumer's memory.

Brand Reputation

Consumers often face incomplete information about a product's quality prior to purchase and consumption. They may prefer branded goods with which they are familiar or that have a reputation for supplying products with certain qualities. In equilibrium, such brand-related reputations can emerge if consumers have a willingness to pay for quality and if a firm with a strong reputation has an incentive to continue to supply high-quality goods in the future to maintain its price premium. As Klein and Leffler (1981, p. 616) write: “[E]conomists also have long considered ‘reputations’ and brand names to be private devices which provide incentives that assure contract performance in the absence of any third-party enforcer (Hayek 1948, p. 97; Marshall 1949, vol. 4, p. xi).” Whether for packaged goods sold in supermarkets, retail gasoline or hotels, consumers routinely pay a price premium for branded goods, even when cheaper alternatives are available. When a firm fails to deliver high-quality service, it may even seek to conceal this reputation by changing its name (for example, McDevitt 2011).

Firms with established brands privately benefit from the incremental revenue streams due to 1) high awareness and consideration of their products (for example, Shocker et al. 1991; Laurent et al. 1995) and 2) a reputation for superior *quality* (Bai 2017; McDevitt 2011; McDevitt 2014; Minichilli et al. 2021; Shapiro 1982; Shapiro 1983). These private benefits to the firm can persist over the longer term through brand loyalty, which in turn stems from learning and taste formation (Bronnenberg et al. 2012; Bronnenberg et al. 2020) and from habits and inertia in buying behavior (Keane 1997; Dubé et al. 2009; Dubé et al. 2010). Indeed, many aspects of brand capital are legally protected through the intellectual property rights associated with trademarks, packaging patents, and copyrights.

For present purposes, we focus on a firm's private incentives to invest in the creation and maintenance of a brand through marketing. For instance, the firm may seek to communicate and promote the brand and its reputation to a broader audience for awareness purposes. In some cases, the advertising itself may convey objective information about a product's quality. However, most forms of brand advertising convey little or no objective quality information other than a reminder of the brand. One popular explanation for the prevalence of such uninformative advertising is that the advertising investment itself signals a brand's quality in equilibrium, if high-quality firms derive higher returns from branding than low-quality firms. Similarly, if more efficient firms derive higher returns from branding, consumers may prefer advertised brands because of the signal of higher efficiency and, hence, better deals. However, attempts to test these signaling theories empirically have delivered mixed results, with little evidence of a correlation between product quality and advertising effort. One interesting exception comes from a field experiment for an online restaurant platform that finds the mere disclosure that a restaurant link is a paid ad increases demand for the advertised restaurant (Sahni and Nair 2019).

Another explanation for uninformative advertising is that consumers derive consumption utility from the brand itself. According to this *persuasion* or *prestige* view, marketing expenditure in advertising and other forms of branding can create a consumable intangible service (say, prestige or lifestyle) that is complementary to the branded good or service (Becker and Murphy 1993). For instance, Kamenica et al. (2013) find that exposure to advertising for a branded antihistamine causes an increase in the rate at which the drug works – a physiological advertising effect.

A more cynical view of uninformative advertising is that it persuades consumers to perceive spurious differentiation between products, potentially causing spurious sources of loyalty (and for the sellers, market power). For example, branded headache medicines generate higher total revenues and typically sell at a significant price premium over objectively identical store brands that differ only in terms of brand name and branding elements. Meanwhile, pharmacists and physicians are considerably more likely to choose store-brand headache medicines than socio-demographically similar consumers who lack the healthcare domain expertise to realize the lack of objective differentiation (Bronnenberg et al. 2015).

Reductions in Consumer Transaction Costs and Search Frictions

In many shopping contexts, consumers incur transaction costs prior to making a decision. These costs can be internal like thinking and deliberation or external like browsing and research. They may additionally include negotiation, ordering and payment, delivery, and post-purchase service and support. These transaction-related costs can consume both time and money. According to the 2019 US time-use survey, consumers spend 0.75 hours per day purchasing goods and services on average, which corresponds to 1.71 hours per day for those who do any purchasing at all. (These estimates are from the U.S. Bureau of Labor Statistics, see <https://www.bls.gov/tus/a1-2019.pdf>.) Similarly, the empirical literature on consumer search has routinely estimated large search costs (for example, Honka 2014, Kim et al. 2010).

Consumers may choose branded goods because they are less costly to consider and evaluate. The ability to recognize a brand and recall associated product information about the branded good

from memory can help a consumer avoid several of these transaction costs. This information could include quality, product attributes or the likely price being charged. It may be triggered through recall and memory if, for instance, branding helps a consumer recall past experiences with a branded good. Alternatively, this information may be conveyed directly through the branding elements. For instance, the strong effect of tobacco packaging color on consumers' perceptions of the quality of the tobacco led Australia to implement a "plain packaging" regulation requiring all sellers to adopt a common, drab-brown packaging color.

Thus, investments in brand advertising can generate a persistent reduction in transaction costs by increasing the prominence of a brand in a consumer's memory, or making it "top-of-mind." For instance, advertising has been found to increase the likelihood of being considered by consumers at the point of sale (for example, Draganska and Klapper 2011). Consumers are also more likely to direct their search to more prominently branded retailers (for example, Baye, De Los Santos and Wildenbeest 2016) and may be more likely to click on firms with more prominent positions in search results on an online platform (for example, Ursu 2018). In principle, the long-term effects of branding on transaction costs could be self-reinforcing if consumers are more likely to consider and purchase branded goods, thereby establishing persistent *consumption capital* (or "habits") for those goods.

Competition and Equilibrium Brand Investment

Thus far, we have discussed a firm's incentives to invest in branding from the perspective of the monetizable equity a brand can create for consumers and demand. We now turn to equilibrium theories of branding and the strategic incentives on the supply side for brand investments. In particular, strategic considerations can either stimulate or deter branding efforts.

The strategic incentives for branding depend on the nature of marketing productivity and the returns to branding. Constant (or even increasing) returns to branding that sustain a high marginal impact of these investments, even at high levels of investment, can lead to an escalation in advertising or other forms of marketing in equilibrium.

We start with the assumption of constant returns to scale in branding. In the special case where the impact of branding expenditures on demand for the branded good does not affect the own-price elasticity, we obtain a classic result: the optimal advertising-to-sales ratio equals the ratio of the advertising elasticity to the own-price elasticity (Dorfman and Steiner 1954). One positive implication of this result is that firms in more competitive markets have less incentive to invest in branding. However, this prediction hinges on the assumption that advertising does not affect the price elasticity of demand.

Next, consider the case of economies of scale in branding and the potential for escalation. Suppose branding expenditures are endogenously chosen by the firm, but are fixed and sunk, and create brand capital that increases future demand. The strategic interaction of firms in this setting can lead to an escalation in marketing investments that creates barriers to entry, sustaining market power and concentration (Sutton 1991). Even as the market becomes very large, an escalation in brand spending arises without a corresponding escalation in entry, so that only a small number of

branded goods dominate while charging a price premium. The escalation in advertising may be even higher if early entrants use their branding to preempt future entry by a rival.

Researchers have documented such outcomes extensively in the consumer packaged goods industry. The typical category of consumer packaged goods has been dominated by the same small set of established brands for decades, with early (surviving) entrants typically sustaining a higher share than later entrants (for example, Sutton 1991; Bronnenberg et al. 2011).

Interestingly, the rapid shift away from traditional television advertising to increasingly targetable and personalizable digital advertising could potentially upend the market structure of consumer goods industries. Most television advertising is purchased upfront, months before the airing of the ad and the sale of the product. On the other hand, digital ads are typically targeted to individual consumers contemporaneously as they browse and evolve towards the purchase decision (the so-called *purchase funnel*). According to a survey of chief marketing officers, digital marketing now accounts for 57 percent of marketing budgets (CMO Survey 2022). In addition, whereas television advertising is mostly borne as a fixed and sunk cost, digital advertising is typically borne as a marginal cost, which can theoretically lead to fragmentation with a large number of small (low-advertising) brands. During the past decade many categories of consumer packaged goods have begun to fragment, as new local *craft* brands have begun to steal share from established brands. The beer industry is an oft-cited example (for example, Elzinga 2011; Bronnenberg et al. 2022).

When advertising is primarily *combative*, it primarily shifts share from one competitor to another in a tug-of-war. Firms may find themselves in a prisoner's dilemma in which all firms would prefer to cooperate to reduce overall advertising spending, but they are in a non-cooperative outcome in which each must advertise to defend against rivals' advertising. In some instances, firms may see no net change in their market shares in equilibrium despite large advertising outlays. Such prisoner's dilemmas have been documented in both laboratory settings (for example, Corfman and Lehmann 1994; Chen et al. 2009) and in the over-the-counter market for painkillers (for example, Anderson et al. 2016).

In contrast, market forces may deter firms from investing in branding when there are positive externalities on other firms. For instance, advertising by one firm may increase awareness for the entire category, generating positive spillovers to rivals. In this case, firms may free-ride off one-another's brand capital without internalizing the benefits their advertising generates for rivals. Such spillovers have been documented empirically in the market for anti-depressants (Shapiro 2018), statins (Starc and Sinkinson 2018) and digital platforms for restaurant delivery (Sahni 2016). Shapiro (2018) finds that advertising would increase 50 percent in the anti-depressants market if firms hypothetically cooperated on their advertising, so that each firm both paid its "share" of the industry advertising and knew that other firms were doing so as well.

Marketing and Social Welfare

Here, we turn to the divisive debate regarding the social benefits of brands and brand investments. While most of the debate has focused on advertising, the incentives for advertising are not distinct from the incentives to invest in other communication strategies to build brands.

The Persuasive View

In the *persuasive view*, advertising conveys information from an “interested” party, thereby providing little objective value and mostly creating spurious perceived differentiation and loyalty (for example, Marshall 1919, Kaldor 1950, Galbraith 1958, Solow 1967). Indeed, consumers are often empirically unable to identify their preferred brands in blind taste tests (Husband and Godfrey 1934; Thumin 1962; Allison and Uhl 1964) and in some instances prefer a cheaper store brand (as in Bronnenberg et al. 2020). Furthermore, such persuasive advertising can generate barriers to entry that sustain high prices and reputational monopolies. Economies of scale in branding would bolster these barriers to entry. In short, under the persuasive view, advertising is necessarily excessive because it decreases welfare, facilitating higher prices with no objective increase in consumer utility.

As noted earlier, established advertised brands have persistently dominated markets for consumer packaged goods for at least half a century, with the earliest entrants out-performing later entrants (Bronnenberg et al. 2009). Similarly, equilibrium advertising levels escalate in larger geographic markets, with no corresponding increase in the number of branded competitors (Bronnenberg et al. 2007). Some of this advertising could be socially wasteful. According to a Food and Drug Administration (2021) information website, generic prescription drugs are typically 80 percent-85 percent cheaper than the equivalent branded drug. Overall, the Food and Drug Administration (2016) summarizes evidence that patients could reduce their daily drug costs by 14-16 percent if they switched to generics, which corresponds to an economy-wide annual saving of \$17 billion. Bronnenberg et al. (2015) estimate that consumers could save \$44 billion annually simply by switching to store-branded consumer packaged goods. However, weaning consumers off premium-priced branded goods is often difficult even when a cheaper, physically comparable alternative is available. The provision of objective information about the comparability of the cheaper variant may have been sufficient to switch consumers away from the established brand (for example, Cox 1983, Carrera and Villas-Boas 2015, Bronnenberg et al. 2020). Furthermore, if one views such effects as reflecting in part the complementary view of advertising discussed below, welfare interpretations become more difficult.

The Informative View

During the 1960s, a competing *informative view* of advertising emerged, led primarily by Chicago school economists (Stigler 1961; Telser 1964). Advocates argued that advertising communicates valuable information about the product and its attributes. To the extent that advertising reduces consumer search and evaluation costs, it would be procompetitive, leading to less price dispersion and lower markups. Furthermore, advertising could facilitate entry and further

toughen competition. Under the informative view, advertising can be socially beneficial by creating consumer value and making markets more competitive.

Some evidence supports the welfare-improving potential of advertising. For instance, anti-depressant advertising has been found to increase prescriptions and most striking, to decrease workplace absenteeism (Shapiro 2020). Similarly, advertising during U.S. presidential elections may have a large effect on voter turnout, stimulating political participation (Shachar 2009, Gordon and Hartmann 2013). Advertising by branded incumbents for cholesterol-reducing statins has been found to facilitate entry by unbranded generic competitors (Starc and Sinkinson 2018). As discussed above, the branding literature finds that the mental associations created by brands in a consumer's memory help reduce search and deliberation costs at the point of sale.

Some reputational benefits of branding may be welfare-improving, too. Bai (2018) finds that introducing a branding technology in the market for watermelons quickly led to higher quality in equilibrium. Similarly, biosimilar branded and branded generic drugs in Chile were found to be of much higher quality than cheaper unbranded alternatives (Atal et al. 2022). In that setting, regulations that limited entry of low-quality biosimilars increased consumer welfare, in spite of leading to higher prices.

As we noted, advertising can sometimes increase overall consumer interest in the product category, generating potential spillovers between firms. In practice, the free-riding problem can lead to under-investment relative to the social optimum for such class-expanding advertising.

The Complementary View

A more recent stream of literature takes the *complementary* view of advertising, whereby the consumer derives consumption utility from the brand and branding itself, even if the advertising conveys no objective information (Becker and Murphy 1993). Empirically, consumers who have recently purchased a branded good are more likely to watch (consume) ads for that good instead of skipping them (Tuchman et al. 2018). A similar complementarity was documented between advertising during the National Football League's Super Bowl for a given brand and subsequent consumption of that brand during future sporting events (Hartmann and Klapper 2018).

The welfare implications of advertising are more ambiguous under the complementary view, which treats advertising as a consumption good in and of itself. However, Becker and Murphy (1993) show that if advertising decreases the equilibrium price of the advertised good, then the market is under-supplying advertising. Intuitively, this test would indicate that firms are not taking into account advertising's ability to increase willingness-to-pay for the advertised good when deciding their marketing spending. Conversely, even if advertising increases equilibrium prices, it need not be socially excessive as long as it creates enough consumer value.

A Roadmap for Future Research

We see at least three potentially valuable directions for future research on the economics of brand capital.

Agency and Conflict of Interest

Many firms rely on external advertising agencies not just to buy and allocate advertising media, but also to evaluate the performance of the ads. This joint duty of purchasing and auditing the performance of advertising raises a clear conflict of interest. Other firms assign a marketing budget to an internal team to conduct the media buying and performance evaluation. Again, there is a conflict of interest. In either case, even if those in charge of the marketing budget do not literally obfuscate negative evidence, they face little incentive to seek out more reliable methods.

As an example of the potential for such conflicts of interest, Blake et al. (2015) show how simple ordinary least squares estimation suggests the presence of strong and significant effects for the eBay company to engage in *paid search* advertising so that its name would appear at the top of a search engine result, implying a return-on-investment of over 1000 percent. If a marketing team that was hired to purchase such advertising found such evidence, it would have little incentive to assess its robustness, even though it is based only on a correlation. Blake et al. (2015) then develop more reliable experimental evidence that paid brand keyword search advertising at eBay had a very small effect on demand, because over 95 percent of that effect consisted of cannibalization of traffic to eBay that would have come free through the organic channel. Essentially, eBay had been paying search engines to place their site at the top of the search list when browsers searched for “eBay,” even though the site would have certainly also been at the top of the list of “organic” (not-paid-for) search results. The true return-on-investment was approximately –75 percent, and eBay subsequently terminated its brand keyword search campaigns on which it had invested \$30 million in 2010 alone. In a follow-up study of branded keyword search advertising, Simonov, Nosko and Rao (2018) find a similar cannibalization effect—that is, paid advertising was just redirecting traffic that would have arrived without this advertising—by conducting randomized field experiments for the 2,500 most searched brands on the Bing search engine.

The built-in conflict of interest in making and evaluating decisions about advertising would be expected to lead a wide variation in the outcomes of advertising, and indeed, the long empirical literature measuring the effect of advertising has routinely documented mixed results. Aaker and Carmen (1982) speculate that some of these mixed findings reflect a tendency for established brands to over-invest in advertising, with some of the budget spent on wasteful and ineffective branding. For example, one might expect to find little or no effect of local changes in advertising for established brands already in possession of large, intangible brand capital stocks. Indeed, Shapiro et al. (2021) find small and mostly insignificant advertising effects for almost 300 of the top-advertised consumer brands. In contrast, using randomized television advertising experiments, Lodish et al. (1995) find much larger television advertising effects for new products, often persisting several years after a campaign. Given the long-standing expertise of producers of consumer packaged goods in advertising, it is surprising to find widespread investment in ineffective advertising—unless one takes seriously the agency problems in advertising spending. There are of course examples of large

advertising effects, including for established brands. For instance, advertising during the football Super Bowl, one of the most expensive and controversial forms of advertising, have been found to increase sales for branded consumer goods and for movies (Stephens-Davidowitz et al. 2017; Hartmann and Klapper 2018).

The mixed results are not merely an artifact of the consumer packaged goods industry. For example, Shapiro (2016) finds a precise null effect of advertising for health insurance. Of course, these studies raise some questions about the appropriate capitalization rate to assign to advertising spending.

Productivity and Growth

In different ways, brand capital can cause firm-level measures of productivity to be either overstated or understated.

In practice, the role of brand capital is almost inevitably unmeasured in production analysis. The standard productivity measures that are constructed for a firm use only tangible inputs and outputs. Such measures will capture the output that the intangible creates, but do not count brand capital among the inputs. As a result, companies with a large amount of brand capital (and/or a high elasticity of output to brand) will appear to have high measured productivity, although the firm's true (intangible-adjusted) productivity level would be much lower. Given the enormous variations in measured productivity among firms even in narrowly defined markets, it is possible—and in some markets probable—that some of this variation is coming from differences in the size or efficacy of firms' brands.

One nuance here resides in how output is measured. As noted, brand does not lead directly to more physical output per unit of input (or for service-producing firms, more countable units of anything). Instead, it raises the prices at which those units are sold. Thus, quantity-based measures of productivity will not capture the effect of brand on output, while revenue-based measures will. De Loecker and Syverson (2021) provide a broader discussion of the respective strengths and weaknesses of quantity- and revenue-based productivity measures.

The discussion to this point takes brand capital as installed and considers its effect on production and measured productivity. However, when brand investments are being made, they are (conceptually) an output of the firm, as would be the case for a firm producing a tangible investment good. In this way, investments in brand capital cause productivity to be understated. The firm looks like it is employing many resources without obtaining a lot of output from them, but in reality that output is not being counted. Thus, when brand capital is first produced it causes measured productivity to *understate* the true productivity level of the firm.

The net effect on measured productivity of the overstatement due to not measuring brand capital as an input and the overstatement from not measuring brand capital creation as an output depends on the relative size and timing of firms' brand investments and installed stocks.

Brynjolfsson, Rock, and Syverson (2021) discuss this and related effects of intangible capital on productivity measurement more generally.

Alternative Sources of Intangible Brand Capital

Our discussion has focused on communication investments to build and maintain intangible brand capital. The practice of marketing is, of course, broader in scope; in particular, it includes non-branding investments.

As one example, firms invest in “customer relationship management” systems, which both seek to acquire new customers and to sell more to existing customers through upselling and cross-selling. The tools of customer relationship management take the form of incentives, convenient transactions, and information about what the firm offers. Foster et al. (2016) are among the first to study how demand-side fundamentals, such as multi-year efforts to build a customer base (and create customer relationships), explain the slow growth of new plants in commodities industries. The properties of such a customer base, or “demand stock” (p. 97), and how it is affected by investments in marketing remain an open question.

In addition, consumption itself can be an important source of intangible capital and manufacturer/consumer relations. Consumers form preferences for products they have consumed in the past (for example, Bronnenberg et al. 2012, Atkin 2013), and for products consumed by their parents (Anderson et al. 2015). Such consumption capital can lead to the formation of preferences that bring important advantages to firms (Bain 1956). However, not much is known about the moderating effect of marketing investments on the formation of consumption capital throughout a consumer’s lifetime. There are some suggestive examples. Bronnenberg et al. (2022) link current consumer preferences for craft beers to historical local availability and distribution, while Atkin (2013) documents that past prices of staple foods impact current preferences. However, more study is needed of the way in which non-branding investments in marketing may initiate and help form long-lived relations between firms and their customers.

Conclusion

The economics literature in recent decades has largely overlooked the role of branding and marketing human capital for our understanding of markets and their organization as well as firm productivity and macroeconomic growth. We acknowledge the potential for some branding efforts to be socially wasteful. However, we also see ample scope for a welfare-improving role of brand capital through its ability to facilitate consumer search and evaluation. Furthermore, we see reasonable potential for brands and branding to offer more than transaction services; in some instances, they create genuine consumption benefits. Given the large economic magnitude of intangible brand capital and its recent growth, these issues seem likely to be of first-order importance.

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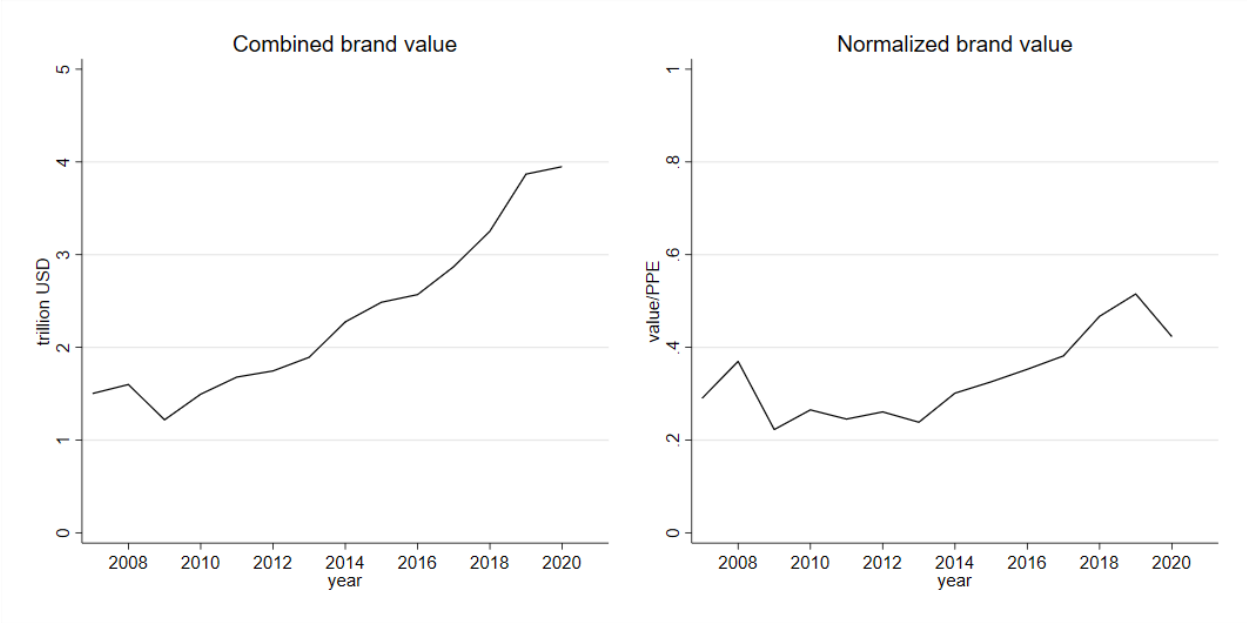


Figure 1: Brand value and normalized brand value for the 100 most valuable global brands

	2005	2012	2019	2005	2012	2019
	Employment			Payroll		
All Economy	0.44%	0.46%	0.52%	1.12%	1.21%	1.41%
Agriculture, Forestry, Fishing and Hunting	0.05%	0.08%	0.09%	0.19%	0.36%	0.33%
Mining, Quarrying, and Oil and Gas Extraction	0.27%	0.32%	0.32%	0.55%	0.69%	0.75%
Utilities	0.48%	0.50%	0.51%	0.87%	0.89%	0.96%
Construction	0.09%	0.10%	0.14%	0.21%	0.23%	0.30%
Wholesale Trade	1.40%	1.56%	1.83%	3.35%	3.84%	4.39%
Information	1.48%	1.69%	2.03%	3.10%	3.56%	4.10%
Finance and Insurance	0.90%	1.02%	1.11%	1.99%	2.35%	2.44%
Real Estate and Rental and Leasing	0.49%	0.47%	0.53%	1.19%	1.32%	1.38%
Professional, Scientific, and Technical Services	0.94%	0.99%	1.49%	1.80%	1.90%	2.77%
Management of Companies and Enterprises	2.76%	3.21%	3.29%	5.09%	5.67%	5.91%
Administrative, Support, and Waste Mgt Services	0.36%	0.26%	0.33%	1.02%	0.80%	1.06%
Educational Services	0.07%	0.11%	0.17%	0.12%	0.21%	0.35%
Health Care and Social Assistance	0.08%	0.08%	0.09%	0.14%	0.15%	0.20%
Arts, Entertainment, and Recreation	0.46%	0.41%	0.42%	1.21%	1.13%	1.24%
Accommodation and Food Services	0.11%	0.09%	0.07%	0.37%	0.33%	0.28%
Other Services (except Public Administration)	0.44%	0.46%	0.57%	1.12%	1.30%	1.69%
Federal, State, and Local Government	0.06%	0.06%	0.07%	0.10%	0.11%	0.11%
Manufacturing	0.57%	0.59%	0.59%	1.50%	1.54%	1.58%
Retail Trade	0.46%	0.51%	0.51%	1.48%	1.59%	1.57%
Transportation and Warehousing	0.22%	0.19%	0.17%	0.47%	0.46%	0.44%

Table 1: Marketing Labor Share of Employment and Payroll

Source: Occupational Employment and Wage Statistics data from the US Bureau of Labor Statistics. Marketing Labor is defined as sales/marketing/PR managers (occupation codes 11-2XXX).