The Real Effects of Fake Goods: Counterfeit Products and Firm Value

Mehmet I. Canayaz[a]

and

Umit G. Gurun[b]

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Abstract

We examine whether exposure to counterfeit products affects brand and firm values. We use the U.S. Trade Representative's Special 301 Reports as exogenous shocks to identify countries that fail to adequately protect intellectual property rights and show that publicly listed U.S. corporations suffer from lower brand asset values in foreign countries with endemic counterfeit problems. Exposures to counterfeits also have significant effects on corporate investments, profits, and valuations. We find that, on average, U.S. firms significantly *reduce* capital and R&D investments when counterfeit activity declines. Our results highlight that counterfeit activity is an important factor that affects investment choices and valuations of U.S. firms.

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[a] Penn State University. Smeal College of Business, 342 Business Building, University Park, PA 16802, USA. Email: mcanayaz@psu.edu.

[b] University of Texas at Dallas, 800 W Campbell Rd. SM 41, Richardson, TX 75024, USA. Email: umit.gurun@utdallas.edu.

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"We need to make sure that we are fully mobilized to stop these rip-off artists from undercutting the American brand. That's really their objective; to undercut the American brand."

—Senator Ron Wyden (D-Ore.), Senate Finance Committee meeting on counterfeit products, March 6, 2018

Counterfeits and piracy not only are widespread and long-standing problems, but also are growing in scope and magnitude. According to Organisation for Economic Co-operation and Development (OECD) estimates, counterfeit trade went up from 1.9% of the world trade to 2.5% from 2008 to 2013.[1] Global counterfeiting, which includes counterfeiting across multiple industries, including everything from apparel, accessories, software, pharmaceuticals, cigarettes, and books to automobile parts, consumer goods, baby food, toys, and electronics, reached $1.2 trillion in 2017. Recent innovations in 3D-printing technologies and the growth of e-commerce platforms enable illegal entities to manufacture and sell counterfeit products with a higher precision and at a much lower cost. Understanding how firms differentially navigate this marketplace is critical for identifying which firms will ultimately succeed, and hence how investors should allocate capital among these firms. Corporate success in today's world depends not only on the goods or services that firms provide, but also on their protection from counterfeits.

In this paper we investigate the effects of counterfeit activity on firms. We conduct our investigation in two steps. First, we study whether exposures to counterfeit products affect brand values, as measured by survey responses given by consumers about their perceptions about the brands.[2] The effects of counterfeit products on brand value depend on whether the consumers can

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[1] More information on illicit trade can be found on OECD's 2016 report "Trade in Counterfeit and Pirated Goods," available at http://tiny.cc/kfv9uy.

[2] Our data includes micro-level brand value data collected from thousands of surveys carried out around

distinguish the deceptive counterfeits from the real goods. Grossman and Shapiro (1988a) argue that in the presence of information asymmetries, deceptive counterfeits reduce the incentives of producers of genuine goods to invest in higher-quality products, and ultimately kill the market for high-quality goods, primarily due to the classic lemons problem described by Akerlof (1970). Interestingly, firms can still be worse off even if consumers can distinguish counterfeit products from real ones because of the status value of the brands. When the status value of a product depends negatively on the number of consumers who own a product, genuine or fake, bearing the same brand name, consumers are willing to substitute the real products with the deceptive counterfeits and therefore make the producers of the genuine goods worse off (Grossman and Shapiro 1988b). In either case, counterfeit products pose a threat to the firm's increased competition for the same consumer base. In the second step of our investigation, we turn our attention to the ramifications of counterfeit products on firm profitability, investment, and valuation. More specifically, we study to what extent enhanced enforcement of anti-counterfeit laws lowers competition created by counterfeit activity and whether firms enjoy increases in profitability and valuation following the reduction of counterfeit exposure.[3]

For our identification strategy, we utilize exogenous shocks to intellectual property law enforcement induced by the United States through Watch List designations in Special 301 Reports. These Special 301 Reports, prepared annually by the Office of the United States Trade Representative, identify intellectual property–related challenges U.S. companies and products face due to (lack of) intellectual property laws in other countries. Section 301 of the Trade Act of 1974 is the principal statutory authority under which the United States imposes trade sanctions on foreign

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the globe between 1993 and 2014. In each survey, respondents are asked to evaluate these brands using various attributes that are then used by the data provider to create proxies for brand values.

[3] For certain products, the consumption of deceptive fakes can generate negative externalities. Examples would be an increased risk of disease transmission in the case of pharmaceuticals, or environmental degradation in the case of industrial chemicals.

countries that either violate trade agreements or engage in other unfair trade practices. When negotiations to remove the offending trade practices fail, the United States may act to raise import duties on the foreign country's products as a means to rebalance lost concessions.

Anecdotal and empirical evidence suggests that countries that are included in Special 301 Reports respond to potential U.S. sanctions threats. Drahos (2002) reports that threat of action under Section 301 often helps insert the U.S. trade lobby–backed advisers into other counties' legislative processes in order to ensure compliance with U.S. trade norms. A former U.S. trade lobbyist notes: "Jamaica had no intellectual property law, but they wrote one with our help. Similarly, the Dominican Republic. I sat down with their lawyer and together we wrote their copyright law." To investigate whether countries engage in amendments to their intellectual property protection practices following their inclusion in Special 301 lists, we collect data on countries' intellectual property offices from the World Intellectual Property Organization (WIPO) country profiles database. Countries keenly respond to being included in Special 301 Reports. In particular, they establish new intellectual property (IP) offices following negative changes in Special 301 status and do not close these offices following positive changes in IP rights (IPR, hereafter) enforcement status.

Does IPR enforcement impact brand values? To answer this question, we examine whether publicly listed U.S. corporations exhibit lower brand asset values in foreign countries where they are exposed to counterfeit products (i.e., weaker intellectual property regimes). We find that publicly listed U.S. firms exhibit up to 2.55% lower brand values in foreign countries that are included in the Special 301 Watch List. The reduction in brand values goes up to 5.07% for the countries included in the Special 301 Priority Watch List. More importantly, a negative (positive) change in a foreign country's intellectual property regime, proxied by a change in that country's Special 301 status, depreciates (appreciates) brand values of publicly listed U.S. firms contemporaneously.

We perform a battery of tests to investigate alternative explanations. For example, we show that excluding firms that were instrumental in drafting a national-level legislation or firms that lobby for trade protection from the U.S. government, if anything, makes our results stronger. Moreover, when we investigate the brand values of 1,352 *non*-U.S. firms in countries with reported counterfeit troubles, we see similar improvements in their brand asset values, suggesting that intellectual property enforcements triggered by the 301 Reports of the United States have positive externality on corporations of other countries. Put differently, the effects of Special 301 Reports are not confined to U.S. brands. When we perform a placebo test, in which we examine whether intellectual property enforcement in a given country impacts brand asset scores in the nearest available country that is not included in the Special 301 Reports, we do not find a relation between the two. This suggests that the enhancements in brand values are indeed driven by enforcement of intellectual property rights through 301 Reports.

In the second part of the paper, we focus on to what extent firm-level profitability, investment, and valuation are related to counterfeit exposure. The counterfeit activity can affect the investment policy of a given firm in different ways. In Fudenberg and Tirole's (1984) framework, threat of increased counterfeit activity may reduce growth opportunities and increase the uncertainty of potential projects, and it can induce firms to select more conservative investment decisions. On the other hand, increased counterfeit activity can also prompt firms to take more aggressive investment behavior in an attempt to strategically deter activities of counterfeit producers (Caves and Porter 1977). Overall, the response of a firm to counterfeit producers depends on the relative costs of fighting counterfeits as well as on the firm's anticipation about how the future inflow of counterfeit products will modify the product market environment. After all, many industries do survive and even thrive in the face of imitation, and in some cases, such as the fashion industry, imitation makes firms richer and more productive.

To investigate the relation between counterfeit activity exposure and firm performance, we first develop a firm-year-level counterfeit exposure measure. In developing this measure, we combine information on the number of potential customers a brand may have in a given country with the level of intellectual rights protection in each country. It is important to note that our data allows us to observe brand awareness in all the countries, regardless of whether the firm itself produces or sells the product in that country. For example, while Louis Vuitton has manufactured bags in the United States, Spain, Germany, and Italy, these bags are sold in 25 of the countries we have data on. Using the firm-year-level counterfeit exposure metric, we show that improvements in IP regimes around the world significantly impact U.S. firms. In particular, a *positive* change in IP enforcements of a foreign country with 100 million firm customers *decreases* capital expenditures of that U.S. firm by 0.20%, R&D expenditures by 0.13%, employee growth by 0.96%, and sales growth by 1.80%. Such a change also *increases* the profit margin of a given firm by 0.24% and its overall value by 1.65%.

I. Background and Literature Review

The counterfeit economy turned into an endemic problem for U.S. corporations over the past decade. According to United States Trade Representative (USTR, hereafter) reports, end-user piracy of business software reached as high as 76% in Thailand and 87% in Indonesia. Pirated optical media (i.e., CDs, VCDs, and DVDs) usage reached 100% in Vietnam, 71% in Colombia, 100% in Ukraine, 98% in Peru, and 90% in Pakistan. Counterfeit medicines were 25% of the market in Indonesia and more than 50% of the market in Jordan. Levels of piracy in China across all lines of copyright business reached 85% to 93%. In the knockoff world, brand names attract imitation and counterfeiting simply because generic products often cannot provide the quality expected by the consumer at lower prices. Several notable studies in marketing literature argue that demand for counterfeits can be explained by lower prices, attitudes toward big branded companies, and the need

for status signaling (Bloch et al., 1993; Cordell et al., 1996; Wee et al., 1995; Tom et al., 1998; Kwong et al. 2003; Wilcox et al. 2009; Han et al. 2010). There are also studies that look at the supply-side effects such as those of Conner and Rumelt (1991) and Olsen and Granzin (1993), which respectively study the network effects in software piracy and consumers' willingness to help workers of branded companies.

While it is profitable for generic products to imitate name brands, it is not clear how authentic brands should respond to competition coming from counterfeits. Grossman and Shapiro (1988, 1989) articulate the impact of counterfeit activity in an international trade framework and provide theoretical arguments that deceptive counterfeiting reduces the incentives of producers of genuine goods to invest in higher-quality products and may even kill the market for high-quality goods. Put differently, if IP law enforcement is weak, legitimate firms may find it profitable to lower their prices and product quality instead of fighting the counterfeit producers. Alternatively, it is also possible that legitimate firms react to counterfeit threat by signaling their goods' origin by investing in quality, developing retail stores, and ultimately raising prices.

More recent analysis has identified further interesting features of markets in which knockoff goods compete with genuine ones. Most notably, Qian (2014a) models the impacts of entry by counterfeiters on the subsequent responses of genuine producers. One key prediction of Qian (2014a) is that entry by counterfeiters would induce a genuine producer to upgrade product quality and raise its product's price if and only if the entrant's quality is lower than a threshold level. In another study, Qian (2008) studies the impact of counterfeiting on sellers of authentic goods under weak IP protection in the footwear industry in China between 1993 and 2004, and she shows that counterfeit entry stimulates the original producer to offer a higher-quality product at a higher price. She shows that companies deter counterfeit entry or reduce counterfeit sales by engaging in self-enforcement

activities and downstreaming vertical integration of licensed company stores. Recent studies document other effects of counterfeits. Qian (2014b) argues that while counterfeiting may increase brand awareness of a given product (advertising effect), it may also reduce sales because consumers may purchase counterfeits rather than genuine products (substitution effect). The advertising effect may, for example, be stronger for high-end fashion products such as expensive clothes and accessories. In contrast, the substitution effect may drive consumers toward counterfeit products for items like software and optical media products such as CDs, VCDs, and DVDs. Finally, Fink et al. (2016) provides an excellent survey of literature on the effects of counterfeiting and piracy in the economy.

We add to the literature in three unique ways. First, we directly estimate the implications of counterfeit activity on brand values in multiple countries for several brands. We test whether firms respond to product market competition created by counterfeit products by changing their investments and explore firm value implications of counterfeit product exposure. Second, we document the effects of 301 Special Report Watch List designations, a previously unstudied counterfeit activity enforcement measure in a multi-country setting. Last, because our data allows us to observe features of several brand attributes, including brand differentiation, strength, and knowledge, we perform tests to observe if counterfeits damage brand value when advertising effects dominate substitution effects.

II. Data and Methodology

A. 301 Reports

For our identification strategy, we use the Watch List designations in Special 301 Reports generated annually by USTR. In these reports, USTR lists the foreign countries "that deny adequate and effective protection of intellectual property rights or deny fair and equitable market access to United States persons that rely upon intellectual property protection." We hand-collect these listings

from Special 301 Reports published on the USTR webpage. Between 1993 and 2014, USTR issued 967 Special 301 listings. In these listings, USTR categorized 91 U.S. trading partners as Priority Foreign Countries (PFC), Priority Watch List Countries (PWC), or Watch List Countries (WC).[4] All of these assessments were made on a case-by-case basis, taking into account such diverse factors as production of counterfeit goods, exposure to global dissemination of counterfeit goods, level of intellectual property rights (IPR) development, international obligations and commitments, the concerns of rights holders and other interested parties, and the trade and investment policies of the United States.

USTR identifies PFCs as "those countries that have the most onerous or egregious acts, policies, or practices and whose acts, policies, or practices have the greatest adverse impact (actual or potential) on the relevant U.S. products." To further facilitate administration of related statutes, USTR also uses the Priority Watch List and the Watch List for the second and third tiers of IPR-infringing countries. Placement on these lists indicates that "particular problems exist in a given country with respect to IPR protection, enforcement, or market access for persons relying on IPR." For each listing, USTR provides detailed explanations of IPR problems and a list of U.S. industries affected by them. Table 1 reports the total number of Special 301 listings and categorizations for each year in our sample period. USTR listed, for example, 43.95 countries per year between 1993 and 2014. In so doing, it identified 0.5 countries as PFCs, 11.91 countries as PWCs, and 29.95 countries as WCs, and 1.59 countries were assigned to Special 306 or out-of-cycle monitoring each year. On average, 6.55 countries were dropped to a worse Special 301 category each year (e.g., from PWC to PFC, or from WC to PWC/PFC, or from Not Listed to WC/PWC/PFC), and 6.27 countries were raised to a better

[4] In addition to these categorizations, in rare cases, USTR also performs out-of-cycle reviews for those countries that require further monitoring in addition to the annual review cycle and Section 306 monitoring for those countries with which the United States has bilateral agreements to address specific problems raised in earlier reports.

status.

Figure 1 contains a world map showing the number of times each foreign country was listed in Special 301 reports during our sampling period. As shown on the map, northern and western European countries exhibit the smallest numbers of Special 301 listings, and eastern European, Asian, and Latin American countries exhibit the greatest number of listings. Russia, for example, has been listed 20 times in Special 301 Reports between 1993 and 2014. Turkey has been listed 23 times, Brazil and China 21 times. On the other hand, France and the United Kingdom have never been listed, and Germany has been listed only once.

[Insert Table 1 & Figure 1 here]

In addition to country names, USTR also provides detailed remarks on all Special 301 listings. In these remarks, the report outlines the status of the counterfeit economy in each country, i.e., the locations and conditions of notorious markets, and how each foreign country tackles and should tackle IP problems. The report further explains why a given foreign country is listed, what it should do in order to get unlisted, and what would happen if there is not enough progress or no action taken. Examples of suggested actions include opening intellectual property offices, signing new free trade agreements with higher intellectual property considerations, passing new legislation against counterfeits, jailing the guilty parties, or educating judges on intellectual property rules.[5]

Based on our textual analysis, between 1993 and 2014, 72 percent of Special 301 listings were associated with issues related to counterfeit products. This number reached 80 percent during the last five years of our sampling period. Moreover, the remarks in Special 301 Reports have been getting longer and longer over the years, as indicated in the last column of Table 1. The remarks in most recent years contain over 2,000 characters, while the reports in the earlier part of our sample contain

[5] In Appendix A, we provide information on a few recent 301 Reports and their aftermath.

less than 500 characters. This trend indicates how the counterfeit economy turned into an endemic problem for U.S. corporations over the past decade. More recent reports provide quantitative information on the severity of counterfeit activity across industries and detailed explanations of which U.S. industries are adversely affected by harmful activities in the foreign country. After reading these remarks, we identify U.S. industries that were behind each of the 967 listings between 1993 and 2014. We link each Special 301 listing decision with U.S. industries on a case-by-case basis to create a database that helps us delineate industries/firms in that potentially lobbied for the listing decision. Doing so allows us to identify industries that do not lobby for but benefit from IPR improvements triggered by 301 Reports. In a given year, USTR identifies 4.95 U.S. industries and 9.71 U.S. subindustries as being affected by counterfeit products in foreign countries.

B. Brand value metrics

To study the effects of counterfeit products on brands, we use the brand reputation data provided by BAV Consulting (BAV). BAV conducts yearly surveys around the globe to evaluate brands along several dimensions. These brand dimensions are referred as "image attributes" in the marketing industry. When, for example, respondents evaluate the Aeropostale brand on BAV's image attribute *prestigious*, respondents are asked to answer yes or no to the following question: "Do you find Aeropostale to be prestigious?" Aeropostale then receives a score on the image attribute *prestigious,* determined by the percentage of respondents that associate it with being prestigious. Scores of Aeropostale and other firms for each attribute are then ranked so that the top-scoring firm in a particular attribute gets a score of 100 for that attribute. In addition to brand image attributes, the company also collects usage statistics and assigns brands to industries and subindustries.

BAV clusters its image attributes into four pillars that proxy for profit margins, product market penetration, customer loyalty, and brand awareness. They call these pillars (1) energized differentiation, (2) relevance, (3) esteem, and (4) knowledge, respectively. *Energized differentiation*

is a brand's point of difference, and it is calculated using a composite of five image attributes (Different, Distinctive, Unique, Innovative, Dynamic). This metric is intended to proxy for the profit margin of the brand. *Relevance* is a proxy for how appropriate the brand is for consumers, and it is calculated based on a scale of 1–7 from the usage preference measures "Not at All Relevant" to "Extremely Relevant." This metric is a proxy for the product market penetration potential of the company. *Esteem* measures how well regarded the brand is, and it is calculated on a scale of 1–7 from "Extremely Low Regard" to "Extremely High Regard" and weighted with a combination of three attributes: *Leader, Reliable,* and *High Quality*. BAV aims to measure customer loyalty with the esteem pillar. The knowledge pillar, which aims to measure brand awareness, focuses on consumers' intimate understanding of a firm's brand, and it is calculated based on a scale of 1–7 from "Never Heard of" to "Extremely Familiar." All of the metrics are later mapped into a score between 0 and 100.

In the BAV model, *Energized Differentiation* and *Relevance* are leading indicators of a brand's direction and momentum, and together they form *Brand Strength,* which provides a forward-looking performance measure. Conversely, *Esteem* and *Knowledge* are current indicators that combine to form *Brand Stature*. *Brand Strength* is therefore an indicator of future brand potential, and *Brand Stature* is an indicator of current brand status. BAV uses these pillars to compute a final composite *Brand Asset Value* for each firm. In our analysis, we use both brand asset value, as calculated by BAV, and components of brand asset value as our main variables of interest.[6]

[Insert Table 2 here]

[6] We provide a detailed explanation of BAV data and brand asset value in Appendix B.

In our tests, we use two samples. In the first sample, we focus on U.S. public firms to investigate the counterfeit exposure on firm-level investment and valuation. The second sample contains all public and private firms in the BAV dataset, excluding the U.S. public and private firms[7]. Panel A of Table 2 presents summary statistics of this first sample of 242 U.S. public firms between 1993 and 2014. As shown, the average brand asset score is 54.21, and the median score is 54.64. Brand usage, i.e., the percentage of consumers that actively use the brand, has a mean of 16.41% and a median of 7.54%. In the second sample, we focus on brand characteristics of the remaining 1,352 firms in the BAV dataset spanning the period 1993 to 2014 across 28 foreign countries. As shown, summary statistics on this sample are similar to the ones in Panel A. For example, the average brand asset score is 54.89, and the median score is 57.76. Brand usage has a mean of 21.71% and a median of 12.61%. Overall, reputational characteristics do not seem to differ to much in Panels A and B.

Panel C of Table 2 presents financial characteristics of U.S. public firms from the merged Special 301, BAV, and CRSP COMPUSTAT Merged universe. We present firm-level characteristics on valuation, debt, investments, and growth profitability. The median Tobin's Q, for example, is 1.64. The median logged firm age is 8.98, the debt to assets ratio is 0.23, the capital expenditures to assets ratio is 0.04, and the profit margin is 0.06.

III. Main Results

A. Counterfeits and brand value

We first test the hypothesis that foreign-country IP rights have an impact on brand values. Specifically, using a sample of 242 publicly listed U.S. corporations, we examine how foreign

[7] We manually identify products of U.S. firms in the BAV dataset and exclude them from this sample.

country designations in Special 301 Reports affect brand reputations of U.S. corporations in international markets. Our main specification is as follows:

$$Y_{i,j,t} = \alpha + \beta_1 * \text{Watchlist}_{j,t} + \beta_2 * \text{Priority Watchlist}_{j,t} + \text{Fixed Effects} + \varepsilon_{i,j,t}, \quad (1)$$

where $Y_{i,j,t}$ denotes the brand asset of the firm i in year t in foreign country j; $Watchlist_{j,t}$ is equal to one if foreign country j is listed as WC in year t; $Priority\ Watchlist_{j,t}$ is equal to one if foreign country j is listed as PWC in year t. Because there are few (11) PFC listings between 1993 and 2014, we group the PFCs with the PWCs.[8] Doing so designates "Not Listed" as the omitted category in the regression. We cluster the standard errors by firm-country because we expect the error terms to be more correlated within firm-country. We report the results in Panel A of Table 3.

[Insert Table 3 here]

As shown in Column 1, after controlling for firm and year fixed effects, we find that a given U.S. firm attains a 2.32-unit-lower brand asset score in WCs and a 4.93-unit-lower brand asset score in PWCs. Compared with sample means reported in Table 2 (54.21), the estimated values correspond to 4.28% and 9.09% changes in brand assets, respectively.

These results are robust to a rich array of fixed effects structures, including industry-year, firm-year, and firm-country fixed effects. The industry-year fixed effect absorbs yearly industry-level shocks. The firm-year fixed effect allows us to compare brand value scores of a given firm in a given year across different foreign countries with different IPR enforcement levels. The firm-country fixed effect allows us to utilize the time-series variation within a given firm's brand value score in a given foreign country. Across alternative specifications, the estimated coefficients of interest, *Watchlist*

[8] Excluding the Priority Foreign Country listings from the analysis doesn't alter our results economically or statistically.

Appendix A. Recent Special 301 Reports and Their Aftermath

In 2005, USTR listed Brazil as a PWC. Despite some improvements in the Brazilian IP system (e.g., the adoption of a National Action Plan by Brazil's National Council to Combat Piracy and Intellectual Property Crimes, as well as successes in enforcement along its border with Paraguay), USTR was very concerned about counterfeit products in Brazil. In particular, optical media (i.e., CDs, CVDs, DVDs, etc.) and internet piracy rates were increasing, and the estimated losses to U.S. firms were exceeding $931 million. USTR stated that this was mostly due to the influx of pirate and counterfeit goods, particularly in the Manaus Free Trade Zone in northern Brazil. USTR also underlined that it expected tangible progress due to the newly adopted National Action Plan, which would target counterfeit products in not only the optical media sector but also all other sectors.

In 2006, USTR acknowledged that Brazil made significant progress on copyright enforcement, specifically "by adopting a National Action Plan to enforce copyrights and reduce piracy, drafting IPR legislation, increasing seizures and prosecutions, and developing strong public awareness campaigns to fight piracy," and in 2007, Brazil was dropped from the Priority Watch List category to the Watch List category, as Brazil's National Anti-Piracy Council was "increasingly recognized as a model of public-private collaboration in the area of IP enforcement." Moreover, the Brazilian government's National Action Plan to address piracy and IP crimes produced "continuing positive results, particularly through effective police actions." While piracy and counterfeiting still existed and criminal prosecutions often lagged police actions, Brazil merited recognition for its vigorous efforts very rapidly.

Countries placed on Special 301 lists, like Brazil, are the focus of increased bilateral attention concerning specific problem areas. USTR develops "action plans" for each foreign country that it has identified for placement on Special 301 and that has remained on the list for at least one year. The action plans include benchmarks to assist the foreign country to achieve, or make significant progress

Table 1- Summary statistics on the distribution of Special 301 Reports

This table reports the total number of Special 301 listings, Watch List designations, reported counterfeit issues related to listings, number of related sectors and subsectors mentioned in Special 301 listings, and length of Special 301 country analyses. *PFC* denotes Priority Foreign Countries, *PWC* denotes Priority Watchlist Countries, *WC* denotes Watchlist Countries, *306/OCR* denotes Section 306 and out-of-cycle reviews. *Weaker IPR* refers to country designation getting worse (e.g., WC to PWC) relative to the previous calendar year. *Stronger IPR* refers to a country designation getting better (e.g., PWC to WC) relative to last calendar year. *Counterfeit issues* denotes the percentage of Special 301 listings that cite troubles related to counterfeit problems. Related sectors and subsectors denote industries that are cited in Special 301 Reports as troubled industries in corresponding foreign countries. To identify them, we use BAV's sector and subsector definitions. *Length of country analysis* denotes the number of characters each Special 301 listing contains.

Panel A: Brand characteristics of publicly traded U.S. firms

	N	Mean	Median	SD	Min	Max
Brand asset	28,541	54.21	54.64	31.84	0.00	100.00
Brand stature	28,541	54.14	55.17	31.57	0.00	100.00
Brand strength	28,541	54.38	56.39	31.01	0.06	100.00
Brand esteem	28,541	59.15	63.08	30.09	0.00	100.00
Brand knowledge	28,541	48.96	47.10	30.14	0.07	100.00
Brand differentiation	28,541	56.05	59.00	29.76	0.07	100.00
Brand relevance	28,541	50.75	50.49	29.58	0.06	100.00
Brand usage (%)	26,203	16.41	7.54	20.63	0.00	97.57

Panel B: Brand characteristics of non-U.S. firms

	N	Mean	Median	SD	Min	Max
Brand asset	71,022	54.89	57.76	29.50	0.00	100.00
Brand stature	71,022	54.44	57.00	29.50	0.00	100.00
Brand strength	71,022	55.08	57.68	28.69	0.00	100.00
Brand esteem	71,022	56.28	59.43	28.66	0.00	100.00
Brand knowledge	71,022	51.94	52.54	29.26	0.08	100.00
Brand differentiation	71,022	54.54	56.52	28.45	0.00	100.00
Brand relevance	71,022	53.24	54.43	28.27	0.06	100.00
Brand usage (%)	71,022	21.71	12.61	22.85	0.00	100.00

Panel B: Financial characteristics of publicly traded U.S. firms

	N	Mean	Median	SD	Min	Max
Tobin's Q	2,712	2.24	1.64	2.42	0.42	79.42
Logged market to book	2,667	1.04	0.97	0.91	–2.89	6.41
Logged AVEBITDA	2,648	2.61	2.52	0.58	–1.01	8.75
Logged price to earnings	2,349	–2.98	–3.07	1.72	–7.62	4.27
Logged book assets	2,712	9.60	9.65	2.00	3.10	14.94
Logged firm age	2,713	8.69	8.98	1.15	0.00	9.86
Debt to book assets	2,698	0.25	0.23	0.22	0.00	3.68
Physical capital to book assets	2,608	0.51	0.45	0.32	0.00	1.89
R&D expenses to book assets	1,861	0.04	0.03	0.04	0.00	0.29
Capital expenditures to book assets	2,613	0.06	0.04	0.06	–0.03	0.76
Employee growth	2,566	0.05	0.01	0.24	–1.00	4.95
Sales growth	2,631	0.08	0.06	0.31	–0.93	11.06
Profit margin	2,712	0.07	0.06	0.08	–0.17	0.27

Table 3 – Enforcement of intellectual property rights and brand reputation

This table reports regressions of BAV brand asset scores on enforcement of intellectual property rights around the globe. In Columns 1–5, we run regressions on the following specification:

$$Y_{i,j,t} = \alpha + \beta_1 * \text{Watchlist}_{j,t} + \beta_2 * \text{Priority Watchlist}_{j,t} + \text{Fixed Effects} + \varepsilon_{i,j,t},$$

where $Y_{i,j,t}$ denotes brand asset of the firm i in year t in country j; $Watchlist_{j,t}$ is equal to one if country j is listed as a Watch List country by the Office of the United States Trade Representative (USTR); $Priority\ Watchlist_{j,t}$ is equal to one if country j is listed as a Priority Watch List country by USTR. In Columns 7–11, we run regressions on the following specification:

$$\Delta Y_{i,j,t} = \alpha + \beta_1 * \text{Stronger IPR}_{j,t} + \beta_2 * \text{Weaker IPR}_{j,t} + \text{Fixed Effects} + \varepsilon_{i,j,t},$$

where $\Delta Y_{i,j,t}$ denotes changes in brand asset of firm i from year t–1 to year t in country j; $Stronger\ IPR_{j,t}$ is equal to one if there is a positive change in IPR enforcement in country j from year t–1 to year t, as reflected in USTR Section 301 Reports (i.e., country status changes from Priority Watch List to Watch List, from Watch List to Not Listed, or from Priority Watchlist to Not Listed); $Weaker\ IPR_{j,t}$ is equal to one if there is a negative change in IPR enforcement in country j from year t–1 to year t, as reflected in USTR Section 301 Reports (i.e., country status changes from Watch List to Priority Watch List; or from Not Listed to Watchlist; or from Not Listed to Priority Watchlist). In Columns 6 and 12, we report results from our placebo test, in which we regress brand asset scores and the change in brand asset scores in nearest available country to country j that is not listed in Special 301 Reports. We label these tests as "Placebo." Firms are publicly listed corporations from the BAV universe, spanning all BAV surveys carried out around the globe between 1993 and 2014. ***, **, or * indicates that the coefficient estimate is significantly different from zero at the 1%, 5%, or 10% level, respectively.