



Paper to be presented at the
35th DRUID Celebration Conference 2013, Barcelona, Spain, June 17-19

On the counterfeiting battlefield. Protecting firms' identity by controlling markets and reputation

Karin Beukel
Copenhagen Business School
Department of Innovation and Organizational Economics
kb.ino@cbs.dk

Francesco Rullani
LUISS Guido Carli
Management
frullani@luiss.it

Abstract

The protection of firms' identity is one of the main problems raised by the diffusion of counterfeit products. Firms protect their identity by fighting counterfeiters in their main and ancillary markets, as well as against diffusion of dangerous counterfeit products that can damage their brand and reputation. We describe the strategies of the firm and of the counterfeiters in these two contexts, and test our hypotheses using a unique dataset reporting 3333 battles taken by a high-tech firm against more than 2000 counterfeiters in 75 countries over a 6-year period. We find broad support for our hypotheses on the strategic behavior of the firm and of the counterfeiters, highlighting the difficulties firms find in protecting their main markets, and their advantages in limiting the diffusion of dangerous counterfeit products

On the counterfeiting battlefield. Protecting firms' identity by controlling markets and reputation

Abstract

The protection of firms' identity is one of the main problems raised by the diffusion of counterfeit products. Firms protect their identity by fighting counterfeiters in their main and ancillary markets, as well as against diffusion of dangerous counterfeit products that can damage their brand and reputation. We describe the strategies of the firm and of the counterfeiters in these two contexts, and test our hypotheses using a unique dataset reporting 3333 battles taken by a high-tech firm against more than 2000 counterfeiters in 75 countries over a 6-year period. We find broad support for our hypotheses on the strategic behavior of the firm and of the counterfeiters, highlighting the difficulties firms find in protecting their main markets, and their advantages in limiting the diffusion of dangerous counterfeit products.

2. Introduction

Counterfeiting is increasingly an issue for firms, as it directly relates to the capabilities of the firm to capture profits generated by an innovation. The appropriation strategies examined in literature (Teece 1986; Cohen 2000; Arundel 2001; Ceccagnoli 2009) are focused on the strategies firms can apply to limit followers' capabilities to imitate their innovations. Counterfeiting is one of the main circumstances in which imitation can become a serious danger for the firm. This not only because the market share of the firm can shrink and the firm may not be able to appropriate fully the value it generates investing in R&D, in customer relations, in advertising and so. Moreover, counterfeiters attempt to interfere by using firm's identity as communicated to the consumers via its presence on the market, its products, and its brand image. A firm's identity as perceived by the consumers is one of the main assets of firms. Counterfeiters take free ride on a firm's investment in identity creation and maintenance copying its products without paying any royalty, thereby appropriating returns illegally.

The "battle" for the control of the firm's identity between the firm itself and the counterfeiters it faces has not been described by literature so far. The studies on counterfeiting have mainly unfold the background where counterfeiting takes place, defining costs and benefits of the players (Harvey and Ronkainen 1985; Globberman 1988; Wilke and Zaichkowsky 1999; Khouja and Smith 2007) and the results in terms of social welfare (Grossman and Shapiro 1988a; Grossman and Shapiro 1988b; Feinberg and Rousslang 1990). To the best of our knowledge, there is no empirical study describing this battle in detail and delineating the strategies of the firms and of the counterfeiters. In this paper we seek to fill this gap offering a framework to explain how the firm and the counterfeiters it faces strategize in different contexts; a) the main

markets where the firm operates or the ancillary markets related to the first one, or b) products whose safety for the consumer is not granted.

The outcome of the ongoing battle between the firm and the counterfeiters can be captured by looking at how many counterfeit products the firm is actually able to seize. Limiting the presence of counterfeit products by increasing the number of goods seized allows the firm to regain control over its markets and its identity. Counterfeiters on the other hand, have the opposite goal: they try to limit the number of seized goods. For each case in which a firm encounters one or more counterfeiters, what we observe in terms of seized products can be taken as an indication on how the battle ended.

In this paper, we employ a unique data set containing detailed information on anti-counterfeit actions handled by one large mobile phone manufacturer to examine how anti-counterfeit actions *actually* are conducted and the related success of these actions, supported by interview data with both firm representatives, officials, lawyers and anti-counterfeit managers. We test three hypotheses that distinguish the case in which the firm faces a counterfeiter in its main market (e.g., the mobile phone market) as opposed to confronting it in its ancillary markets (e.g., headphone), the case in which the counterfeit products are potentially dangerous for the consumers, resulting in a direct damage for the firm's identity in case of an accident, as opposed to the case in which the counterfeit product is safe, and finally the case in which both circumstances (main market and dangerous products) are verified. With the study we seek to determine how these circumstances affect the firm and the counterfeiter behaviors and strategies, and how this affect the outcome of the battle in terms of number of seized counterfeit products.

3. Background and rationale of the paper

Recent OECD estimates show a 25% increase in absolute value of counterfeit products between 2005-2007 (OECD 2009). Despite the growth and magnitude of the challenge for the firms facing the enormous amounts of counterfeit products, the phenomenon has drawn limited attention to scholars in management studies. A series of papers sets the background defining the cost (and benefits) of counterfeit products for the society, for firms and for consumers (Grossman and Shapiro 1988a; Grossman and Shapiro 1988b). Another stream of literature outlines the types of actions taken against infringing firms (Harvey and Ronkainen 1985; Shultz and Saporito 1996). To this, is linked also a larger literature examining litigation outcomes (Siegelman and Waldfogel 1999) and more recent literature centered on how partners resolve disputes prior litigation (Lumineau and Oxley 2012). However, we lack empirical evidence on the actual “battles” taking place on global markets, on the strategies firms producing original products use to contain the amount of counterfeit products, and on the counter-measures adopted by counterfeiters to actually remain on the market –and possibly expand their presence. This is due in part to the difficulties in finding the necessary data because of the illegal nature of the phenomenon, and in part because there is no established empirical framework to deal with such a shadowy phenomenon, something that made Staake, Thiesse et. al (2009) argue that *“performance measures of anti-counterfeiting activities could help to identify, select, and improve successful practices.”* p.338.

The lack of clear and widely accepted reference points in the analysis of this phenomenon forces us to move from our own definition of counterfeiting. Throughout the paper, we use “counterfeit” meaning the contemporaneous presence of two characteristics:

*1) a product is counterfeit if it copies another product (imitating the brand, the logo, the design, or the product in toto) with the purpose of **confusing** the consumers on the actual origin of the product, and*

*2) if this activity is perpetrated **illegally**, i.e., without any license agreement or other form of transfer of property rights to the counterfeiter by the firm producing the original products.*

This definition allows us to identify the phenomenon quite broadly, and the same time to be very precise in the features we should single out as fundamental. The two keywords one can read through the two statements above are “confusing” and “illegal”. They connect to very specific behaviors of the counterfeiter and of the counterfeited firm.

A firm needs to be recognized by the consumers as having a precise identity. Creating a distinctive identity allows a firm to attach to its products and services a series of meanings and symbols that the consumer acquires together with the product, and that create higher values for the consumer (in certain sectors, being them the main reason why a product is actually purchased) and that allow the firm to differentiate its products much more with respect to its competitors. A firm can create and maintain an identity acting on the simple aesthetics of its brand, logo, physical and virtual presence (Schmitt, Simonson et al. 1995). Firms also communicate messages on the values, ideas, and life-styles the firm adopts by taking certain action rather than others investing in reaching the consumers and convincing them on firms standpoints on these issues (Basdeo, Smith et al. 2006). The investment in firm identity is also a strategy to reduce quality uncertainty for consumers (Nelson 1978; Klein and Leffler 1981).

Identity is a fundamental tool to be present in the market and to cognitively align the actors inside and outside the firm (Schultz and Hatch 2003).

Consumers are exposed to the identity of the firm via two main channels.

The first one is the firm's presence on the market. The firm's products are the means by which consumers can solve a specific problem or issue and create value for themselves. Thus, products convey to the consumer not only the aim, the "raison d'être" of the firm, given by the specific use of the products themselves, but also how the firm wants to reach that goal, what technologies, designs, symbols, life-styles and meanings it has created in order to solve the consumers' problem in a certain way rather than others (Klein and Leffler 1981). The firm's products represent the firm, and the messages they convey (in terms of quality, price, symbols, technical solution, malleability to consumer's needs, and so on) are the main messages the consumers perceives as defining the firm's identity. Packaging, sale forces, distribution channels, post-purchase services and call centers also contribute to communicate the firm's identity creating the context of the product's purchase, use and establishing a direct relationship between the firm and the consumer. An as an effect when consumers consume a branded product, consumer are helped with identifying themselves, as well as having an opportunity to broadcast the self-image attained by the branded product (Wernerfelt 1990).

The second crucial channel used by firms to define their identity is the direct communication to consumers. Advertising, communication over the mass media as well as using social media, the actions the firm uses as "statements" showing the adherence to a certain set of life-styles, values and principles, such as CSR actions, or investments in R&D, or sponsorship of cultural, sports or community-related events, all are fundamental vehicles exposing the firm's identity to the

consumers. In all these communication-related contexts, the main marker used by firms to be recognizable is the brand, functioning as an anchor for the meanings the firm tries to attach to its identity and to convey to the consumers. Both market presence and brand identity can be obtained only via important investments, i.e. the firm has to use resources to create the conditions for both products and brands to penetrate the market and maintain their position over time, possibly expanding.

Counterfeiters illegally imitate and possibly copy the identity of the firm in order to free ride on the investments the firm has done to create and preserve its brand identity and the perception the consumer has of its products. It is important to notice that not only counterfeiters take advantage of the fact that the firm has invested in creating its own identity, developing, for example, high-quality products, or advanced technologies, or efficient processes (and thus price reduction), or specific advertising campaigns. They also exploit the fact that firms need to maintain their brand image and market presence while they as counterfeiters do not have one, as they are actually illegally using those of the firm. This means that counterfeiters can also act in ways that can be detrimental for the firm's identity without losing much. Diffusing low-quality or even dangerous products when this means savings on the production cost and thus assures a larger penetration in the market is thus a viable strategy for most counterfeiters. This incentive becomes even clearer when thinking that counterfeiters' investment is firm specific only to a certain extent. If for any reason (including their own actions) original products lose their appeal on the market, counterfeiters can usually afford without much problems the cost needed to reorient their production towards other brands. Many counterfeiters already exploit economies of scope producing copies of products from different firms and brands, and in that case their capability to

move from one to another turns out to be a fundamental tool allowing them to quickly adapt to a possible new market structure.

The illegal actions of the counterfeiters not only diminish the firms' sales but, most importantly in many cases, also subtract to the firm's control over the main channels through which it conveys its identity to the consumers. When a consumer uses a counterfeit product, the identity of the firm becomes dependent of the actions of the counterfeiter. The consumer and the other potential customers interacting with the consumer will attach to the firm's original product the messages the counterfeit product is conveying. The firm is thus losing control of its identity, and needs to take action against the counterfeiter in order to regain the control of its market presence and of the messages related to its brand.

Among the possible actions that firms undertake with this purpose, is one particularly interesting: counterfeit products seizure. Being the product itself the main vehicle for the firm's identity, one of the best ways to regain control of the firm's identity is to regain control of the market containing the number of counterfeit products the consumer can be exposed to and possibly buy. Moreover, consumers' awareness about the possibility of encountering counterfeit products and what that really means for the firm is a fundamental tool to protect firm's identity. One of the best ways to communicate this is diffusing news related to the seizure of counterfeit products and exposes to the public the steps of the "battle" against counterfeiters. Counterfeit-product seizure is thus one of the main strategies firms can use to protect their identity against counterfeiters. This allows us also to answer to Staake, Thiesse et. al (2009) call for a well-defined performance measure of anti-counterfeiting activities. Of course, we do not claim this is generally a good

measure of performance for anti-counterfeiting strategies. What we claim here is that the number of counterfeit-product seized captures the outcome of the “battle” for the firm’s identity between firms and counterfeiters, and thus works as a perfect measure for a paper aimed at describing such battle and the moves of the contenders in different contexts of the fight.

4. Empirical setting: an qualitative account of the counterfeit phenomenon

Counterfeiting is a difficult phenomenon to approach, as a major part of it is illegal, hidden and difficult to uncover. One of the authors of this study has conducted extensive interviews in China & Hong Kong, in South America (Peru, Brazil, Paraguay and Argentina) and Europe (mainly Scandinavia) to unfold the counterfeiting battle in a range of different industries. The interviews are from stakeholders whose main concern and fulltime job concern counterfeiting, and are meant to give insight as to how both the counterfeiting company and the original manufacturer approach and evaluate the situations.

To understand to which degree firms will choose not to take action against counterfeit products is an imperative to understand mechanism playing a role in an anti-counterfeit battle. In the interviews respondents were asked about “keeping status quo” (i.e., not taking any action). Initially we interviewed firm representatives, lawyers, and officials for information on what would be a natural situation in which not to take action against counterfeit products. In theory, if the loss of keeping the status quo is smaller than that of taking action, the decision maker will favor the choice of not taking any action (Kahneman. D and Tversky. A 2000). This was also reflected in the interviews:

“I think it [the option of keeping status quo] is also possible. You may do it. Actually, the problems of infringing will never disappear. If you think you cannot get what you should

be paid or it has no tremendous impact on you, then you can just leave it. But if you perceive some bad influences, you should take some actions.” (Official)

A balance favoring no action can be outcome of the fact that counterfeiters internalize some of the cost they introduce in the system by their actions. Exploiting the image of the firm, or flooding its market with counterfeit products, may harm the identity of the firm, and this may decrease the consumers’ appeal for the products, both the original and the counterfeit ones. Counterfeiters should thus have incentive to harm the firm only to a certain extent, otherwise their free ride would not go far. Despite that, we observe in reality a clear lack of incentive from counterfeiters to “protect” the brand they are infringing. As a consequence, counterfeiters may be very dangerous for the company, resulting in a balance that most of the time leans in favor of taking action, as the concerns emerging from our interviews show:

“Well, I can already eliminate the option of keep status quo. To do nothing is not an option in my eyes. Obviously, it is a point that can be drawn into the specific case when you do the evaluation, but I have been through my entire model and have done the evaluation and the specific evaluation in this specific case could be that we choose to take no action, because the problem is not very big or for some other reason. But in general, I do not accept it.” (IP Representative, MNC)

“If you disregard the IP rights as your own, you will be damaged in the end.” (Lawyer, Chinese law firm)

“There is no way to avoid being copied. The only thing you can do is to stop it when you find the counterfeiting products. You cannot control the counterfeiting manufacturers”.
(Lawyer, Chinese law firm)

“It is unthinkable to be a Danish company and not do anything about it [infringement].”

(IP representative, MNC)

“...that [status quo] will not get you anywhere. It is out of category.” (Advisor at Foreign organization)

“If you do nothing, you will have to leave the market.” (Lawyer, Chinese law firm)

This choice favoring action is however only one possible outcome. Counterfeit products are not original products, and this difference may become clear to the consumer to the extent the counterfeit product is not perceived as a threat anymore by the firm. We collected also interviews of this tone:

“...go to an art gallery, where you can buy a lot of Monet pictures and they look alike but ...there is only this one [original painting] from him. Are you afraid all these posters are going to wipe out [the original]? I do not think so, I believe it enhances instead, it enhanced the original product so then you know ‘ahh okay’, so no. The answer is no; it is not one we are afraid of.” (Company CEO, Interior Design Company -SME)

Counterfeiters exploit the identity of the firm not only creating copies, flooding markets with products that tend to be as close as possible to the originals in terms of technology and market positioning. They try to free ride on the brand and on the relationship consumers have with a firms’ image. Brands are crucial tools to anchor consumers to the firm’s identity, and are thus a fundamental battle field for the counterfeiters and the firm.

“Branding could be bad. This will make your products more attractive to the counterfeiter. This is more prevention.” (Lawyer, Chinese law firm)

“In practice a really effective branding of one’s products: that I believe will help. All things equal there is a difference between original and pirated goods. To know that they have a strong brand will to some extent be a protection but that does not apply to all products and types of products but I think it would be a possibility. Branding, that works both ways. As we discussed then it may be that one has such a strong brand depending on sales and the product and such that the costumers will go after the real product. Oppositely, if you do not have a brand then you do not get copied. (Consul at foreign office in Shanghai, China)

Counterfeiters are not locked-in in terms of brands. Copying several brands is easy, and very much used. For example, mobile phone counterfeit manufacturers are very often counterfeiting several different brands, taking advantage of the fact that the mobile phone industry is quite homogenous in terms of technological capabilities and that sales points of counterfeit phones are usually not branded, and can easily distribute different brands. Counterfeit companies choose to counterfeit several brands to minimize their risk: when a seizures done, most often it is only on behalf of *one* original brand, while all other branded goods are left behind. When a firm launches a raid against counterfeit factories and distribution posts, it is usually unable to get the other brands’ counterfeited products removed as well. They remain on the site, still available to the counterfeiters. This problem is at the origin of the recent effort by companies in the mobile phone industry to engage in collective intelligence work and raids, sharing the burden of them.

“The situation in China is that the counterfeit company may produce various brands of different companies. Chinese partner is more familiar with the Chinese market and legal systems. It is really a good channel for the company.” (Lawyer, Chinese law firm)

While counterfeiters are free to move –and do move- among different brands, industries such as the mobile phone is single-brand focused, meaning they use their main brand for all products in connection with the model name. For example NOKIA sells both NOKIA – Lumia 800 or NOKIA Lumia 900, using the brand to mark every and each model. The incentive of the brand owner to take care of brand reputation is therefore extremely high.

Another major advantage for counterfeiters is that counterfeit companies have the option to wait and put products on the market only when they know whether the new branded product becomes a success. If a model does not become a success, they can simply choose not to have that product manufactured. Some interviewees even see a strong correlation between number of counterfeited goods and the success of the original product.

“The more famous the product is, more counterfeit products will come out.”

(Investigator)

Despite these advantages, counterfeiters also have cost to bear. The investment in a mobile phone manufacturing site is high, also for counterfeit manufacturers. Counterfeit products most often need to be functional, minimum at the time when it is sold; therefore it becomes necessary for the counterfeit companies to do a minimum of investment in a production. Counterfeiters need to have at least some knowledge of the technical applications. Moreover the simple fact that to produce they need plants and employees, coupled with their need to create economies of scale, generate some difficulties in escaping investigations and controls. In this sense, being a small counterfeit company may generate less profit, but turn out to be more protectable and flexible, not speaking about the fact that firms producing the original product may not see it as a threat:

“If the counterfeiting company is large or big company, sometimes they cannot escape easily because they have a factory and there are many branch offices so we can go to the courts directly, but if the infringer is just some small company or some persons then you should go to AIC (red. Administration of Industry and Commerce) first, because maybe it is possible for them to escape” (Expert, Chinese law firm)

“Basically the [small] producer will not be not be aware or understand the fact that he has done something wrong. The small producer who can produce 100 copies, he will never be able to understand this, and he is not the real problem either. It is the big companies that are the serious ones, they are the problem and I dare to say that the big serious ones know that in 10 years, they will know that what they are doing is wrong...when you look at the facilities they have. You become really surprised. It is not a small company, it consists of I do not know how many factory buildings, where they produce these things”. (Expert, Foreign company)

In the end, the loss of control this situation generates is the most important loss firms perceive

“There is no way to avoid being copied. The only thing you can do is to stop it when you find the counterfeiting products. You cannot control the counterfeiting manufacturers”.
(Lawyer, Chinese law firm)

“For instance we have to have sufficient evidence of infringing behavior and then we can take further action to the stage of penalty. It is also a requirement of the law. But in reality, when we go to check the infringing party they do not have such records of the production. That is to say, they produced some counterfeits, which are found by us. We can only penalize them on those existing counterfeits if they do not have a kind of record

to show their continuous infringing behavior. We cannot penalize them for their previous infringements, because we do not have evidence, records or files, although everybody knows they did produce counterfeits from January to December. Therefore, when the enforcement unit comes to check them they can only get the existing products. That is the case so you should not say it is the problem of enforcement powers”.(Lawyer, Chinese law firm)

5. Hypotheses construction

The fact that the firm’s identity is communicated via market presence and brand identity implies an order to the firm’s priorities when it comes to identity protection. Not all markets are equal in this case. A large firm usually operates in a series of related markets. For example, a firm may have a main product (e.g., a mobile phone) and produce also complementary products (such as headphones). The identity of the firm is affected by a larger extent by the market presence it has on the main market where it operates, as this market is populated by its main product. The main market is also the market in which the consumers identify the firm. Moreover, the main market is also the market where the margins are higher, and the firm has much interest in preserving its position. This means that we expect the firm to have a higher level of commitment in protecting its identity and its products when the counterfeiters’ attack is placed on its main market, as opposed to the same attack but on an ancillary market.

As for the counterfeiters, given the higher margins the firm’s main products assure, they also have interest in enlarging their presence in that market as opposed to other secondary markets. These markets are also where the firm’s identity is more powerful, and is able to create the higher value for the consumers. Counterfeiters are thus pushed to act on this market to take advantage of the

fact that the copied logo will be easily recognized by the consumers (and those they will interact with).

Both the firm and the counterfeiter have a clear incentive to create strategies enabling them to enlarge their presence in the main market in which the firm operates, even when this means diverting attention and resources from other ancillary markets. As a result, we do not know what the outcome of the battle could be. However, it is likely that the counterfeiters have an advantage over the firm. First of all, they are free riders, and do not bear any costs for product development or identity creation. Thus, they can potentially use much more resources on access to main market. Moreover, they enjoy a larger set of possible strategies because they do not need to care much about the negative effects their actions can have on the firm's identity nor do they need to exclude from actions that may be possibly illegal, as they are already producing and distributing products illegally. Some countries legislations and governments' attitude toward counterfeiting give also an advantage to counterfeiters, and make us hypothesize the following:

H1: ceteris paribus, the effectiveness of counterfeit-product seizure in a firm's main market is less than that observed in its ancillary markets

Firms caring about the preservation of the control over their identity seek also control of the news related to their products and actions. When counterfeiters operate in a firm's market, their action can result in a substantial loss of control also of the events that generate such news. For example, if a counterfeit product causes damages to the consumer, the news related to this event may (erroneously) associate the damage to the firm's brand. Of course, the firm may then regain

control over the issue demonstrating that it was a product illegally produced and distributed by a counterfeiter, but this would require time. Even using the same media, it is difficult for the firm to reach and convince all the consumers exposed to the first news, and this result in a clear damage to the firm's identity. We thus expect firms to be more reactive to counterfeiting when the involved products that may generate news with a strong negative impact. A clear case in this sense would be that in which the counterfeit products are dangerous for the consumers.

On the contrary, a counterfeiter has no particular reason to care about the damages its product may create. As explained, counterfeiters have not borne the cost related to the firm's identity generation and maintenance, and can also redirect their production toward other companies and brands if the one they originally copied deteriorates due their actions. They have no real incentive to distinguish between products that simply do not work from those whose defects may generate serious health damage to consumers. The main incentive guiding counterfeiters in this case is cost reduction, if that comes at the expenses of safety or not, it is not among their main concern. We thus do not expect them to place any extra effort in the penetration of their potentially damaging products over those that are not dangerous.

As a consequence, the firm is expected to be more effective in containing the counterfeiters' actions in the context of potentially dangerous counterfeit products, as stated our next hypothesis:

H2: ceteris paribus, the effectiveness of counterfeit-product seizure is larger if it is directed toward potentially dangerous counterfeit products rather than safe products

H1 and H2 identify specific situations in which we expect the firm to respond with the maximum level of commitment, while counterfeiters are instead more sensitive to their presence on the market rather than to the possible danger they can cause with their products. We can capture some more subtle effect looking closely at the interplay between market presence and brand image. Indeed, when we observe dangerous counterfeited products diffused by the counterfeiters in the firm's main market, we expect the firm to increase its commitment to block the counterfeiters beyond what she puts already in protecting its identity in one of the two situations separately. However, being the firm's investment already very important in each of the two, the marginal effect of adding one concern to the other is presumably of a smaller order of magnitude. In other words, the effort, energy, time and commitment the firm is expected to use to block the counterfeiters of dangerous products diffused in its main market is superior to those used to block dangerous products in ancillary markets, or safe products in its main market, but not much. This is due to the fact that the firm is already employing its resources at the highest level in reaching both strategic goals; a) presence in market in which main revenue is generated and b) brand image, keeping dangerous products of the market, as this interview done with the anti-counterfeit manager of our counterfeited firm shows:

*“We look at what kind of product is it, what it will cost us, we look at what country, what legal actions we can take, what kind of evidence we got, and we also look at what cost could be involved with taking the case. However, sometimes it is very difficult to estimate the cost. But, I will not say that we don't care about cost -we do- but **if it is a strategic target, the infringer, then we can go forward no matter the cost**”(emphasis added)*

The counterfeiter does not have the same incentive structure as the firm. We have said we expect them to care only about being present in the firm's main market, while it does not distinguish between dangerous or safe products. However, the counterfeiter knows that the firm is going to react more strongly when it will release products that at the same time can be both dangerous and related to the firm's main market. The counterfeiter is not sensitive to the protection mechanism the firm activates for the dangerous products, but wants to protect its presence on the main market, as it is the most important in terms of revenues. As a consequence, when the counterfeiter reacts to the anticipated higher commitment of the firm it increases own effort to make the products pass into the market and not being seized by the company. This increase can be substantial: the counterfeiter has only one aim (stay on the main market) rather than two aims (stay on the main market and protect the brand identity), and it can concentrate its processes and resources only on that. Moreover, it already operates illegally, and faces a wider set of possible strategies usually not available to firms operating legally.

This mean we should observe a specific outcome of the battle when the counterfeit products are placed on the main market and are potentially dangerous: we expect the firm to increase its effort to protect its identity, but not substantially with respect to the case in which it acts only to protect its presence on the main market or its brand identity. On the contrary, we expect the counterfeiter to be able to substantially increase its effort in trying to make the counterfeit products pass through. Again the outcome of this fight is ambiguous, but again we see a possible advantage on the side of the counterfeiter, which results in the following hypothesis:

*H3: ceteris paribus, the effectiveness of counterfeit-product seizure is smaller if it is directed toward counterfeit products at the same time placed in the firm's main market **and** potentially dangerous*

Our analysis as detailed above focuses on several important dimensions in firm's enforcement strategy, including market importance of the counterfeited good and the potential impact on firm's own brand. Gaining a better understanding of how these different types of firm circumstances effect the success of an anti-counterfeit action has the potential to contribute significantly to our understanding of a firm enforcement strategy. In order to substantiate our ideas, in the next section we test the hypotheses defined above.

6. Data & Method

5.1 Empirical Context and Sample Description

Empirically, we analyze the case of a large mobile phone manufacturer employing a unique and detailed dataset covering how the firm handled 3333 infringement cases, seizing over 7.3 million counterfeit products in 75 countries over 6 years (2006-2011). This firm is to our knowledge the only company who historically has stored very detailed data on anti-counterfeit actions taken and their outcome. At the same time, the mobile industry is one of the industries which are heavily affected by counterfeit products worldwide. To illustrate, a recent report from the European Commission show that 1.503.521 products in the category of "Mobile phones including parts and technical accessories" was seized alone in the year of 2010 at the European borders, the products seized had an estimated retail value over 75.000.000€ (EuropeanCommission 2011). At the same time, profitability and survival in the mobile industry is characterized by being an industry where technology licensing is a core element in producing legal mobile phones, Lee and Kim (2001) report that Korean producers pay royalty fees equivalent to 5,25% of sales revenue per mobile unit as well as lump sum payments to access the industry, this measure is higher than in other

industries such as automobiles, personal computers, and audio and video equipment. Overlapping R&D activities with many partners (Lin, Chai et al. 2008) in the mobile phone industry is also a result of the intense competition for bringing new improved products to the market at a fast pace. Products which carry both technological advancements as well as consumer's preferences. The industry is characterized by only few main players (over the last ten years); Nokia, Samsung, LG, Motorola, and Sony Ericsson Mobile Communications. Only one new major player has been able to enter the industry during the last decade, namely Apple, with the introduction of smartphones (Euromonitor 2011).

The focal firm, in which we study the outcome of actions, is a major player in the mobile phone industry. We can use their actions to study the outcome of actions, based on the incentive for counterfeit firms, due to the fact, that the focal firm always take action when the firm meets counterfeit situations, which they identify as 'strategic targets'. During interviews held with the anti-counterfeit managers, as well as, reading focal firm's documents explaining the prioritization of products and markets, we identified what the firm named 'strategic targets', they were a). Potential dangerous products, and b). High revenue products.

This empirical setting therefore makes it a unique setting for studying the success of counterfeiting globally. Our primary source of data is the focal firm, however, each case is merged with data gathered at external law offices. One external law office (with branches worldwide) has been engaged in most cases and has stored subsequent data for each case, and data was also gathered at the infringing firms. We had full data access to the anti-counterfeit databases available at the focal firm, where notes were applied to each case. These databases are built to keep track on all ongoing cases. The data we had access to was not structured ready to use in our econometric analyses, all notes for each case was therefore read in order to create the

variables missing. The readings was done over a period of 3 month in fall 2011, during the coding time, interviews with several persons, administrative staff as well as legal staff, from both the focal firm as well as the external law firm to gain insights into the practices and routines behind the data was held. Even though the available data is unique as far as we know, the methodological approach used, is a replication of how other management scholars have dealt with similar data collection (Woolthuis, Hillebrand et al. 2005; Lumineau and Oxley 2012).

There were certain limitations to our sample; our sample is restricted to consist of the cases in which size of seizure was available; in 523 cases this measure was not reported. In some cases, often pertaining from selected developing countries, this information does not reach the firm nor external law firm, and the firm often does not know the results of the case. As such, our sample is limited to a sample of cases won by the firm, these criteria led to a sample of 3333, representing actions against counterfeiters in 75 countries.

A significant second limitation to our data is that we only have this detailed dataset on how one firm dealt with the infringement cases they faced over 6 years. While the detailed data from this one firm provide very rich knowledge in terms of the cases they face (a little over 2000 different infringing firms) over the period of 6 years, we still have to be very careful when interpreting the results. However, the clear evidence of the focal firm's handling of 'strategic targets' always being fought with all the power they have no matter the cost, gives us reason to believe that in exactly this setting, where we focus on these two dimensions will give us insights on the success of the battle between the original and counterfeit firms under certain circumstances. A second limitation to our data is that we do not have observations on financial resources spent on fighting the counterfeiting firms in all our observations used in the empirical analysis; it is therefore in the models we present left out. However, to check the robustness of our results, when including

resource spend we therefore estimate a model with the 908 observations in which the variable *resources* is available, and our results remain consistent. While the empirical setting does pose the above mentioned challenges, it also limits a set of potential challenging issues: Focusing on anti-counterfeit actions taken by one single firm, effectively eliminate other potential sources of unobserved heterogeneity and potential selection biases, such as individual firms strategic focus, industrial and market drivers, and individual firms own value and reputation.

5.2 MEASURES

Dependent variable

SEIZURESIZE

Creating a dependent variable which measures the success of an anti-counterfeit battle is difficult, and no other papers have as far as we are aware created and tested such in an empirical study (Staake, Thiesse et al. 2009). Each type of legal action can have benefits for the firm handling the case and have negative impact on the counterfeiter in a number of ways, first of all, the size of the seizure, no matter the type of product, is important. The more counterfeit products that are removed from the market, the more it benefits the firm and the more it harms the counterfeiter. However, there are other measures which also are interesting in this respect; certain types of legal actions can enable different punishments to the counterfeiter/benefits to the firm, e.g. in administrative, customs and criminal cases, the counterfeiter might also be forced to pay substantial fines, and the brand owner may obtain intelligence or publicity to help them either catch or scare off other potential counterfeiters. In civil actions the case can also be a greater victory to the firm due to it being a special legal case, in the sense that if the firm gets its legal claims through it can create precedent for future cases. In civil cases yet another important

benefit are available, the court can approve the firm's costs of the case, which in many cases means a substantial amount of money. However, even though the range of opportunities in creating different outcome measures for a success/failure of an anti-counterfeit action, in our estimations we need to apply a measure that clearly represents the capability of the firm of protecting its identity limiting the diffusion of counterfeit products, and at the same time that accounts for the success of failure of free-riding on the firm's identity flooding the markets with its products. As dependent variable we thus measure the outcome of the battle between counterfeiter and brand owner via the number of seized products. In particular, using data from both the firm as well as the external lawyer we create a count variable to capture the size of the seizure. In this variable, called SEIZURESIZE, each product seized, no matter type, counts as 1. In the robustness check section we explain how additional measures of success have been tested, and the results hereof.

Independent variables

BRAND IMAGE

Measuring anti-counterfeit actions taken to prevent branding distortion is highly difficult, in essence all anti-counterfeit activities taken by brand owners can be said to be done in order to secure brand value. However, the threat from potential dangerous counterfeit products, defined as products which if not produced correctly can be of risk for the consumer, is immensely important to the brand reputation (Wilke and Zaichkowsky 1999). As identification of counterfeit products can be highly difficult (Gentry, Putrevu et al. 2001), the damages to the original brand a counterfeit product carrying the trademark of an original producer can do are enormous. Explosions of mobile phone accessories with the results of injury or death of the

consumer are not uncommon (Meredith 2010). In the mobile phone industry, two product types are more dangerous than that of others; batteries and chargers. We therefore adopt the most straight forward approach and construct a simple measure capturing whether the seizure include dangerous products (batteries or chargers) potentially having large impact on brand or not (all other products), this results in a dummy variable taking 1 if high impact on branding (dangerous product) and 0 if low impact on brand.

MAIN MARKET

We create a dummy variable, MAIN MARKET, which is coded 1 if the product seized is a mobile phone, 0 if it is all other product types. This measure is used to proxy for market importance based on the assumption that mobile phones are the core product for mobile phone manufacturers, and the core product in generating revenue. Mobile phones are relatively more expensive than that of other accessory products such as headsets, batteries, chargers, loudspeakers, etc. Interviews with firm representative also confirmed this product type, to be the most financially important products.

Control variables

To capture other factors that are predictably associated with how successful an anti-counterfeit action is, namely the size of the seizure, we include several control variables. These are presented below:

Action type

Several types of actions can be taken in order to seize counterfeit products, in our sample we distinguish between the most common types of actions civil, criminal, customs, administrative,

and apply a group for all other actions. In this dataset, we define custom actions as an action taken after goods has been seized at a national border. Administrative action is an action done with the use of administrative authorities, most often the action is a raid of a manufacturing site or a sales point. Criminal action is most often having the police or state as the prosecutor, whereas Civil action is when the firm itself has initiated an legal action against the counterfeiter. Other action is used when for example the case has changed type, eg. from Customs to Administrative, or when it is internet takedowns, or if the case does not fall into the other categories. We create dummy variables for each of the action types based on the information in both the firm's database on each seizure as well as the external law firm's identification of case.

Counterfeiter's investment

In our data, in the notes attached to each case, and in the personnel contacts inserted in the corresponding database it was indicated whether the counterfeiter had employed a lawyer as a representative to deal with the case. We construct a variable indicating the counterfeiter's investment in the case by the use of this information. As we don't have any monetary indicators from each counterfeiter, we create a variable taking 1 when the counterfeiter has had a lawyer on the case, 0 if no opposing lawyer is mentioned in the data archive of each case.

Internal Person handling case

There are both internal and external persons taken care of each case for the focal firm. During the period of 6 years where the actions was taken, 9 different people in house could be appointed to take care of the coordination of the action. We create a dummy variable, INT_PERS, for each of these persons.

External Advice

External lawyers also worked for our focal firm. With the assumption that external local lawyers, can learn to perform better in the local environment as they work for the firm, we control for the experience of the external advisor of the firm, if the external lawyer has dealt with more than 100 cases for the firm we assign 1 and 0 if the external advisor has less experience.

Several External Advisors

In some cases only one external lawyer is assigned to deal with the case as representative for our focal firm, and in some cases several persons, during interviews we identified that this most often was due to practical administrative reasons, eg. the person normally in charge of this type of case, being sick or on holiday the day the seizure is done. In the cases where the person “normally” assigned to such cases returned from holiday / sickness, the cases would be handed back to the person, and two persons would therefore be assigned on the case. We therefore control for this, as it might have impact on the case handling. We apply a dummy variable taking 1 if there are more than one external advisor assigned, 0 if one external advisor is assigned.

Practical Complexity

Through our interviews we also identified that the degree of complexity could have impact on the success of a case. We used the insights from the interviews to create a measure of *practical complexity* a dummy variable taking 1 if the seizure concern more than one counterfeiter, this occurs if for example both manufacturer, importer and exporter are fought against at the same time, 0 if only one opponent. This measure was identified via focal firm’s own recording of contact persons on each case, as well as, through reading all notes belonging to each case.

Region

We control for nine geographical regions, taking each of the 6 most occurring countries as dummy variables: China, USA, Great Britain, Russia, France and Hong Kong, and aggregating the rest of the countries in three dummy variables EURURAM for other countries in EU and the Americas, APAC for countries in the Asian Pacific and a category MEA where countries in the Middle East and Africa are joint.

Country specific anti-counterfeit experience when seizure is done (COUNTRY_EXP)

Through our interviews we identified experience in each country being a factor of importance for the firm's success and failure of the counterfeit company; the more the firm had been engaged in the country over a period of time, the larger the chance of seizing large number of counterfeit products. We therefore created a dummy variable COUNTRY_EXP, counting what number action the seizure in a country is, in the year in question.

7. Results and Discussion

The firm faced 3333 infringement cases from 2006 to 2011 in 75 countries (see table 1 for descriptive statistics); hereof 58% was custom cases, 8% criminal cases, 3% administrative cases and only 1,2% civil cases, whereas 29% fall into the category other actions (internet take-downs, etc.). In China 542 seizures were performed over the 6 year period, by far the country with most actions. Other main geographies of seizures are Germany, France, Hong Kong, Great Britain, Russia and USA. A preliminary analysis of our success measure SEIZURESIZE shows that number of products seized is between 1 and 801.198 per action, with a mean of 2186. Taking a closer look at tails of the distribution, shows that there is a high number (n=863) of actions against small seizures (1 to 3 products), and that in 50% of actions less than 48 products were

seized, indicating a left skewed distribution. Only 4,2% of the cases included products which can be of special harm to the firms BRAND, due to the dangerousness for consumers, whereas in 30% of the actions products were seized in MAIN MARKETS.

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
SEIZURESIZE_	3333	2186.036	18929.6	1	801198
BRANDING	3333	.0426043	.2019935	0	1
MAIN MARKET	3333	.3087309	.4620391	0	1
CUSTOMS_AC~N	3333	.5883588	.4922046	0	1
CRIMINAL_A~N	3333	.0840084	.277442	0	1
ADMINISTRA~N	3333	.0333033	.1794544	0	1
CIVIL_ACTION	3333	.0108011	.103381	0	1
OTHER_ACTION	3333	.2925293	.4549923	0	1
COMPLEXITY~L	3333	.009601	.0975276	0	1
EXPERIENCE~L	3333	.4035404	.4906809	0	1
SEVERAL_EX~S	3333	.0063006	.0791379	0	1
INFRING_IN~T	3333	.0021002	.0457868	0	1
COUNTRY_EXP	3333	35.41284	42.84339	1	264

In table 2 pairwise correlations are presented, few correlations are significant; none unexpected approaches a common 0.70 criterion for multicollinearity.

Table 2: Pairwise correlations

	SEIZUR~_	BRANDING	MARKET~E	CUSTOM~N	CRIMIN~N	ADMINI~N	CIVIL~N
SEIZURESIZE_	1.0000						
BRANDING	0.0391	1.0000					
MAIN MARKET	-0.0678	0.0102	1.0000				
CUSTOMS_AC~N	-0.0674	0.0406	0.2621	1.0000			
CRIMINAL_A~N	0.1162	0.0218	-0.0338	-0.3577	1.0000		
ADMINISTRA~N	0.0155	-0.0226	0.0316	-0.2185	-0.0562	1.0000	
CIVIL_ACTION	-0.0041	0.0929	-0.0007	0.0343	-0.0316	-0.0194	1.0000
OTHER_ACTION	-0.0036	-0.0540	-0.2784	-0.7688	-0.1947	-0.1194	-0.0672
COMPLEXITY~L	-0.0097	-0.0055	0.0741	0.0636	-0.0298	-0.0183	0.0790
EXPERIENCE~L	-0.0553	0.0324	0.1135	0.3239	0.0000	-0.0266	-0.0386
SEVERAL_EX~S	0.0144	-0.0168	0.0124	0.0358	0.0032	-0.0148	-0.0083
INFRING_IN~T	0.0039	0.0228	-0.0307	0.0117	0.0097	-0.0085	-0.0048
	OTHER_~N	COMPLE~L	EXPERI~L	SEVERA~S	INFRIN~T		
OTHER_ACTION	1.0000						
COMPLEXITY~L	-0.0498	1.0000					
EXPERIENCE~L	-0.3394	-0.0183	1.0000				
SEVERAL_EX~S	-0.0345	-0.0078	-0.0655	1.0000			
INFRING_IN~T	-0.0151	-0.0045	-0.0110	-0.0037	1.0000		

In table 3a and 3b our estimation results are presented. The dependent variable is SEIZURE SIZE a count variable. We thus use a negative binomial regression model to produce our estimates. This would not allow us to easily retrieve the meaning of the coefficients of the interactions, as the negative binomial regression model is a nonlinear model (Hoetker, 2007). To solve this issue we can exploit the fact that SEIZURE SIZE is a variable ranging from 1 to 801,198, behaving almost like a continuous variable. In this case, using OLS can be considered a good proxy, that in any case we use only to evaluate the effect of the interaction between BRAND and MAIN MARKET.. A positive coefficient indicates that a larger value of the relative variable increases the number of seized counterfeited products. We employ robust estimators in both cases. Model 1 estimates a baseline model of controls only. In Model 2 we test hypothesis 1 which argues that the counterfeiter will win the battle in the MAIN MARKETS. Using a sample of 3333 observations exhibiting anti counterfeit actions taken against counterfeiters, we regressed MAIN MARKET on SEIZURE SIZE. The results are supportive of our hypothesis; MAIN MARKET has a negative, statistically significant coefficient (at the 0.01 level).

In equation 3, Model 3 in Table 3 the estimations for hypothesis H2 are shown, providing preliminary support for our hypothesis. With respect to products important for original firms brand identity (BRAND), we find that BRAND has a positive coefficient, as predicted, at a 1% significance level. Thus, the counterfeiter has little respect in terms of the brand identity, and therefore little incentive to fight for these products on the market.

In model 4 we present the results for the interaction of BRAND and MAIN MARKET. Which are situations where there is both brand image and a main market to fight for. This situation is very rare, and it only happens in 1,4% (in 47 observations) of the cases, these cases were the ones which we identified as cases where the counterfeiter would put an extra emphasis into

fighting and therefore the outcome would be in favor of the counterfeiter. For robustness we also check the interaction in an OLS, the results are confirmed in this model. Our results support this hypothesis.

Table 3a				
Negative binomial regression				
Dependent variable is SEIZURESIZE (Number of counterfeited products seized)				
	Model 1a	Model 2a	Model 3a	Model 4a
SEIZURESIZE				
BRANDING		1.269***		1.198***
		[0.233]		[0.259]
MARKETIMPORT~E			-1.992***	-1.866***
			[0.149]	[0.154]
BRAND_MARKET				-1.309***
				[0.470]
CUSTOMS_ACTION	4.258***	4.453***	3.707***	3.645***
	[0.890]	[0.703]	[0.765]	[0.744]
CRIMINAL_ACT~N	4.490***	4.617***	3.991***	3.877***
	[0.920]	[0.741]	[0.806]	[0.783]
ADMINISTRATI~N	3.960***	4.271***	3.086***	3.134***
	[0.998]	[0.837]	[0.849]	[0.836]
CIVIL_ACTION	0.197	-0.167	-0.199	-0.504
	[0.475]	[0.397]	[0.461]	[0.373]
OTHER_ACTION	3.536***	3.666***	2.769***	2.668***
	[0.916]	[0.738]	[0.797]	[0.781]
COMPLEXITY_P~L	-0.103	0.005	0.879*	0.917*
	[0.432]	[0.431]	[0.519]	[0.511]
EXPERIENCE_E~L	-0.973***	-1.009***	-0.856***	-0.882***
	[0.149]	[0.148]	[0.154]	[0.154]
SEVERAL_EXTE~S	3.105***	3.062***	2.417**	2.482**
	[1.167]	[1.107]	[1.129]	[1.091]
INFRING_INVE~T	3.165***	3.330***	2.239**	2.348**
	[0.939]	[0.940]	[0.918]	[0.925]
YEAR DUMMIES	YES	YES	YES	YES
INT_PERS DUMMIES	YES	YES	YES	YES
REGION DUMMIES	YES	YES	YES	YES
COUNTRY EXP DUMMIES	YES	YES	YES	YES
Constant	-4.295***	-4.968***	-3.527***	-4.049***
	[1.255]	[1.054]	[1.148]	[1.065]
lnalpha				
Constant	1.378***	1.370***	1.322***	1.317***
	[0.017]	[0.017]	[0.018]	[0.018]
Pseudo LL	-2.15e+04	-2.14e+04	-2.13e+04	-2.13e+04
No of Obs	3333	3333	3333	3333
* p<0.1, ** p<0.05, *** p<0.01				

Table 3b				
OLS regression				
Dependent variable is SEIZURESIZE (Number of counterfeited products seized)				
	Model 1b	Model 2b	Model 3b	Model 4b
MAIN MARKET		-2558.189***		-2334.586***
		[567.529]		[577.934]
BRAND			4028.479**	5441.392**
			[1580.144]	[2291.940]
BRAND_MARKET				-4178.788*
				[2301.347]
CUSTOMS_ACTION	-798.653	-980.180	-644.723	-556.363
	[1818.863]	[1838.312]	[1852.619]	[1970.085]
CRIMINAL_ACT~N	5000.036**	4422.045*	5099.799**	4734.512*
	[2521.573]	[2525.829]	[2547.555]	[2629.337]
ADMINISTRATI~N	-7102.537	-7660.076	-6985.956	-7258.439
	[5190.122]	[5180.878]	[5197.911]	[5213.863]
CIVIL_ACTION	-228.064	-569.719	-858.079	-1224.996
	[1142.285]	[1133.618]	[1144.309]	[1136.076]
OTHER_ACTION	311.407	-118.992	405.206	200.785
	[2050.126]	[2054.532]	[2080.471]	[2165.459]
COMPLEXITY_P~L	-18.885	546.260	125.787	565.226
	[758.972]	[792.781]	[784.017]	[842.900]
EXPERIENCE_E~L	-2358.181***	-2248.163***	-2342.390***	-2288.148***
	[874.246]	[871.092]	[872.695]	[871.688]
SEVERAL_EXTE~S	1311.890	1283.984	1549.140	1491.475
	[3308.254]	[3236.519]	[3312.351]	[3255.196]
INFRING_INVE~T	1858.281	615.990	1634.811	322.469
	[3607.620]	[3616.847]	[3822.264]	[3907.817]
YEAR DUMMIES	YES	YES	YES	YES
INT_PERS DUMMIES	YES	YES	YES	YES
REGION DUMMIES	YES	YES	YES	YES
COUNTRY EXP DUMMIES	YES	YES	YES	YES
Constant	-1892.860	-484.374	-3959.156	-3574.921
	[2670.770]	[2716.714]	[3274.062]	[3884.674]
R-squared	0.327	0.330	0.328	0.332
Adj.R-squared	.2678778	.2706598	.2694828	.2724785
No of Obs	3333	3333	3333	3333
F test	5.549078***	5.596702***	5.569338***	5.604919***

* p<0.1, ** p<0.05, *** p<0.01

7.1 Robustness checks

A number of robustness checks were performed in order to examine the robustness of our results. Initially, as presented in Table 3b we examined our hypothesis in OLS regressions, especially to ensure the robustness of our results for hypothesis 3, model 4. We also checked for the robustness of our results also including firms financial resources spent on actions taken. In these estimations, the level of significance and direction of results remain the same, however, the coefficients on the magnitude of both BRANDING (6984.576**, ref. to model 2) and MAIN MARKET (-3844.977**, ref. model 3) and the interaction between BRANDING and MAIN MARKET (-8343.165*, model 4) increases. Resources are surprisingly not significant (.2), however, when omitting COUNTRY EXP which indicates the number of cases in the given country the given year, resources spend becomes positive and significant at a 5% level in all 4 models, with positive coefficients ranging from .365 to .44.

Additionally, we examined the effects of BRANDING and MARKET IMPORTANCE using more detailed dependent variables. Depending on the type of action (criminal, civil, administrative and customs), the potential harm done to the counterfeiter was outlined. A categorical variable having 3 levels were thereafter constructed, 1 if the seizure size was below average, 2 if the seizure size was above average and 3 if the seizure size was above average and one of the following situations was identified: the actions was by the focal firm identified in monthly reports as a special case, the action had imposed a fine or damages to the counterfeiter, the action had been highlighted as a special case, due to extraordinary amount of intelligence obtained, good publicity, or the case was of special interest legally. With Ordered logit estimations, the effect of BRAND and MAIN MARKET remained consistent with the results presented in our main estimations.

8. Conclusion

Research on anti-counterfeiting has been hampered by the lack of performance measures of anti-counterfeiting, as well as, little theoretical framing outlining potential performance outcomes based on differences in firms and counterfeiters incentives. These difficulties have meant that the discussion of firm based effective anti-counterfeit strategies have remained more or less a theoretical and empirical vacuum. This paper uses a novel perspective on counterfeit, highlighting the effect of this practice on firm's identity and discussing how anti-counterfeit battles may end in different situations. Needing to represent how much a firm is able to protect its presence on the market, we identify the outcome of the battle by measuring number of seized counterfeit products. Firms try and limit the presence of counterfeit products damaging their identity by increasing the number of goods seized. Counterfeiters have the contrary goal: they try to limit the number of seized goods, to free-ride on the firm's identity.

Our empirical results support three main propositions on the anti-counterfeit battle giving insights into the strategies of the firms and of the counterfeiters. First, we find that in main markets as opposed to ancillary markets the outcome seems to favor the counterfeiters.

Counterfeiters have an advantage over the firm due to a range of factors: they bear no costs for product development or identity creation, which gives them comparably more resources to spend to support their responses to anti-counterfeiting actions. Second, with products that are potentially dangerous for the consumers, results are the opposite: firms perform significantly better against the counterfeiters. Firms have strong incentive to protect their brand, even though the products does not give a high return. Counterfeiters on the other hand do not care about the potentially dangerous products, they are free-riding on the expenses bore to build the brand.

Third, in an interaction model representing the diffusion of dangerous models in main markets, we present the results that point to a favorable situation for the counterfeiter.

The empirical analysis reported here is one of the first systematic tests of anti-counterfeit battles. In addition to shedding light on both firm and counterfeiters strategic details, it outlines a range of anti-counterfeit measures which does need further research in order to understand their implications on performance in anti-counterfeit battles.

REFERENCE LIST

Arundel, A. (2001). "The relative effectiveness of patents and secrecy for appropriation."

Research Policy **30**: 611-624.

Basdeo, D., K. Smith, et al. (2006). "The impact of market actions on firm reputation." Strategic

Management Journal **27**(12): 1205-1219.

Ceccagnoli, M. (2009). "APPROPRIABILITY, PREEMPTION, AND FIRM

PERFORMANCE." Strategic Management Journal **30**(1): 81-98.

Cohen, W. M., Nelson, R., Walsh, J.P (2000). "Protecting their intellectual assets:

Appropriability conditions and why US manufacturing firms patent (or not). ." National

Bureau of Economic Research.

Euromonitor (2011). Mobile Phones: Winning Strategies and Pitfalls.

European Commission (2011) "Report on EU customs enforcement of intellectual property rights,

Results at the EU border - 2010."

Feinberg, R. M. and D. J. Rousslang (1990). "THE ECONOMIC-EFFECTS OF

INTELLECTUAL PROPERTY RIGHT INFRINGEMENTS." Journal of Business **63**(1):

79-90.

- Gentry, J. W., S. Putrevu, et al. (2001). How now Ralph Lauren? The separation of brand and product in a counterfeit culture. Advances in Consumer Research, Vol Xxviii. M. C. Gilly and J. MeyersLevy. **28**: 258-265.
- Globerman, S. (1988). "ADDRESSING INTERNATIONAL PRODUCT PIRACY." Journal of International Business Studies **19**(3): 497-504.
- Grossman, G. M. and C. Shapiro (1988a). "FOREIGN COUNTERFEITING OF STATUS GOODS." Quarterly Journal of Economics **103**(1): 79-100.
- Grossman, G. M. and C. Shapiro (1988b). "COUNTERFEIT-PRODUCT TRADE." American Economic Review **78**(1): 59-75.
- Harvey, M. G. and I. A. Ronkainen (1985). "INTERNATIONAL COUNTERFEITERS - MARKETING SUCCESS WITHOUT THE COST AND THE RISK." Columbia Journal of World Business **20**(3): 37-45.
- Hoetker G. (2007). The use of logit and probit models in strategic management research: critical issues. Strategic Management Journal, 28: 331–343
- Kahneman, D and Tversky, A (2000). Choices, Values, and Frames, Cambridge University Press, Cambridge.
- Khouja, M. and M. A. Smith (2007). "Optimal pricing for information goods with piracy and saturation effect." European Journal of Operational Research **176**(1): 482-497.
- Klein, B. and K. B. Leffler (1981). "THE ROLE OF MARKET FORCES IN ASSURING CONTRACTUAL PERFORMANCE." Journal of Political Economy **89**(4): 615-641.
- Lee, K. and C. S. Lim (2001). "Technological regimes, catching-up and leapfrogging: findings from the Korean industries." Research Policy **30**(3): 459-483.

- Lin, J., K. H. Chai, et al. (2008). "A dynamic model for managing overlapped iterative product development." European Journal of Operational Research **185**(1): 378-392.
- Lumineau, F. and J. E. Oxley (2012). "Let's Work It Out (or We'll See You in Court): Litigation and Private Dispute Resolution in Vertical Exchange Relationships." Organization Science **23**(3): 820-834.
- Meredith, L. (2010) "Counterfeit phones may explode."
- Nelson, P. (1978). Advertising as information once more. In Issues in Advertising: The Economics of Persuasion.
- OECD (2009). MAGNITUDE OF COUNTERFEITING AND PIRACY OF TANGIBLE PRODUCTS: AN UPDATE.
- Schmitt, B., A. Simonson, et al. (1995). "Managing Corporate Image And Identity." Long Range Planning **28**(5): 82-92.
- Schultz, M. and M. Hatch (2003). "The cycles of corporate branding: The case of the LEGO company." California Management Review **46**(1).
- Shultz, C. J. and B. Saporito (1996). "Protecting intellectual property: Strategies and recommendations to deter counterfeiting and brand piracy in global markets." Columbia Journal of World Business **31**(1): 18-28.
- Siegelman, P. and J. Waldfogel (1999). "Toward a taxonomy of disputes: New evidence through the prism of the Priest/Klein model." Journal of Legal Studies **28**(1): 101-130.
- Staake, T., F. Thiesse, et al. (2009). "The emergence of counterfeit trade: a literature review." European Journal of Marketing **43**(3-4): 320-349.

- Teece, D. J. (1986). "PROFITING FROM TECHNOLOGICAL INNOVATION - IMPLICATIONS FOR INTEGRATION, COLLABORATION, LICENSING AND PUBLIC-POLICY." Research Policy **15**(6): 285-305.
- Wernerfelt, B. (1990). "ADVERTISING CONTENT WHEN BRAND CHOICE IS A SIGNAL." Journal of Business **63**(1): 91-98.
- Wilke, R. and J. L. Zaichkowsky (1999). "Brand imitation and its effects on innovation, competition, and brand equity." Business Horizons **42**(6).
- Woolthuis, R. K., B. Hillebrand, et al. (2005). "Trust, contract and relationship development." Organization Studies **26**(6): 813-840.