

2 Understanding Counterfeit Supply

Counterfeit producers are likely to base their operations upon – at least implicit – risk return calculations and on some sort of future planning or exit strategy. In fact, observations of the illicit market indicate that most actors follow concise strategies which are clearly reflected in a number of typical production settings and logistics activities. As with licit competitors, understanding the basic characteristics of counterfeit producers is crucial for shedding light on their strengths and weaknesses and for developing effective response and prevention strategies. In the following section we will provide an in-depth empirical analysis on counterfeit production for a wide range of product categories, discuss different business cases from an illicit actor's perspective and elaborate on distribution activities with respect to counterfeit supply.

2.1 *Strategies and production settings of counterfeit producers*

While the demand-side of the counterfeit market has received some attention in scholarly journals, very little is known about the market's supply-side.⁷ In particular no research investigating the characteristics of counterfeit producers has been published, although a better understanding of this issue warrants attention for several reasons:

- First, the pervasiveness of counterfeit producers in many emerging economies with the associated income and learning effects is likely to influence the development of these nations (McDonald and Roberts 1994). Deeper insights into the supply-side of the counterfeit market can help to better understand their growth and progression, and may also improve strategies to protect intellectual property.
- Second, an empirical study regarding the basic characteristics of counterfeit producers can provide an anchor for further methodological investigations into this widely untouched field of business research. It may help to compare and contrast the existing body of knowledge with the new findings, for example probing theories and models on organizational learning, new venture strategies, customer value or brand management.
- Third, practitioners must select suitable strategies to protect their companies' revenue and intangible assets, sometimes even facing illicit markets similar in

⁷ Insightful studies on counterfeit demand have been published for example by Grossman and Shapiro 1988a and 1988b, Bloch et al. 1993, Wee et al. 1995, Cordell et al. 1996, Chakraborty et al. 1997, and Gentry et al. 2006. We will discuss demand-side aspects in the following chapter.

size to their own and a local judicial system partly in favor of counterfeit producers (Ling 2005). Knowledge of the characteristics of competing illicit actors can prove helpful for decision makers in order to define and prioritize targeted countermeasures.

In the following empirical study we examine the characteristics of the counterfeit market. The study reveals the existence of five distinct strategic groups among counterfeit producers, (1) Disaggregators, (2) Imitators, (3) Fraudsters, (4) Desperados, and (5) Counterfeit Smugglers – each with specific characteristics with respect to production capabilities, re-engineering skills, properties of the targeted products, and potential degree of conflict with the law. While the work does not normatively address the performance or appropriateness of either group, it finds that the existence of each setting can be explained by strikingly simple, but not obvious, analytical considerations. The results allow for a more differentiated investigation of their learning and growth strategies, and also support practitioners to better position their companies with respect to the counterfeit market.

The considerations follow Porter's (1979) definition of strategic groups in respect to licit firms, and regard strategic groups as clusters of actors with similar strategies in terms of their key decision variables. Groups are separated from each other by mobility barriers, barriers to entry, and barriers to exit (Mascarenhas and Aaker 1989). These barriers can be skills and assets such as the ability to efficiently manufacture specific products, and – with respect to illicit behavior – also the ability to maintain illegal operations.

The context is the market of counterfeit goods (or more precisely the producers thereof) as observed between the years 2003 and 2006, where the narrow definition of counterfeit trademark goods applies as given in the Agreement on Trade-Related Aspects of Intellectual Property Rights. As outlined before, this definition comprises breaches of trademark law, but excludes piracy (which is defined as a violation of copyright and related rights), as well as factory overruns and parallel imports (which are considered a breach of contract rather than a breach of trademark law). It thus allows the focus to be set on the production activities of illicit actors.⁸ The analysis is structured as follows:

- First, we describe the source of the underlying data and develop a set of group-defining variables including the measurement scale for each variable.
- Second, we describe the data sample and discuss the sample characteristics.
- Third, the actual cluster analysis is conducted, the results are presented, and the reliability and validity of the findings are discussed.
- Fourth, we conclude with the interpretation of the results.

⁸ Products that infringe both copyrights and industrial property rights are as a matter of course included.

Data source and definition of the group-defining variables

The clandestine nature of the counterfeit market and the potential risks for counterfeit producers in case their identity is uncovered limits the direct accessibility to information from illicit actors. Though anecdotal evidence and testimonies from convicted actors constitute a potential source to validate selected findings retrospectively, counterfeiters who are able to hide their operations or who are tolerated by local enforcement agencies are likely to be underrepresented within this accessible group, thus introducing an indefinite sampling error. Moreover, the statements of convicted criminals are difficult to verify and therefore of limited value in the context of this study. Counterfeit products, however, provide valuable insights into the characteristics of illicit manufacturers. Expert analyses of such articles allow conclusions to be drawn on the re-engineering capabilities, the properties of and investment in corresponding production facilities, the functional quality of the products, and consequently on the likely strategic positioning of a counterfeiter's venture. For the present study, seized counterfeit articles serve as the primary data source of the empirical analysis where seizures were conducted by customs or other enforcement agencies, or resulted from test purchases by the right holders or licit manufacturers.

The choice of variables along which to group observations is a crucial step in the application of a cluster analysis. Since the present study is explorative in nature and focuses on theory building rather than testing, a cognitive approach was chosen to define the clustering variables. While both inductive and cognitive techniques help to generate a rich description of the sample's characteristics, the latter technique is preferred as it captures the experiences of industry experts and thereby increases confidence that the variables are relevant and meaningful.⁹

In order to identify the grouping variables, interviews with nine brand-protection and production experts from the luxury goods, fast-moving consumer goods and aviation industries were conducted. Each practitioner was asked to name the five most important characteristics of counterfeit articles which allow conclusions on the strategies of counterfeit producers to be drawn. The five most often cited properties were:

- (v1) visual quality;
- (v2) functional quality;
- (v3) product complexity, where this attribute relates to the added complexity from counterfeit producers (i.e. adding a counterfeit label to a complex generic product only leads to a low score);
- (v4) potential loss or danger for the user; and
- (v5) degree of conflict with the law in the country of production.

⁹ See, for example, Meyer et al. (1993) and Ketchen and Shook (1996). Application of the analysis can be found in Mascarenhas and Aaker (1989) and Reger and Huff (1993).

The respondents were confident that other industry experts could also provide reliable information on these variables as long as they were familiar with the product under study and the corresponding production techniques. A second set of attributes which requires a higher degree of interpretation on the part of the respondents was suggested:

- (v6) estimated investment in production facilities and organization;
- (v7) estimated specialization regarding product and brand selection; and
- (v8) estimated output given the applied production technology.

The measurement scale for each variable was defined in a group discussion to ensure comparability among the different analyses. Table 2.1 summarizes the suggested scales for each dimension. Further analysis showed that the more concise first set of variables was sufficient to identify meaningful and distinct groupings of the observations. Variables v2 and v4 were highly correlated, so v4 was excluded

Table 2.1: The scale of the variables

<p><i>v1: Visual quality</i></p> <p>1 = Counterfeit origin obvious for non-expert without closer inspection</p> <p>2 = Counterfeit origin obvious for non-expert only after closer inspection</p> <p>3 = Counterfeit can be recognized by suspicious consumer only after closer inspection</p> <p>4 = Difficult to distinguish for product expert</p> <p>5 = Difficult to distinguish for counterfeit expert</p>	<p><i>v5: Degree of conflict with law</i></p> <p>1 = Tolerated by authorities in country of production</p> <p>3 = Tolerated with some connections to enforcement agencies</p> <p>3 = Tolerated only with very good connections</p> <p>4 = Risk of considerable punishment</p> <p>5 = Considerable risk of life time imprisonment or death penalty</p>
<p><i>v2: Functional quality</i></p> <p>1 = Counterfeit has no functionality / effect</p> <p>2 = Very limited functionality for a short time</p> <p>3 = Functional quality considerably lower than of a genuine low-cost alternative</p> <p>4 = Funct. comparable to genuine low-cost product</p> <p>5 = Functionality equal to generic product</p>	<p><i>v6: Investment in production facilities and organization</i></p> <p>1 = Less than USD 5,000</p> <p>2 = USD 5,000 to USD 50,000</p> <p>3 = USD 50,000 to USD 500,000</p> <p>4 = USD 500,000 to USD 5,000,000</p> <p>5 = USD 5,000,000 or more</p>
<p><i>v3: Product complexity</i></p> <p>1 = Only label attached</p> <p>2 = T-Shirt, belt</p> <p>3 = Quality handbag</p> <p>4 = Medium to high quality mechanical watch, hand mixer, simple combustion engine</p> <p>5 = TV and more complex products</p>	<p><i>v7: Specialization</i></p> <p>1 = Product and brand can be changed at low cost</p> <p>2 = Product category can be changed at low cost</p> <p>3 = Product category fixed, brand can be changed at low cost</p> <p>4 = Highly cost intense to change product</p> <p>5 = Highly cost intense to change brand or product</p>
<p><i>v4: Potential loss or danger for user</i></p> <p>1 = No significant financial loss</p> <p>2 = Some financial loss (USD 10 to USD 1000)</p> <p>3 = Considerable financial loss (over USD 100)</p> <p>4 = Threat to health and safety (for example allergic reaction, bruises, burns)</p> <p>5 = Potential deadly injuries</p>	<p><i>v8: Output</i></p> <p>1 = Less than 0.1 percent of licit production</p> <p>2 = Less than 10 percent of licit production</p> <p>3 = Less than 33 percent of licit production</p> <p>4 = Less than 100 percent of licit production</p> <p>5 = Output exceeds licit production capacity</p>

from the further analysis.¹⁰ While the analysis based on all eight variables led to the same principle groupings, the solution with a smaller number of variables (v1, v2, v3, v5) was preferred, following Punj and Stewart's (1983) recommendation for a small number of group-defining variables in a cluster analysis. Table 2.2 provides the descriptive statistics and the Pearson correlations of the group-defining measures.

Table 2.2: The Pearson correlations and descriptive statistics for sample

Variables	Means	Std. dev.	1	2	3	4	5
1. Visual quality	3.45	0.95		0.38*	0.30*	-0.07	0.02
2. Functional quality	2.55	1.13			0.53*	-0.71**	-0.41*
3. Product complexity	1.84	0.70				-0.32*	-0.43*
4. Potential loss or danger	2.70	1.24					0.53*
5. Conflict with the law	2.96	1.45					

N = 119; *correlation is significant at the .01 level; **correlation is significant at the .005 level

Data sample and sample characteristics

The sample was gathered over a 20-month period. In order to ensure a broad sample base, at least ten counterfeit cases from each of the following product categories were selected for further investigations: (1) foodstuffs, alcoholic and other drinks; (2) perfumes and cosmetics; (3) clothing and accessories; (4) electrical equipment; (5) computer equipment (hardware); (6) watches and jewelry; (7) cigarettes; (8) pharmaceutical products; (9) mechanical parts; and (10) fast-moving consumer goods. Overall, these ten categories make up over 80% of all counterfeit cases as reported by European customs (c.f. TAXUD 2005, breakdown by product category). Each category is represented by at least one, mostly two, brand owners with a market share among the top ten within their market segment. Interview partners within these companies were identified through telephone calls or were already known to the authors from prior research projects. The interviews were announced by pre-calls and an introductory email. The willingness to support this project was high: 25% of the contacted enterprises provided the required information, 65% refused to participate mainly due to concerns over talking about delicate issues with people from outside the firm (60%) or without giving any specific reason (30%), and 10% claimed they did not have any samples of counterfeit articles at hand. The high response rate may have resulted from earlier joint research cooperation

¹⁰ This is done since the information contained in v4 is sufficiently captured by v2.

among many of the targeted companies and our institute; moreover the majority of companies signaled considerable interest in the results of the study, which the researcher promised to make available to them after the conclusion of the project.

Overall, the characteristics of 128 articles comprising 38 brands were discussed with brand-protection and manufacturing experts. The experts were asked to choose articles from the most recent three to six counterfeit cases their company had been involved in, in order to prevent a selection bias towards extraordinary or particularly spectacular cases. Samples of all but 34 articles were physically available during the interviews so as to reduce errors resulting from bad memory on the

Table 2.3: Industry categories represented in the sample

Product category	Category description	Cases in current	sample
(i)	Foodstuffs, alcoholic and other drinks	11	9 %
(ii)	Perfumes and cosmetics	13	10 %
(iii)	Clothing and accessories	20	16 %
(vi)	Electrical equipment	10	8 %
(v)	Computer equipment (hardware)	9	7 %
(vi)	Watches and jewelry	13	10 %
(vii)	Cigarettes	10	8 %
(viii)	Pharmaceutical products	11	9 %
(xi)	Mechanical parts	16	13 %
(x)	Fast-moving consumer goods	11	9 %
	Other goods	3	2 %

Info Box 2.1: What is cluster analysis?

Cluster analysis is a mathematical method to partition a data set (e.g. on people, companies, things, chemical processes, etc.) into subsets (clusters), so that within-subset-variation is small and between-subset-variation is large. In other words, cluster analysis (ideally) helps to define different groups so that each group has mostly similar members, but the groups are different from each other. Such categorizations can help to reveal structures within large amounts of data, ease an interpretation of the observations, and thereby facilitate further analyses. Data clustering is a common technique used in data mining, speech recognition, image analysis, and bioinformatics. It is also frequently used in business research, e.g. when assigning many different customers to a small number of groups that can be more effectively targeted with specific marketing messages, when selecting geographic markets, or when classifying competitors. For an in-depth discussion of this technique, see Aldenderfer and Blashfield (1984). We will use cluster analysis to show that a number of different, characteristic types of counterfeit producers exist and to highlight their basic characteristics.

part of the respondent, and to limit the influence of perceived expectations of the interviewers. Table 2.3 provides an overview of the counterfeit articles and the corresponding product categories.

Results and test for reliability and validity

Cluster analysis was applied to the above-mentioned data set. The analysis revealed that a number of combinations of specific parameter values (i.e. specific individual characteristics of counterfeit producers) appear to be much more likely than others, allowing for a segmentation of the analyzed articles. In fact, five clearly distinct groups of counterfeit producers can be identified:

Group 1 produces counterfeit goods with the lowest average visual quality. The average functional quality was rated as medium, in most cases allowing the owner to use the product, but having to sacrifice durability, stability, performance or contingency reserves. The typical product complexity is low to medium and a further analysis showed that many producers within this category target branded articles with high interpersonal values. The expected conflict with law enforcement in the country of production is the lowest among all the groups. Since members within group 1 primarily utilize the disaggregation between brand and product, they can be labeled Disaggregators.

Group 2 produces counterfeit articles with the highest visual and functional quality. Product complexity was highest among all groups, often allowing for an actual consumption or usage of the counterfeit articles. Counterfeit actors within this category seem to face limited pressure from local enforcement agencies. Since the product-related characteristics of the members within group 2 are most similar to those of the genuine articles, this group can be referred to as Imitators.

Group 3 is made up of producers of articles with a high visual, but low functional quality. Products are typically of medium complexity and are likely to pass as genuine articles if not carefully examined. They may result in a substantial financial loss for the buyer or even endanger the user's health and safety. Consequently their producers often face considerable punishment if their activities become known. Since the deceptive behavior towards the buyer of the corresponding article constitutes the main characteristic of the producer, this group of counterfeiters can be labeled Fraudsters.

Group 4 contains producers of goods of medium to high visual quality, but with the lowest functional quality and product complexity. Products within this category are likely to severely endanger their user or consumer. Consequently their producers potentially face extensive conflicts with enforcement agencies. For

further discussion actors within this group are termed *Desperados*, pointing out their unscrupulous behavior.

Group 5 is made up of producers of articles with an average high visual and functional quality and a medium complexity. In this respect group 5 resembles group 2. However, the expected conflict with law enforcement agencies is significantly higher since most actors within group 5 target branded products upon which the state imposes high taxes. Group 5 can be referred to as *Counterfeit Smugglers* since they primarily profit from circumventing taxes rather than from realizing brand-name-related earnings.

Table 2.4 (a) provides the quantitative results of the group defining for each identified cluster.¹¹ Table 2.5 shows the distance between the cluster centers. A thorough interpretation of the groups and a discussion of the likely strategies of the actors will be provided later in this section.

Table 2.6 shows the cross-tabulation of the producers' group memberships and the targeted product categories. Based on the results of Fisher's exact test, the null hypothesis that the counterfeiters' strategy types are randomly distributed across the product categories is rejected. In fact, certain strategy types are predestinated for certain counterfeit goods. *Counterfeit Smugglers*, for example, in addition to the brand-name-related earnings, rely on making profits by evading taxes and therefore are likely to concentrate on bootleg tobacco products and alcoholic beverages. The quality of pharmaceutical products is especially difficult to assess prior to the purchase, making this category attractive for *Desperados*. However, the strategy types seem to be dependent on, but not merely surrogates of, the counterfeit product categories. Perfumes and cosmetics, clothing and accessories, electrical equipment, mechanical parts and fast-moving consumer goods are manufactured by at least three types of counterfeiters. Therefore the correlation between the product category and membership in a strategic group is not found to impose restrictions on the explanatory power of the study.

Throughout the study within-method triangulation served as an important tool to ensure reliability. The convergence of the results obtained by different clustering algorithms and distance measures indicates a high consistency of the solution, which in turn is an indicator for the reliability of the results (c.f. Hair et al. 2005). Furthermore, a split sample procedure, where the data set was randomly divided into half, was applied. Clustering of the subset also leads to a grouping with five distinct clusters with center means almost identical to those of the clustering results of the entire data set (c.f. Table 2.7). This again indicates a high degree of reliability in the findings.

¹¹ The results from the F- and Tukey Test were included, but only for descriptive purposes since the groups were chosen to maximize the differences among cases in different clusters.

Table 2.4: Statistics of group-defining (a) and non group-defining variables (b)

Variables (a)	Group 1: Disaggregators	Group 2: Imitators	Group 3: Fraudsters	Group 4: Desperados	Group 5: Cf. Smugglers	F (b)	Tukey test (c)
(a) Group-defining variables							
Visual quality	2.43 (0.79)	4.3 (0.60)	3.45 (0.74)	3.13 (0.76)	3.86 (0.66)	24.83*	2,3,4,5 > 1; 2 > 3,4; 5 > 4;
Functional quality	2.52 (0.51)	3.77 (0.43)	1.96 (0.63)	1.04 (0.21)	3.64 (0.50)	133.86*	2,5 > 1; 1,3,5 > 4; 2 > 3,4; 5 > 3;
Product complexity	1.83 (0.58)	2.47 (0.73)	1.83 (0.38)	1.13 (0.34)	1.71 (0.61)	19.59*	2 > 1,3,4,5; 1,3 > 4; 4 > 5;
Conflict with the law	1.39 (0.50)	1.83 (0.46)	3.00 (0.53)	4.83 (0.39)	4.79 (0.43)	249.43*	2,3,4,5 > 1; 3,4,5 > 2; 4,5 > 3;
(b) Non-group-defining variables							
Estimated investment	2.00 (0.67)	3.07 (0.69)	2.14 (0.64)	1.22 (0.42)	3.50 (0.76)	41.16*	1,3 > 4; 2,5 > 1,3,4;
Estimated specialization	2.61 (0.78)	3.47 (0.51)	2.76 (0.64)	1.78 (0.74)	3.56 (0.63)	24.45*	1,3 > 4; 2,5 > 1,3,4;
Estimated output	2.83 (1.03)	3.33 (0.80)	2.62 (0.82)	2.00 (0.63)	3.50 (0.76)	11.58*	1 > 4; 2,5 > 3,4;
Potential loss or danger	1.83 0.83	2.07 0.87	3.24 0.58	4.35 0.78	1.64 0.63	51.01*	1,3,5 > 4; 2 > 1,3,4,5;
Number of items	23	30	29	23	14		

(a) Means are shown, with standard deviations given in parentheses.

(b) Degrees of freedom for all variables are 4, 114.

(c) Groups are significantly different ($p < .005$) for Tukey's test in multiple comparison of means.* $p < .001$

Table 2.5: Distances between cluster centers

Cluster	Disaggregators	Imitators	Fraudsters	Desperados
Imitators	2.37			
Fraudsters	1.98	2.40		
Desperados	3.87	4.42	2.18	
Cf. Smugglers	3.85	3.08	2.49	2.76

Table 2.6: Product type vs. group membership

Product category	Group 1	Group 2	Group 3	Group 4	Group 5
(i) Foodstuffs, alcoholic and other drinks	0	0	5	2	4
(ii) Perfumes and cosmetics	2	2	8	0	0
(iii) Clothing and accessories	10	8	2	0	0
(vi) Electrical equipment	1	3	3	2	0
(v) Computer equipment (hardware)	0	4	4	0	0
(vi) Watches and jewelry	6	4	0	0	0
(vii) Cigarettes	0	0	0	0	10
(viii) Pharmaceutical products	0	0	0	10	0
(xi) Mechanical parts	1	3	3	9	0
(x) Fast-moving consumer goods	2	5	4	0	0
Other goods	1	1	0	0	0

Table 2.7: Group characteristics of the holdout sample

Group-defining variables	Group 1: Disaggregators	Group 2: Imitators	Group 3: Fraudsters	Group 4: Desperados	Group 5: Cf. Smugglers	F (b)
Visual quality (a)	2.46 (0.60)	4.26 (0.32)	3.23 (0.36)	3.11 (0.36)	4.00 (0.00)	19.08*
Functional quality	2.54 (0.27)	3.68 (0.34)	2.31 (0.40)	1.01 (0.00)	4.00 (0.00)	52.72*
Product complexity	1.85 (0.14)	2.63 (0.58)	1.77 (0.19)	1.11 (0.11)	1.80 (0.70)	11.79*
Conflict with the law	1.54 (0.27)	1.95 (0.16)	3.15 (0.14)	4.78 (0.19)	4.80 (0.20)	120.57*
Number of items	13	19	13	9	5	

(a) Means are shown, with standard deviations given in parentheses.

(b) Degrees of freedom for all variables are 4, 54.

* p < .001

Careful validation is essential to assure that a meaningful and useful grouping of observations is arrived at. In this context reliability as demonstrated above is a necessary, but not a sufficient condition (Kerlinger and Lee 1999). In order to assess the validity of the findings, the insights and experiences of external practitioners can allow for a between-method triangulation as their perspectives are

likely to differ from the researchers' expectations and judgments (Ketchen and Shook 1996). Therefore external expert knowledge, i.e. industry-affiliated brand-protection and anti-counterfeiting specialists other than those who helped to identify and select the group-defining variables, was taken into account to validate the findings. The respondents found the five-cluster solution clearly reflected the supply-side of the counterfeit market. Again most industry experts were able to provide a consistent analytical interpretation of the results without any prior explanation from the research team.

In fact, the small number of variables led to the confined clusters and the clusters' members show common characteristics beyond those that result directly from the clustering variables. Table 2.4 (b) summarizes the characteristics of the non-group-defining variables for each cluster and provides the corresponding results of the Tukey Test and t-Test. Moreover, the experts' opinion underpinned the practical value of the study. In fact, the results support hypothesis generation for further studies as well as the development of management recommendations. The implications are outlined below.

Main findings

The previous analysis supports the existence of five distinct types of counterfeit producers, each with different production capabilities, different foci on visual and functional quality (i.e. different emphasis on the consumers' pre-purchase and post-purchase experiences), and different associated risks with respect to prosecution. This positioning, be it due to external constraints or due to a deliberate choice, can be interpreted as the strategy of individual counterfeit producers. In the following discussion the existence of the strategic types is substantiated by presenting additional characteristics of corresponding counterfeit producers and by providing reasoning for the formation of each group. The findings result from semi-structured interviews and group discussions with brand-protection experts from industry and enforcement officers from customs, and were also validated against internal documentation of counterfeit cases, including raids, confiscations of stocks and seizures of production machinery.

Disaggregators focus on producing products with an average¹² functional quality. The potential financial loss or danger for the user is typically low as are the expected conflicts with local law enforcement agencies. Targeted product categories are mostly clothing and accessories, as well as luxury consumer goods with high interpersonal values, though the activities of Disaggregators are not limited to these categories. The business case seems to build upon generating brand-name-related earnings with minimal investments in production facilities. Trademarks either enrich generic goods or substandard products merely serve as a carrier for a

¹² Here, the term 'average' relates to the quality of counterfeit merchandize.

trademark (for example one type of handbag which is available with various labels). This statement is also supported by the low to average complexity of the counterfeit articles. A low investment in machinery and facilities limits the financial loss in case of raids, but also confines production to easy-to-manufacture goods. These products are very often of inferior quality and must sell as non-deceptive counterfeits for a fraction of the original product's price. As low sales prices do not justify expensive shipment strategies or direct selling, counterfeiters use large consignments to export their goods and rely on middle men in the country of destination in order to supply street vendors. This not only reduces the margin of the illicit manufacturer, but also makes the products susceptible to seizures. As a considerable part of the illicit value chain is in the country of sale (because distribution is risky and cumbersome), the extent of the corresponding counterfeit articles greatly depends on the efficiency of the enforcement activities in this country.

Imitators produce counterfeit articles with a relatively high visual and functional quality. An analysis of the non-group-defining variables consistently revealed a high average estimated investment, a high degree of specialization, and a relatively high production output. In many cases the corresponding counterfeits fulfill the needs of the user, but the functional quality is clearly below that of the corresponding genuine products. An important finding from the interviews was that Imitators often primarily serve their home market. In young economies where intellectual property rights are not strictly enforced, the use of foreign patents and designs can help companies to reduce their efforts during development processes, and significantly lower the risks of product launches. Similarly, trademark infringements can foster sales, thus establishing economies of scale and accelerating experience curve effects. Counterfeiters within this group are most likely to turn into licit competitors once intellectual property rights become more strictly enforced.

Fraudsters typically produce articles of a high visual, but low functional quality and aim to sell these goods as deceptive counterfeits. They often target products where the buyer is likely to be unaware of the existence of faked articles (prominent examples are fast-moving consumer goods). This enables Fraudsters to realize sales prices close to those of genuine products, thus justifying losses due to eventual seizures. These characteristics seem to be reflected in a low estimated investment in production facilities, which can be interpreted as an attempt to preserve flexibility and to limit the financial loss in the case of seizures of equipment. Interviews with brand-protection experts also revealed that Fraudsters often aim to infiltrate the supply chain of licit companies.

Desperados have similar characteristics to Fraudsters, but they take a more extreme position with respect to endangering the well-being of the end-consumers. They mostly target expensive, but simple-to-mimic products, such as pharmaceuticals or automotive spare parts, whose quality is difficult to evaluate prior to purchase. Desperados face the risk of severe punishment. However, this is to be

seen alongside the considerable profits, even if most of the fakes were confiscated. To reduce their risk, Desperados mostly produce on a small scale, which is also reflected in the low score of the non-group-defining variable “Estimated investment in production facilities”.

Counterfeit Smugglers have a special position as they primarily realize profits by evading taxes rather than by gaining brand-related earnings. Prominent examples are alcohol and tobacco products. High profits are juxtaposed with stringent actions by government agencies. A common characteristic of the members within this group is their strong ties to organized crime, a high level of investment in the protection of their operations, and, partly related to the latter, a high degree of vertical integration from production to distribution.

We will greatly benefit from this classification when discussing the development and selection of suitable protection and prevention strategies.

2.2 *Distribution channels and shipment strategies for illicit goods*

Counterfeit producers often rely on elaborate logistics skills that allow them to distribute their products while concealing their illicit nature, disguising the location of their production plants and protecting intermediate stakeholders. They go to great lengths to try and ensure their goods are not confiscated as seizures not only reduce their profits, but also increase the risk of backtracking individual shipments. The latter eventually jeopardizes the counterfeiters’ sales channels, which are often expensive to establish and may ultimately lead to a confiscation of production machinery and prosecution of the actors. Consequently an understanding of the flow of counterfeit goods can help licit manufacturers, brand owners, and enforcement agencies to protect the licit supply or even to disrupt counterfeit activities. In this context a model is introduced to illustrate the flow of goods between counterfeit producers and licit actors. The model aims to help practitioners to systemize their supply chain security efforts, and thereby emphasizes the notion of counterfeit trade as an organizational, industry-like phenomenon.

The illicit supply chain

Companies can make or buy inputs, transfer outputs downstream or sell them. Illicit actors can do the same. In fact, counterfeit goods exist in final and intermediate markets. In order to protect licit companies from counterfeit goods infiltrating their supply, managers have to eliminate the value chain’s permeability to such goods. This, however, requires some knowledge concerning the structure of the illicit market and the way it interfaces with the licit supply chain. In an attempt to structure an analysis, a visual representation of the licit and illicit flow of goods is given in

Figure 2.1. Goods move from the part supplier to the component supplier, the manufacturer, the distributor, and the retailer, who then passes them down to the consumer. The final link in the chain is waste management. Individual steps may be omitted and additional steps may be introduced to better reflect the supply chain of the company or industry under study. Several intermediate markets are included, allowing for easy integration of additional stakeholders.

The illicit supply is represented analogously. Goods pass through the chain as non-deceptive counterfeits and are sold to the licit side via intermediate or final markets as deceptive counterfeits. Though observations of the counterfeit markets suggest that illicit actors exist at all steps of the value chain, it is likely that several steps can be neglected in company or industry-specific settings; counterfeit manufacturers may, for example, buy their supply from the licit market instead of relying on illicit parts suppliers, and serve their retailers directly without intermediate markets and distributors.

After integrating other relevant stakeholders or eliminating obsolete steps from the value chain, an actual instantiation of the model can be developed where the individual stakeholders (boxes) and distribution paths (arcs) are described. Of interest are both typical properties and classification of boundaries (for example

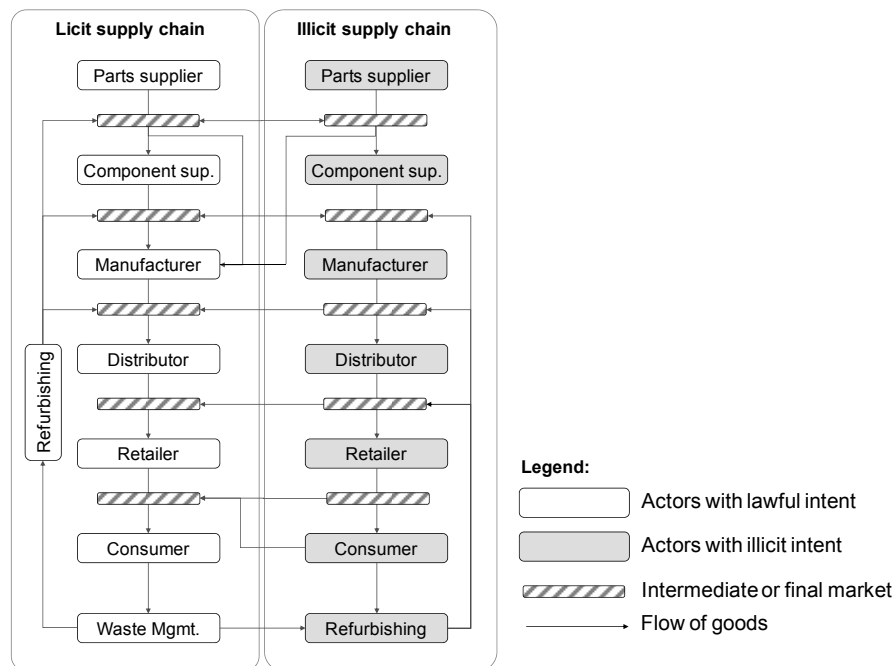


Figure 2.1: The coexistence of the licit and illicit market

unlikely behavior or characteristics). Especially the following issues should be addressed:

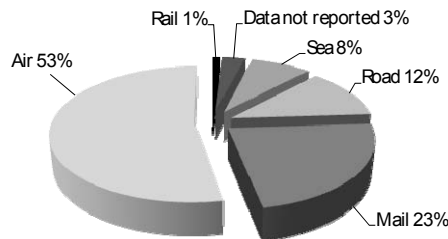
- *Characterization of the actors in each box.* Knowledge of the basic characteristics of counterfeit producers or distributors allows monitoring and prevention measures to be refined. Actors can be evaluated regarding their strategic focus or production settings as detailed earlier in this chapter. Relevant issues concern the location of production, appearance in the market, typical product characteristics and potential collaboration with other stakeholders.
- *Identification of frequently used paths and jeopardized intermediate markets.* Knowledge of transport routes and intermediate markets is important as it can help licit actors to disrupt counterfeit activities and to protect their own business from the infiltration of imitation products. Recently used transport routes and markets (including online markets) have to be identified and evaluated, and likely contingency routes of illicit actors should be pointed out.
- *Analysis of typical shipment strategies.* For the further instantiation of the model, users may turn their attention to the shipment strategies of illicit actors, which often include transshipments where illicit actors break their routes to disguise the origin of the goods, the use of small lot sizes which make seizure expensive, the use of expensive postal services which are rarely investigated, admixing original products with counterfeits to reduce the chance of detection even if the shipment is investigated, and the use of shipments which are similar to original shipments in terms of quantity, traffic route, and appearance.
- *Integration of customs.* Each flow of goods is a transaction potentially involving a border crossing. Customs is a major stakeholder in the battle against counterfeiting, but often relies on information from licit manufacturers or brand owners in order to recognize intellectual property rights infringements. Relevant customs checkpoints can be included in the model.

If a company is threatened by counterfeit products of different categories, several instances of the model may have to be defined. The same may be necessary for different geographic markets, especially with respect to non-deceptive counterfeit consumer articles, as the importance of various sales channels may vary. A survey conducted in Great Britain and Northern Ireland, for example, revealed that of those counterfeits which were knowingly purchased, 54% were bought outside the country, 28% on street markets, and 4% in domestic stores (Bryce and Rutter 2005). The same question directed to German-speaking consumers revealed a different market structure. Here, 78% of the non-deceptive counterfeit articles were bought abroad, 11% over the Internet, 8% at work or school, and less than 2% in shops or from street vendors.¹³ Based on individual instantiation, companies can conduct a risk analysis and develop or adjust their anti-counterfeiting strategy accordingly.

¹³ The survey was conducted between April and June 2005. 203 randomly chosen respondents over the age of 14 were asked where and in what quantities they had bought counterfeit goods within the previous year.

Info Box 2.2: Counterfeit cases by means of transport

A large proportion of counterfeit cases are initiated after phony products have been identified in air cargo freight and postal items. In 2006, these expensive means of transport accounted for more than 75% of all cases within the European Union. Shipments by mail are also very attractive for counterfeit actors as they do not require additional intermediate stakeholders who would have to dispatch and further distribute the goods. Their high share also reflects the importance of direct-selling over the Internet. Only 8% of the cases are initiated after inspections of sea freight. This, however, does not mean that sea freight is less susceptible to counterfeit trade. There, due to the larger lot sizes, individual cases often amount to thousands of illicit imitation products. Moreover, one may raise the question if sea containers are less thoroughly inspected than air cargo.



Source: (EC 2007)

Info Box 2.3: Number of articles seized by countries of origin

The table below shows the number of articles seized by European customs in 2006, expressed as percent by origin/provenance and product type. It provides a reasonable overview on where illicit imitation products were manufactured and also shows which countries were used as transshipment hubs to disguise the real origin of some goods.

China's dominance in counterfeit trade is well-known. The distance to her nearest illicit competitors, however, is nevertheless significant. The People's Republic is the biggest importer of counterfeit goods in all but two product categories, leaving India, Turkey, Ukraine, and the United Arab Emirates far behind. In fact, very few countries are responsible for the vast majority of counterfeit imports. This statement holds not only for imports to the European Union, but also to North America. Other countries that appear on the list have very likely been misused as "safe harbors" to disguise the shipments' real origin. Switzerland, for example, is certainly no vivid producer of counterfeit sportswear. Choosing the home of the United Nations' World Intellectual Property Organization (WIPO) as a hub could almost reveal a strange sense of humor among illicit actors. It nevertheless highlights that the country of origin as declared in the freight papers is no sufficient indicator for the goods' integrity.

Foodstuffs, alcoholic and other drinks	18%	Turkey	China	1%	12%	Singapore	Hungary	7%	6%	Tunisia	Argentina	2%	2%	36%	Others
Perfumes and cosmetics	37%	China	Ukraine	19%	17%	Indonesia	Arab Emir.	9%	4%	Turkey	Hungary	3%	2%	9%	Others
Clothing and accessories	63%	China	India	5%	3%	Turkey	Ukraine	2%	2%	Hong Kong	Vietnam	1%	1%	6%	Others
a) sportswear	43%	China	Vietnam	13%	7%	Swiss	Turkey	5%	4%	Bulgaria	Arab Emir.	3%	3%	22%	Others
b) other clothing (ready to wear)	50%	China	India	19%	9%	Turkey	Pakistan	4%	2%	Bulgaria	Thailand	2%	2%	11%	Others
c) clothing accessories (bags, sunglasses...)	81%	China	Malaysia	2%	2%	Algeria	Egypt	2%	2%	Hong Kong	Arab Emir.	1%	1%	9%	Others
Electrical equipment	61%	China	Hong Kong	21%	7%	Arab Emir.	Rep. Korea	3%	2%	USA	Taiwan	1%	2%	2%	Others
Computer equipment (hardware)	47%	China	Spain	17%	15%	Hong Kong	Pakistan	4%	3%	Singapore	Egypt	3%	3%	8%	Others
CD (audio, games, software), DVD, cassettes	88%	China	Iran	5%	1%	Taiwan	Syria	1%	1%					5%	Others
Watches and jewellery	72%	China	Hong Kong	19%	2%	Rep. Korea	Malaysia	1%	1%	Thailand				4%	Others
Toys and games	85%	China	Hong Kong	3%	2%	Spain	Vietnam	1%	1%	Pakistan	Syria	1%	1%	2%	Others
Cigarettes	83%	China	Arab Emir.	6%	2%	Algeria	Egypt	2%	1%	Serbia	Malaysia	1%		5%	Others
Medicines	31%	India	Arab Emir.	31%	20%	China	Thailand	4%	2%	Philippines	Vietnam	1%	1%	10%	Others
Other	82%	China	Turkey	3%	2%	Hong Kong	Bulgaria	2%	1%	Netherlands	Egypt	1%	1%	8%	Others

Source: (EC 2007)

The importance of customs in the fight against counterfeit trade

Customs play a key role in the fight against counterfeiting and piracy. Of all the articles seized in Europe, more than 70% of counterfeit goods are intercepted by the authorities. The TRIPS Agreement confers an essential responsibility upon customs, especially in an international context, and the location along national borders, the detailed knowledge of international trading routes, as well as the right to inspect the goods under their control enables the authority to exercise its duties as an effective gatekeeper. When customs officers have sufficient grounds for suspecting infringements of intellectual property rights, they may detain the goods for three working days, even before an application is lodged by the right holder (so-called ex-officio procedures), and ask the right holder to provide information on the case. Such IPR infringements include violation of trademarks, copyrights or related rights, patents, supplementary protection certificates (plant protection and medicinal products), designations of origin, or geographical indications. However, customs need the help of the right holders themselves to achieve significant results in the fight against counterfeiting and piracy. Applications for action provide customs with the information that helps to identify illicit goods and endow the authority with additional power for dealing with the suspected products. To submit an application for action, the right holder (or their representative) must fulfill two conditions. As stated on the customs website,

- “the application must provide customs with an accurate description to make identification possible” and
- “proof must be provided that confirms that the applicant is the holder of the right in question” (EC 2008).

Though the application for action is national in character it can, if deposited in a member state of the European Union, have the same legal status throughout the other member states. In such a case, a community application should be used (c.f. EC 2008). A model form of the community application is published in Official Journal of the European Union L 261 of 6/10/2007. Notes on its completion and the declaration form that the right holder must fill in are published in Official Journal of the European Union L 328 of 31/10/2004. After the filing of an application, customs will automatically seize the stopped goods, and the owner has ten working days instead of three to decide whether to take action. In 2006, more than three fourths of all seizures were initiated by applications for actions, and only 15% result from ex-officio interventions (EC 2007). Therefore, filing an application is strongly recommended.

2.3 *Exploring the counterfeiters' business case*

Given the industry-like characteristics of many production sites, cost-benefit calculations are almost certainly undertaken when selecting, changing, expanding or discontinuing illicit activities. For a better understanding of the underlying business concepts it is worth discussing the cost drivers of illicit production from a counterfeiter's perspective. We will furthermore contrast the potential financial advantages of such activities with the additional costs, risks, and limiting factors of future growth.

Counterfeit producers often reap the benefits that result from considerable investments by the corresponding brand owners. Obvious gains stem from free-rider effects with respect to research and development costs and marketing expenditure. Other significant savings result from the choice of raw material and production techniques that do not necessarily need to be up to the quality and safety standards of the corresponding brand owners. Moreover, counterfeiters have lower costs for salaries, taxes (if paid at all), reserve for warranties, compliance to environmental regulations, etc.; they neither face the risk associated to product launches and market entries nor do they have to offer complementary low margin products or services as they can concentrate on selected top-selling, well-established brands and products.

However, counterfeit production also comes with costs. These may include, for example, expenses for purchasing and maintaining production machinery, and the costs of raw materials and salaries. Moreover, counterfeit actors have expenses that licit companies do not have, for example for maintaining their illicit distribution network and dealing with local or government officials (which may require paying bribes or profit sharing). Other direct or indirect expenses include the cost ascribed to potential seizures of articles and production machinery as well as the risk of personal fines, imprisonment or even capital punishment. These numerous additional risks also increase the cost of capital for financing counterfeit activities and thus decrease the overall discounted profit of related investments.

The individual strategic setting of an illicit actor has a considerable influence on the cost of production and distribution, the sales prices and the scalability of the activities and long-term perspectives. Table 2.8 summarizes the most important cost factors and compares them with the expected revenue (i.e. sales prices and output). Again, each business model follows specific cost-benefit patterns and has specific advantages or disadvantages with respect to scalability and the venture's future perspectives. Low costs for reverse engineering, production equipment, raw materials etc. are put into perspective by considerably discounted sales prices (for Disaggregators) or by a high risk of prosecution (for Fraudsters and especially Desperados). Imitators may be able to realize long-term revenue streams but face comparably high expenses for reverse engineering, production and raw materials.

Table 2.8: Costs, revenue, and future perspectives of counterfeit producers

	Disaggregators		Imitators		Fraudsters		Desperados		Cf. Smugglers	
Product costs of illicit actors										
Reverse engineering	l		h		n		n		n	
Development costs	l	--	h	--	l	--	l	--	n	
Production equipment	l	--	h	-	l	--	l	--	m	-
Raw materials	m	-	h	-	l	--	l	--	m	o
Salaries	m	-	m	-	l	--	l	--	l	
Quality mgmt.	l	--	m	-	n	--	n	--	l	
Marketing	n	--	n	--	m	-	m	-	n	
Shipment of articles	m	+	m	+	l	+	l	++	m	+
Warranties	n	--	l	--	n	--	n		n	
Maintaining illicit distribution network	m		l		m		l		h	
Product seizures	m		h		m		l		l-m	
Confiscation of production equipment	l		h		m		l		m	
Bribes	l		l-m						h	
Fines, punishments	l		l		h		h		h	
Output										
Sales price	l	---	m	-	m-h	o	m-h	o	m	-
Output capacity	m		m-h		m		l		m	
Scalability of illicit production	l		h		m		l		m	
Long term growth	l		h		l		l			
Legend:										
Blank field: not applicable / no data										
White field: absolute costs	o: none		l: low		m: medium		h: high			
Gray field: comparison to licit producers	++ much higher		+ higher		o almost equal		- lower		-- much lower	

Table 2.8 shows that seizures constitute a major cost driver for all but one strategic setting; they lead to a direct financial loss among illicit actors of at least the costs of production and transportation up to the point where the goods are confiscated. In general, losses are higher the more sophisticated the imitation products are. Moreover, indirect costs arise, for example when alternative transport networks have to be established. Counterfeit actors may need to search for new shipment routes, identify new logistics partners and establish new middle men, for example to bypass border controls. Not only are these activities laborious (particularly with regard to the limited transparency and the high search cost within such markets), they also increase the risk of running across unreliable partners or even informants.

As seizures increase the risk of prosecutions, higher margins may be demanded by the participating stake holders. Furthermore, questions on who to blame for the financial losses are likely to cause friction among the actors.

In fact, direct and indirect costs constitute a limiting factor for the growth of counterfeit trade, and product seizures contribute heavily to these costs. Figure 2.2 shows the axiomatic relationship between seizure rates and the resulting sales prices for licit and illicit actors for an exemplary good. The overall cost is approximated using Equation 2.1 which expresses the cost per successfully delivered product C as a function of the cost of production and delivery up to the point of destination $CoPD$, the seizure rate s , indirect costs due to seizures I , the desired margins of illicit actors M , and the per-article costs and margin of sales CaS . The model is exemplarily set up with the parameters as stated below.

$$C = \left(CoPD + CoPD \frac{s}{1-s} + I \frac{s}{1-s} \right) \cdot (1 + M_{\text{Production,Delivery}}) \cdot (1 + CaS_{\text{Retail}}) \quad (2.1)$$

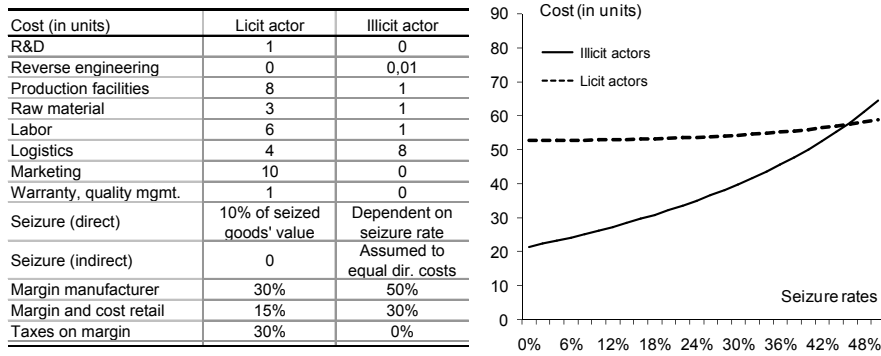


Figure 2.2: The impact of seizure rates on the cost of a counterfeiter's activities

Financing counterfeit activities

Industry-like production of goods requires professional financial management. Large-scale counterfeit producers (especially Imitators) have to raise capital to purchase machinery, facilities, etc., and have to maintain the ability to meet their financial obligations. Money lenders, as a matter of course, demand a return for their investments that not only includes a premium for the market risk but also for the risks associated with illicit activities and for dealing with criminal organizations. The lack of transparency of such activities and the difficulty to prevail over the “business partners” when trying to sell a stake restricts their access to finances even more. In fact, these aspects explain why other criminal organizations often stand

behind large-scale producers of counterfeit goods. However, when counterfeit production is accepted by local officials or when the producers successfully disguise their counterfeit activities (for example by also producing non-counterfeits), capital may also come from licit sources (e.g. from investors who are not aware of the illicit activities).

Though the clandestine nature of the illicit market limits the accessibility to reliable data for example on the cost of capital in this domain, one should nevertheless reflect on the financial requirements of large-scale producers in order to fully understand the mechanisms of the counterfeit market. Approaches to limit the access to venture capital can also reduce counterfeit activities.

2.4 *Research on counterfeit supply*

Very few publications are dedicated to the supply-side issues of the counterfeit market, though knowledge in this field is of great importance for understanding the way the illicit market operates, how companies in emerging economies use imitation products to foster learning and development processes and how licit brand owners can fight illicit producers. One reason for the lack of related work is very likely to be the limited access to illicit market players and thus the difficulty of obtaining information on clandestine illicit market activities. However, some insightful publications exist, and we briefly summarize the most insightful contributions below. Table 2.9 provides an exhaustive overview of the academic literature in this field.

An early contribution on the supply-side was published by Harvey and Ronkainen (1985). The authors point out potential ways illicit actors may obtain the know-how required to manufacture counterfeit articles. However, their work is based mainly on the assumption that intellectual property is stolen from within the affected company, thus not reflecting the considerable reverse-engineering capabilities of today's counterfeit industry.

Olsen and Granzin (1992 and 1993) discuss how brand owners can prevent otherwise trustworthy distributors from knowingly or unknowingly selling illicit imitation products. The authors stress the importance of maintaining a high level of satisfaction and dependence among their supply chain partners, as well as showing their high commitment, in order to gain their assistance in fighting the counterfeit trade.

In an insightful case study Green and Smith (2002) detail the efforts of an international company to eliminate the production and distribution of counterfeit alcoholic beverages in an emerging Asian market. Thereby they also cover important characteristics of counterfeit production and detail the organizational structures of the illicit market. Their study provides evidence of a sophisticated production system characterized by a high degree of labor division and specialization, highly-protected individual operations organized in such a way that the elimination of a

single function or production site does not endanger other functions, and by strong ties to organized crime. The case study also shows that, despite high margins from the illegal activities, consistent seizures and raids have the potential to drive illicit actors out of business.

Table 2.9: Supply-side investigations

Author(s)	Year	Short description
Harvey/ Ronkainen	1985	<ul style="list-style-type: none"> – Discussion of potential ways illicit actors can obtain classified information which enables them to produce counterfeit articles. – Loss estimates based on industry estimates.
Olsen/ Granzin	1992	<ul style="list-style-type: none"> – Depiction of how manufacturers can establish a relationship with their distributors to gain support in fighting illicit trade. – Interviews with five retailers from the automotive industry to conceptualize a structural equation model.
Olsen/ Granzin	1993	<ul style="list-style-type: none"> – Investigation of the influence of dependence, control, channel conflict and satisfaction on a dealer's willingness to help a manufacturer combat counterfeiting. – Findings are that manufacturers can engender cooperativeness by nurturing satisfaction and dependence in manufacturer-dealer relationships.
Glass/ Wood	1996	<ul style="list-style-type: none"> – Application of social exchange theory to investigate the influence of situational factors on the intentions to engage in software piracy. – Findings are relevant in the context of exchange in peer-to-peer networks but do not directly apply to commercial counterfeiting.
Green/ Smith	2002	<ul style="list-style-type: none"> – Summary on the literature that addresses counterfeit trade. – Strategies for addressing the threat in developing markets. – Case study of a major company producing and selling alcoholic beverages.
Ben-Shahar/ Assaf	2004	<ul style="list-style-type: none"> – Development of a formal model in which a manufacturer may promote copyright infringements to indirectly participate in predatory pricing and to deter competitors from entering the market.
Liu et al.	2005	<ul style="list-style-type: none"> – Effect of random examinations and different punishment levels with respect to store managers who potentially sell deceptive counterfeit products.
Khouja/ Smith	2007	<ul style="list-style-type: none"> – Analysis of profit maximization models, which take both piracy and saturation effects into account.

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