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The Problem of Earlier Rights: Evidence from the European Trademark System

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The Problem of Earlier Rights: Evidence from the European Trademark System *

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ABSTRACT

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1 Introduction

This paper examines effects of delegating policing of trademark use and filing in bad faith to the users of the trademark system. Trademark law in Europe, the United States and many other jurisdictions requires, in principle, that trademarks be registered for goods and services for which a company is using or intends to use the mark (Ashmead et al., 2015; Seifter III, 2015).[1] Jurisdictions differ significantly in how they police use and bad faith. In the United States, firms are required to provide proof of use to the United States Patent and Trademark Office (USPTO). Europe has national and EU level trademarks. In the EU level system, administered by the European Union Intellectual Property Office (EUIPO), use is tested only when a rival firm requests this, either during opposition or cancellation procedures.[2]

The comparatively strict stance on trademark use taken in the US is leading USPTO to take strong measures to deal with the current increase in registered but unused marks.[3] Meanwhile the comparatively lax approach to enforcement of trademark use in Europe has led to litigation before the Court of Justice of the European Union (CJEU) regarding bad faith of applicants who knowingly register marks that are overly broad (Johnson, 2018).[4] Spurred by an inquiry into Australia's IP system (Australian Government Productivity Commission, 2016) IP Australia examined non-use of registered marks, but found little or no effect on applicants and consumers (Zhang, 2019).

The principal reason for the operation of centralised registers for trademarks (and patents) is to facilitate the coexistence of earlier and later rights. Signs that are similar or even the same may be used concurrently as trademarks by different owners for different goods and services. Conflicts are managed by a combination of examination and adversarial procedures. All offices operate a mix of both, but USPTO rely much more on examination and review to ensure adherence to trademark law. The current policy debate is very much about whether this is necessary.[5]

Reliance on third parties to police an IP register creates lower direct costs. This is attractive for policy makers and users. But strong reliance on third parties to police deviation from the principles of trademark law may create significant distortions of competition. We contribute to the debate on management of IP systems by examining how the current light touch approach at EUIPO impacts competition. Using data from a policy change we first demonstrate that the register at EUIPO often fails to reflect use of the

[1] EU legislation governing trademark use was set down in Council Regulation 40/94/EC (20.12.93) on the Community trade mark, subsequently replaced by Council Regulation 207/2009/EC (26.2.09), amended by European Parliament and Council Regulation 2015/2424/EU (16.12.15) and then replaced by European Parliament and Council Regulation 2017/1001/EU (14.6.17) [EUTMR]. EU trademark law allows for revocation of a mark on application, if it goes unused for five years. The Lanham Act codifies US trade mark law. In 1998 this act was revised to allow for intent to use applications. Under the revised provisions applicants have a maximum period of three years within which to demonstrate use.

[2] The Standing Committee on the Law of Trademarks, Industrial Designs and Geographical Indications (SCT) of the World Intellectual Property Organisation (WIPO) provides a useful overview of trademark law and practice around the world in a 2010 publication available here.

[3] In 2012 USPTO asked 500 randomly selected trademark owners to submit additional evidence of mark use in a "Proof of Use" pilot. Just over half of owners could not verify previous claims of use (USPTO, 2015). This prompted various initiatives to tackle non-use, including instituting random proof of use audits. This is described on the USPTO Proof of Use Audit Program page. Recently hearings in Congress have taken place to determine whether USPTO should be given additional powers to review trademark use. An interesting summary of developments precipitating these actions can be found in the New York Times: All Your Favorite Brands.

[4] Refer also to the judgement of Justice R. Arnold (Arnold, 2018), the opinion of the Advocate General Tanchev Tanchev (2019) and the ruling of the CJEU on 29.1.2020. Furthermore in a parallel case the Second Boards of Appeal at EUIPO have ruled on bad faith in a repeat filing by Hasbro (22 July 2019, Case R 1849/2017-2).

[5] For analysis of the simlar questions applied to patents see Lemley (2001) and Frakes and Wasserman (2019).

registered trademarks.[6] Next, we examine the effects on competition that this generates. Non-use can be challenged at EUIPO, but we show that non-use challenges are rendered impracticable by refiling of earlier marks. We demonstrate that this significantly strengthens the hand of those trademark owners who use opposition regularly. This creates a distortion of competition.

Competition regulators often shy away from analysis of IP rights because of the difficulties inherent in linking IP rights to specific markets, determining validity of the IP rights and obtaining reliable data on contractual arrangements between rights holders.[7] Loose regulation of trademark use at EUIPO impacts competition by creating entry barriers. Contrary to usual competition analysis, these barriers are not intended to keep out direct competitors. They are the indirect consequence of efforts to strengthen a complementary asset, in this case the brand which the trademark protects. The practices we document are particularly apparent where natural language elements are used to construct salient marks. Beebe and Fromer (2017) show that trademark owners frequently prefer use of short words from natural language to construct their marks, creating scarcity of marks based on these words.[8]

The following section provides an introduction into the institutional context of our analysis. In Section 3 we discuss the data and methods used in the paper. Section 4 sets out empirical results and Section 5 provides a conclusion.

2 The Problem of Earlier Rights

Trademarks exist to protect signs that link a product or service to a brand against free riding by rivals (Landes and Posner, 1987). Trademark law seeks to prevent registration of later rights that could confuse consumers as to the origin of a product or service. The problem is to protect earlier rights only as far as they are in use, while allowing some scope for expansion of the range of use.[9]

The vast majority of brands are used narrowly, both in a geographical sense and within the space of products and services. Marks that are similar or the same do coexist, if they are used in different places or for different products or services. To manage coexistence of similar marks, trademark offices rely on a system of classification for goods and services, that is used around the world. The Nice classification consists of 45 classes which cover all products and services. Applicants filing a new mark for registration include a specification of the range of goods and services their mark will be used for.

The problem of earlier rights in trademark law arises at the point at which a new sign is introduced by an applicant. Where the new right is related to products or services that are also new it can be difficult to delineate accurately how extensive the range of goods and services will be that the mark will come to be used for. Currently mark owners cannot expand the range of goods and services of registered rights,

[6] Earlier work also shows this, providing mainly descriptive and industry specific evidence Greenhalgh et al. (2012); von Graevenitz (2013); Ashmead et al. (2015).

[7] Hovenkamp (2019) surveys the nexus of IP and competition policy. He notes that empirical evidence on specific IP rules and their effects on competition is limited. Anderson et al. (2017) who also survey this nexus provide a narrative suggesting considerable learning about effects of IP by competition regulators. Both reviews are almost exclusively concerned with patents. Anderson et al. (2017) also note the importance of reliable examination of patents for competition.

[8] Landes and Posner (1987) argued that there would never be scarcity of trademarks as the range of words and signs for new marks is unlimited. The evidence in Beebe and Fromer (2017) shows that users prefer some words and signs over others, which creates scarcity.

[9] Dinwoodie (2016) analyses the geographical dimension of co-existing trademarks in the European Union. Here we are primarily interested in the temporal dimension. In both contexts the question of actual use of the mark is central.

so they will naturally protect the mark to the maximum extent they deem necessary at time of filing. Trademark law accommodates this. In the EU there is a five year grace period within which the owner can seek to grow the actual use of the mark to extend to the registered range of goods and services.[10] Once the grace period is over it is up to rival firms to challenge marks that are overly broad, if unused parts of a registration hamper later applications or where there is a new conflict between existing marks that previously coexisted (Macken, 2019). Two principal ways to challenge registered marks exist. First, owners of later rights that find their applications are opposed can request a proof of use for the earlier right. Second, once the grace period is over, any firm can request that a mark be cancelled, where is not in use.[11] EU law involves minimal oversight of the actual use of the trademark by the trademark office (EUIPO) and relies mainly on third parties, i.e. rivals, to police excessive breadth of earlier rights.

The empirical question we focus on is whether the current set of laws and processes that are intended to limit registered use to actual use in the EU have the desired outcome. Not all earlier rights are earlier rights in the sense outlined above. Due to the incentives generated by the grace period some trademark owners have come to generate a stream of follow-on registrations that exist primarily to ensure that their core brands are always linked to a registered mark falling within the grace period. This approach to filing neuters proof of use challenges and cancellation actions. The problem is recognised in case law,[12] but it is primarily limited through reliance on bad faith arguments and again depends on third parties to challenge such filing behavior. By implication the main limitation that currently exists for such filing strategies comes from their cost. Companies devoting more resources to the protection of their brands can obtain a greater degree of protection from the EU trademark system. We demonstrate that this reinforces barriers to entry.

The problem of earlier rights outlined above exists in any trademark system. Stronger involvement of the registering office in testing actual use can help to limit incentives to game the register in the manner outlined above. This is the approach currently adopted in the US. There non-use is regulated by the office and is handled with increasing stringency. Regulation of non-use requires some degree of examination, which is costly. We return to this in our conclusion.

An analogous problem of earlier rights exists for patents, because inventions are frequently cumulative and complementary: later inventions build on earlier inventions or create new applications for earlier inventions (Scotchmer, 2005; Bessen and Maskin, 2009; Galasso and Schankerman, 2014). Currently in most jurisdictions balancing of the rights and innovation incentives of earlier and later patent applicants is achieved through examination of patents by patent examiners employed by the IP office. However, there is an academic debate on this question too: Lemley (2001) argues that public expenditure on examination of patents should be minimal. He points out that the large majority of patent applications at USPTO have no direct commercial effect and resources used to examine such unused patents are wasted. Lemley proposes that the courts should be left to adjudicate disputes arising over lack of precision and clarity of patent rights, which is how the EU trademark system currently operates.[13]

Our analysis below reveals a similar picture. Many EU trademarks are registered by firms that

[10] By comparison US law only provides for a maximum of three years for this.

[11] Cancellation actions are exceedingly rare in Europe (Ashmead et al., 2015).

[12] For instance EUIPO Boards of Appeal Case R 1849/2017-2 decided on 22.7.2019. The case regards the mark *Monopoly* and is an appeal, following a cancellation action brought by Kreativni Dogadaji against Hasbro, Inc.

[13] Recently Frakes and Wasserman (2019) revisit his analysis with new data and come to different conclusions.

operate on a narrow regional dimension, selling just a few products or services. The current registration system of minimal oversight serves such firms well. However, building on Beebe and Fromer (2017) we find that among a subset of trademark owners competition is sufficiently fierce that this system ceases to function as intended.

The remainder of this section provides descriptive data on three important dimensions of trademark use at EUIPO. First, we analyze congestion of the EUIPO trademark register, following Beebe and Fromer (2017). We show that applicants frequently re-use specific short terms in trademarks. Second, we describe the 2016 fee reform and provide descriptive analysis of firms' responses to this reform. Finally, we demonstrate the effect of including of a mark falling into the grace period, on outcomes of trademark opposition.

2.1 Congestion of the EUIPO register

Beebe and Fromer (2017) show that applicants for US trademarks frequently build trademarks around short words from natural language. This observation calls into question the argument advanced in Landes and Posner (1987) that there is an unlimited supply of new trademarks. This argument is invoked to justify a lack of examination of trademark use: in a world in which there is no scarcity of new trademarks non-use of existing marks is less problematic.

Table 1: **Most Applied-For Words of Three or More Characters at EUIPO**

Mark	N single	N *total*	**Disputes**	Mark	N single	N *total*	**Disputes**
orange	238	1394	58	matrix	142	465	38
amazon	201	609	43	aurora	139	350	20
sky	193	3110	513	ice	139	2031	218
eco	192	2646	655	orion	138	244	27
mini	155	1428	184	iris	138	369	27
eclipse	151	234	16	evolution	137	1114	58
one	150	6530	240	**fusion**	136	845	39
elite	149	820	108	omega	135	430	176
cat	148	1104	174	**vision**	134	2193	113
apollo	143	390	25	phoenix	134	530	34

[1] We identify all marks consisting of a single word that were in force at EUIPO in 2018 and rank these in reverse order by the count of all Nice classes in which each word was registered; this is *N single*. *N total* is the count of all Nice classes in which each word was registered across all registered trademarks in force at EUIPO in 2018. Disputes is the count of all disputes at EUIPO involving at least an earlier or a later right starting with the word in question. Disputes extracted on the 26.2.2020.

Table 1 provides data on the most frequently used words in single word marks filed at EUIPO. To generate the table, we split trademarks filed at EUIPO into their component words and counted the frequency with which each word appears across all marks registered in October 2018. The table shows

how broadly each word is filed and how many legal disputes arose concerning each word.[14] Words are listed in order of the breadth with which they are registered. We present in bold those words that also appear in Table 4 of Beebe and Fromer (2017), which shows the most frequently applied for single word trademarks at USPTO in the period between 1985 and 2014. Notice that the five most disputed words are also the shortest words.

Illustrating the intensity of competition for specific signs the third most frequently used word, also the second most disputed word, has been subject to litigation on whether the filing of goods and services declarations at EUIPO that are much broader than the actual and intended use in the market can constitute bad faith.[15]

Overall the table demonstrates that different applicants in Europe frequently use the same short words from the English language when they construct trademarks, just as in the United States. This suggests that at least for these words a precise determination of actual trademark use in the market is important and likely also efficient.

2.2 Trademark Fees at EUIPO

EUIPO began issuing EU trademarks (EUTM) throughout the European Union in 1996. The EU trademark system was evaluated by the European Commission prior to its 20th anniversary. On the 26.3.2016 the price structure for the trademark system was adjusted.[16] Table 2 sets out prices valid before and after the 26.3.2016.[17] Before the reform of 2016 the cost of filing in one or up to three Nice classes was the same; this is also known as a three for one pricing schedule. This pricing schedule created incentives to file trademarks in three classes, even if it was unlikely that the trademarks would ever be used in all three classes. EU trademark law provides a five year grace period, within which the mark should be put to use.[18] Once this period ends, any firm that finds its application for an EU trademark to be opposed can request the owner of the opposing (earlier) mark to demonstrate use of their mark.

Table 2: **Fee Structure at EUIPO Before and After 26.3.2016**

CTM (old system)	Fee	EUTM (new system)	Fee
First class	€900 up to 3 classes	First class	€850
Second class		Second class	€50
Third class		Third class	€150
Fourth +	€150	Fourth and all subsequent classes	€150
Renewal fees (e-filing)			
First class	€1350 up to 3 classes	First class	€850
Second class		Second class	€50
Third class		Third class	€150
Fourth +	€400	Fourth and all subsequent classes	€150

[14] Disputes counted include decisions by opposition divisions at EUIPO, by Boards of Appeal at EUIPO and judgments by the General Court or Court of Justice of the European Union (CJEU).

[15] EWHC 943, referred to CJEU (SkyKick v Sky, C-371/18) by Justice Richard Arnold.

[16] Regulation 2015/2424 also introduced the name European Union Intellectual Property Office for the office. Prior to that it had been known as Office for Harmonization in the Internal Market (OHIM).

[17] While the structure of the pricing scheme had not changed since 1996, OHIM lowered fees in 2005 and 2009.

[18] Art. 15, Regulation EC 40/94; Art. 15 Regulation EC 207/2009; Art. 18, Regulation EC 1001/2017.

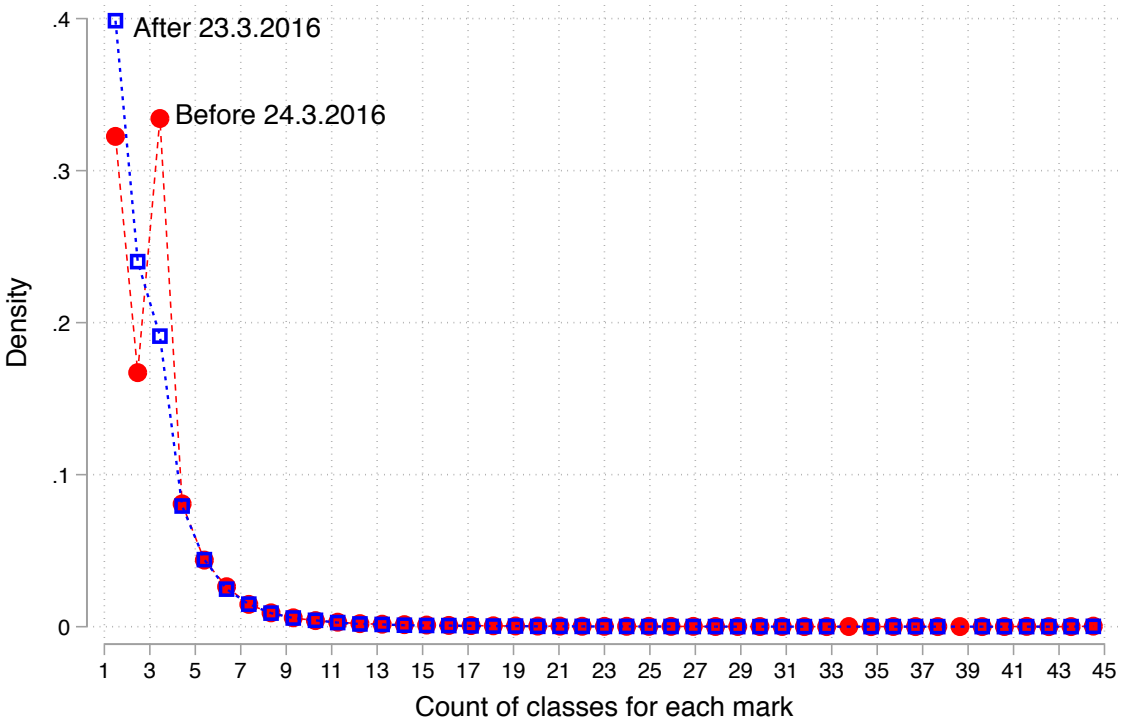

Figure 1: Three for one policy change on 23.3.2016 at EUIPO

Note: The graph shows how the distribution of the number of classes filed at EUIPO changed in repsonse to the 2016 reform of filing and renewal fees.

Figure 1 shows that the reform of 2016 had a significant effect on how broadly trademarks were filed at EUIPO. Before 2016 the count of trademarks filed in three Nice classes was higher than the count of trademarks filed in one or two Nice classes. After 2016, the majority of marks are filed in only one Nice class. The number of applications filed in three classes is now lower than that filed in two. This suggests that a significant proportion of marks was filed in classes in which there was no use prior to the policy change. We shed further light on this by studying marks that were renewed just before and after the reform of fee structures at EUIPO.

The 2016 fee reform also applied to renewal fees. Applicants who had applied for a mark before 26.3.2006 were able to renew any mark registered in up to three classes by paying a flat fee. In contrast, applicants who had applied for marks after 26.3.2006 and before 26.3.2016 would have faced that same flat fee at application, but an increasing fee schedule at time of renewal. The 2016 reform lowered the total amount payable for renewal, even if three classes were renewed. Firms could further reduce renewal costs by narrowing marks, if these included unused Nice classes.

While the timing of the reform might have been anticipated a decade before, the precise structure of the new pricing schedule could not be anticipated. This means that the reform of 2016 presents a natural experiment. This induced some trademark owners to reveal the extent to which their original marks included Nice classes that their business did not extend to a decade after filing. Table 3 below shows the proportion of marks registered in X classes, where $X \in \{2, 3, 4, 5\}$, that were narrowed upon renewal. The key takeaway is that the probability of narrowing increased for marks registered in 2 or 3 classes after the 2016 reform, while it fell for marks registered in 4 or 5 classes.

Table 3: Narrowing at Renewal for Marks Registered at EUIPO before and after 23.6.16

	Nice Classes							
	2		3		4		5	
Filing year	N	%	N	%	N	%	N	%
2000	3694	.7	6089	1.0	1853	6.5	1012	8.0
2001	3490	.5	6120	.9	1552	5.9	932	7.6
2002	3631	.7	6258	1.1	1483	5.8	830	7.3
2003	4658	.7	8634	1.1	1917	7.0	983	10.0
2004	4347	1.1	8398	1.1	1943	5.9	967	9.3
2005	5093	.9	9090	1.5	2101	5.7	1092	7.9
2006 before	1371	1.4	2368	1.7	557	6.6	308	9.1
mean		.8		1.2		6.2		8.4
2006 after	5102	1.5	8218	4.6	2102	5.7	1112	7.7
2007	9776	2.0	18768	5.2	4632	4.7	2562	7.3
2008	11747	1.9	23118	3.9	5753	3.8	3174	5.6
2009	12378	3.2	28711	5.4	6870	6.6	3636	7.5
mean		2.3		4.8		5.2		6.9

Most trademarks that were renewed at EUIPO between 2000 and 2009 were not narrowed. Table 3 shows that narrowing was more probable if a mark was registered in more classes and that prior to the 2016 reform the probability of narrowing a mark registered in three classes was almost as low as that for a mark registered in only two classes. This changed significantly in 2016 with the reform of the renewal fee schedule. Comparing filing year cohorts 2005 to 2007 the probability that a mark originally registered in three classes is narrowed increases by 346%.

Table 3 shows that the vast majority of marks is not narrowed before or after 2016. This might lead to the incorrect assumption that non-use is not widespread. It should be borne in mind that the incentives generated by the 2016 fee reform counteracted each other: on one hand renewal fees fell across the board, on the other the marginal renewal fee for marks registered in two or three classes became positive. The first change makes it cheaper to maintain broad marks, the second incentivizes cash strapped firms to narrow excessively broad marks registered in two or three Nice classes. Data on matched marks, registered at both USPTO and EUIPO, allow us to provide additional confirmation that excessive breadth explains narrowing of marks at renewal in 2016.

Figure 1 shows that the share of marks filed in three Nice classes fell from 34% to 19% in March 2016. This suggests that a high share of trademarks registered at EUIPO was excessively broad, just as a result of the three for one policy.

Ashmead et al. (2015) provide additional descriptive results from comparisons of marks filed both at USPTO and EUIPO that indicate that many trademarks filed at EUIPO are broader than their pattern of use in the market.[19] This raises the question whether filing marks in this manner creates costs for consumers or rival firms. To provide a partial answer we turn to analysis of trademark opposition.

[19] von Graevenitz (2013) provides additional evidence on excess filings at EUIPO.

2.3 Opposition at EUIPO

This section describes the incidence and outcomes of opposition at EUIPO. Opposition is the principal avenue by which the owner of an earlier right can contest the registration of a later right. In opposition the owner of the earlier right must demonstrate that there is a likelihood of confusion for consumers, should the later right be registered and used. If earlier rights are likely to be overly broad, the owner of the right being opposed, the later right, can request a proof of use for the earlier right. This avenue is closed off, if the earlier right has not been registered for five years, falls into a grace period. We show here that owners of earlier rights exploit this by refiling earlier rights.

Earlier rights may be refiled with the intention to update a mark, either by extending the reach of the goods and services declarations or by updating the appearance of the mark. Refiling restarts the grace period, even if the most recent earlier right overlaps with previous versions. Regardless of the holder's intention, the effect for the owner of the later right is the same. Therefore we do not make any effort to identify which intention may have led to refiling. We revert to this question in the conclusion.

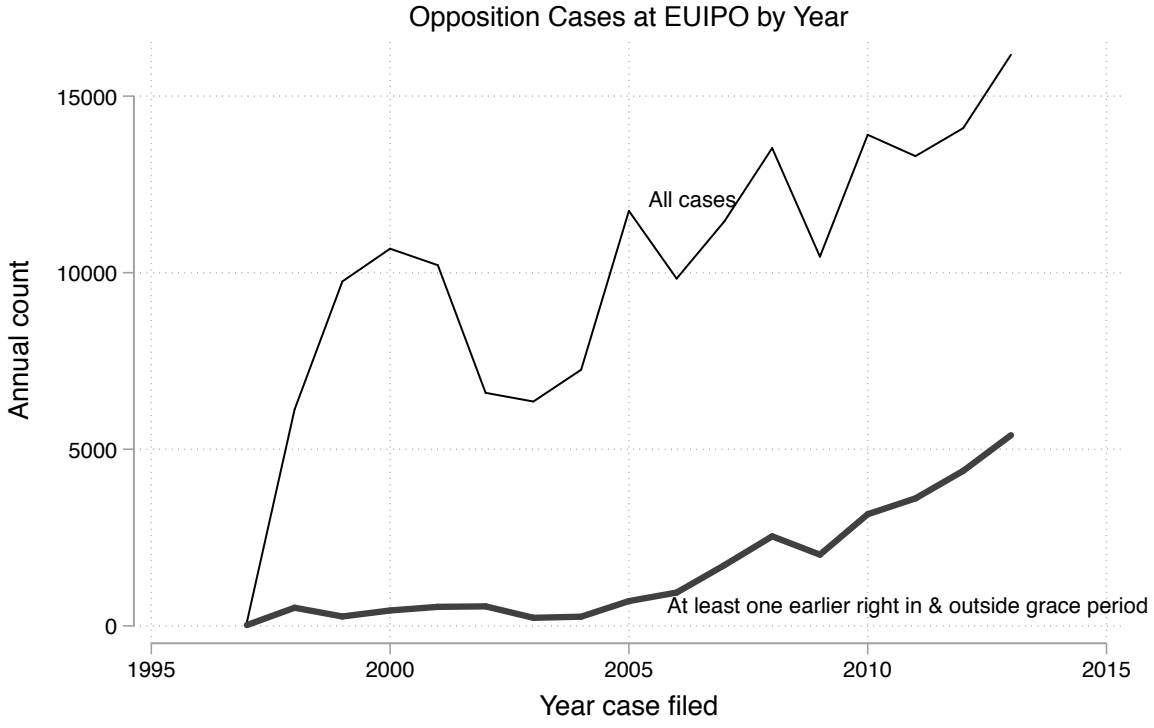

Figure 2: Incidence of Trademark Opposition at EUIPO (1996-2014)

Note: The graph shows the total number of opposition cases arising at EUIPO by year. These increase due to the strong growth of filings at EUIPO. The thick lower line is for those cases in which the owner of the earlier rights is citing at least one earlier right that falls into the five year grace period and one earlier right that does not.

Figure 2 illustrates the growth of opposition cases at EUIPO since 1996. This growth is a result of the strong increase in trademark applications at EUIPO. We also illustrate the increase in opposition cases in which the owner of the earlier right has relied on at least one mark falling into and one mark falling outside the grace period of five years after registration. The graph shows that by 2014 one third of

all opposition cases involved such a combination of earlier rights.[20] In Figure 6 in Appendix B we show that opposition cases based on refiled earlier rights are brought by thousands of earlier right holders by 2014. This shows that the strategy is not limited to very few earlier rights holders, rather the strategy is adopted by many firms and used repeatedly. It is used across a wide range of industries, the most frequent owners of earlier rights employing it are retailers (e.g. El Corte Ingles), companies in the food and beverages industry (e.g. Nestle), telecommunications companies (e.g. Deutsche Telekom, Free) and also Facebook.

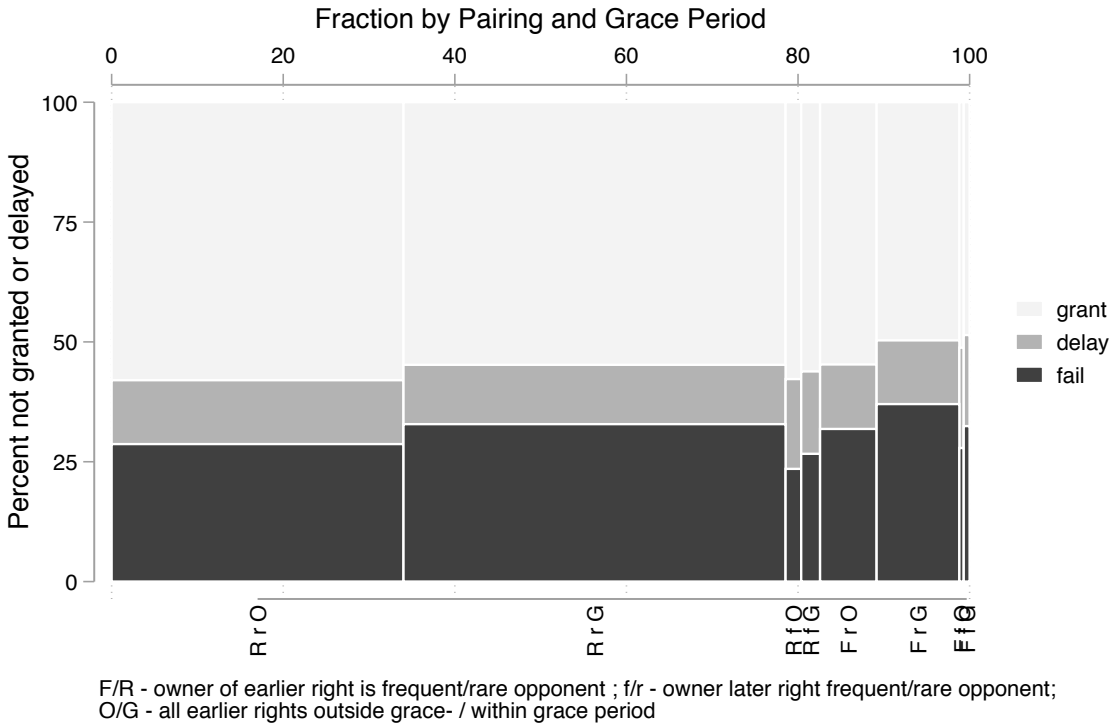

Figure 3: Outcomes of Trademark Opposition at EUIPO (1996-2016)

Note: The graph shows which proportion of opposition cases is brought by frequently opposing firms (F) and which proportion of such cases results in later rights being delayed or not granted at all. The highest proportion of cases not granted is found where the earlier right is owned by a frequent opponent (F), the later right is not owned by such a firm (r) and opposition is based on at least one earlier right that is within the grace period (FrG). Note that marks that are granted may have been narrowed in scope.[21]

The benefit of refiling is illustrated in Figure 3. This illustrates outcomes of all concluded trademark opposition cases in our data. We consider three outcomes: rejection of the later right, delay of grant by more than 3 years and grant. Note that where the later right is granted it may have been limited as a result of the opposition procedure. Our analysis covers the years 1996-2016. We split the firms involved in opposition cases into the 300 most frequently appearing owners of earlier rights (F) and all others.[22] This results in four types of opposition cases, depending on whether these frequent opponents are owners of either the earlier (F), the later (f) or both types right in an opposition case. We further subdivide outcomes depending on whether at least one of the earlier rights falls within the grace period

[20] In the same period the proportion of opposition cases citing just one earlier right at EUIPO decreased from 95% to 54%. One reason for this increase in multiple filings is to combine refiled earlier rights with older rights.

[22] The most frequent opponent brought 932 opposition cases. 125 opponents have brought at least 100 cases each.

(G). Overall this leads to eight types of case. In Figure 3 the column width represents the proportion of all opposition cases represented by a case type. The majority of opposition cases involve at least one earlier right falling into the grace period.

Figure 3 shows that for each combination of owners the proportion of later rights not granted is higher, if at least one earlier right falls within the grace period. The highest probability that the earlier right is rejected arises when the earlier right belongs to a frequent opponent, the later right does not and there is at least one earlier right within the grace period (FrG). These findings highlight the importance of the grace period for opposition outcomes. Frequent opponents (F) seem to benefit particularly from employing marks falling into the grace period.[23]

The description of renewal filings and opposition outcomes in this section indicates that many firms are filing overly broad trademarks and protecting these through frequent refiling. The remainder of the paper seeks to establish whether these patterns hold up, if we test them with more sophisticated statistical methods. In the following section we explain how data on renewals and opposition outcomes can be used to rule out alternative explanations for the filing patterns we observe. We also discuss how we analyse opposition outcomes to determine the effects of refiling earlier rights.

3 Data and Methods

This section sets out the two empirical models we estimate and provides decriptive statistics from our data. The first model focuses on incentives to file overly broad trademarks. The second model captures effects of refiling on grant rates after opposition.

3.1 Empirical Models

Fee Reform The 2016 fee reform at EUIPO could not have been anticipated in detail a decade before. Trademarks registered around 2006 provide an experiment that we analyse to learn about the effects of EUIPO's fee schedules on the breadth of registered marks.

Difference-in-differences models are robust to selection bias (Imbens and Wooldridge, 2009). Identification relies on the assumption that the groups being compared were subject to the same trends prior to the policy experiment being analysed. We compare trademarks that were registered across at least two and at most five Nice classes: four groups.[24] Which group each mark falls into was determined 10 years before the renewal decisions we analyse. This was long before the reform of the fee schedule was proposed. Table 3 shows that the probability of narrowing a mark on renewal was not subject to significant upward or downward trends before 2016. Hence we estimate a difference-in-differences model with four groups and the policy shock of 2016:

[23] In Appendix B we split the above graph by number of earlier rights. This reveals particularly strong effects for the combination FrG when more than one earlier right is used in opposition.

[24] We restrict our sample to marks registered in fewer than six classes as only a small fraction of marks are registered in more than five classes. Figure 1 shows that there is almost no difference in the share of filings registered in more than five classes before and after 2016.

$$N_{D,i} = \alpha_0 + \sum_{j=2}^{4} \beta_j D\_NC_{j,i} + \beta_p D\_Policy + \sum_{k=2}^{4} \gamma_k D\_NC_{j,i} \times D\_Policy + \epsilon_i \quad . \quad (1)$$

Here $N_{D,i}$ is a binary variable taking the value one if the mark was narrowed on renewal. $D\_NC_{j,i}$ is a dummy variable taking the value one if the mark is originally registered in j Nice classes. D_Policy is a dummy variable taking the value one if the mark is renewed after the policy change. We augment this basic specification with fixed effects for country of origin and in some specifications we also control for breadth of the equivalent US trademarks.

The control group in this specification is given by trademarks filed in five Nice classes. We expect the fee schedule reform of 2016 to increase firms' incentives to narrow trademarks filed in 3 Nice classes ($\gamma_3 > 0$). We don't expect any differential effects for marks filed in 4 Nice classes and weaker effects for marks filed in 2 Nice classes.

Opposition strategies We are interested to establish whether widespread non-use of trademarks has costs for other users of a trademark system. Earlier rights can be used to prevent registration of later rights through opposition. Opposition has a number of possible outcomes: the later right may be completely rejected, it may be narrowed and grant will be delayed. These outcomes impact the owner of the later right in different ways, depending on how important the later right is in their portfolio of trademarks. To simplify analysis we focus on just one outcome: whether the later right is granted. This is arguably the primary concern of the later right owner and it is also the simplest outcome to analyse.[25]

Opposition based on unused marks can be challenged through a request for proof of use at EUIPO. However, unused marks falling into a five year grace period cannot be challenged. Re-filing of marks can extend the grace period. This practice has been found to be in violation of EU trademark law by the Board of Appeal at EUIPO in a case related to the word mark "Monopoly".[26] In evidence given for this appeal the owner of the earlier right notes that the practice of re-filing is widespread.

While re-filing can be found to be in bad faith, this only happens where there is a third party that challenges the earlier right. The mere fact that an earlier right is a partial or total copy of an even earlier right is not likely to suffice to prove bad faith. Therefore, current EU law and current procedures at EUIPO create incentives for sophisticated users of the EU's trademark system to ensure that they have earlier rights falling within the grace period. Figure 3 shows that earlier rights falling into the grace period are very often relied upon in opposition cases.

According to the accounts of practitioners[27] refiled earlier rights protect older earlier rights against proof of use requests. Refiling is costly, but benefits the earlier right holder, if it reduces the probability that a later right is granted. Reliance on refiled rights in opposition is likely driven by a wider strategy to defend core brands. The strategy is not directly observable, which is likely to bias coefficients in simple models correlating outcomes of opposition with refiling. To strengthen the case that refiling is causing owners of later rights to lose opposition cases we estimate instrumental variables regressions.

We identify instrumental variables that determine whether a refiled earlier right is used to oppose

[25] Delay is conditional on grant. Analysis of narrowing requires data we currently do not have access to.

[26] See case R 1849/2017-2 decided on 22.7.2019. The case is an appeal, following a cancellation action brought by Kreativni Dogadaji against Hasbro, Inc. See also T136/11 pelicantravel.com s.r.o. v OHIM of 2012.

[27] The rationale for refiling is set out in the judgement of the "Monopoly" case and has been confirmed by a number of practitioners.

a later right, but have no effect on the decision to grant the later right. We draw on the history of oppositions brought by the earlier right owner to construct these instrumental variables. Two instruments are based on previous opposition activity of the earlier right holder and two are based on the maximum age of their earlier rights. Instruments based on previous opposition activity reflect the experience of the earlier right holder with opposition and refiling. Instruments based on age capture the maturity of earlier rights. These instruments determine whether the earlier right holder is likely to adopt a refiling strategy. Experience with opposition and refiling increase the likelihood refiled rights are used in the focal case. Greater age of earlier rights reduces the likelihood that refiled rights are used: older earlier rights are more likely to be well known.[28]

Define G_i as a binary variable indicating whether the later right is granted after opposition. Define R_i as a binary variable indicating that at least one earlier right used in the opposition case falls into the grace period. We estimate the following model to test whether δ_1 is negative and to determine the economic importance of the effect of refiling on the grant rate after opposition:

$$G_i = \delta_0 + \delta_1 R_i + \delta_X X_i + \nu_i \ . \tag{2}$$

The set of covariates (X_i) includes the experience of earlier and later right holder with opposition (Count previous cases), the total number of separate earlier right owners opposing a later right and a dummy capturing whether the case is based on a single earlier right.

3.2 Data

This section sets out descriptive information for the datasets we use.

Data on Trademark Renewals

The data we use to study the effects of the price reform at EUIPO in 2016 contain 43515 instances of renewal of trademarks that were initially registered in a minimum of 2 and a maximum of 5 Nice classes. Table 4 sets out descriptive statistics for this dataset.

Table 4: **Descriptive Statistics Renewals Analysis**

Variable	mean	median	std. dev.	min.	max.
N_D	0.038	0	-	0	1
2 NC's	0.299	0	-	0	1
3 NC's	0.505	1	-	0	1
4 NC's	0.126	0	-	0	1
D_Policy	0.544	1	-	0	1
D_US	0.264	0	-	0	1
Count US NCs	0.545	0	1.134	0	17
log(Oppositions)	0.146	0	0.478	0	4.5

Notice the low probability that a mark is narrowed on average. The table then contains information

[28] We test whether each instrument can be excluded from the main model, relying on the remainder and confirm that the exclusion restrictions hold. Results are relegated to the Appendix (Section C).

on the proportion of marks within this data that were registered in 2,3, and 4 Nice classes. Next the Policy dummy indicates that 54% of cases of renewal in our data are observed after the fee reform in March 2016. The US dummy shows that we were able to match 26.4% of marks in our data to US marks. From this data we have information about the breadth of the matched mark on the US register. Finally, we have included information on the number of opposition cases which were based on the mark prior to its renewal. Our data also include information on the country of origin of the mark owner. We include this as a fixed effect in our analysis, but do not break out the information in any tables included in the paper to save space.[29]

Refiling Earlier Rights and Opposition

We have compiled a dataset on 181,296 opposition cases for 171,861 later rights opposed at EUIPO between 1997 and 2017. The descriptive statistics in Table 5 show that just over two-thirds of later rights are granted after opposition, that an earlier right falling into the grace period is used in 57% of opposition cases and that in three-quarters of cases opposition is based on a single earlier right.[30]

Table 5: **Descriptive Statistics Opposition**

Variable	**mean**	**std. dev.**	**median**	**min.**	**max.**
Dummy grant later right (G)	0.681	-	1	0.000	1.000
Dummy grace case (R)	0.571	-	1	0.000	1.000
Dummy single earlier right$_i$	0.758	-	1	0.000	1.000
$\ln$(Count previous cases)$_l$	1.126	0.837	0.693	0.000	6.084
$\ln$(Count previous cases)$_e$	1.824	1.405	1.386	0.693	6.838
Count opponents	1.211	0.746	1.000	1.000	20.000
$\ln(\max$(Count previous cases))$_{e,m}$	1.197	0.872	0.693	0.693	7.275
$\ln$ ((Count previous refiling cases))$_e$	0.299	0.579	0.000	0.000	5.447
$\ln(\max$(Mark age))	1.687	1.340	1.686	-5.901	4.851
Average $\max$(Mark age)$_e$	10.836	13.844	5.298	0.001	93.847

In the period we study 43,948 opposition cases were based on multiple earlier rights and by 2014 three-quarters of these cases involved at least one earlier right falling into the grace period. A decade before only half of such cases involved an earlier right falling into the grace period. Where multiple earlier rights are involved in an opposition case it is much more likely that the owner of the earlier rights is using the the re-filed rights to prevent proof of use tests.

These results indicate that the adoption of re-filing to prevent proof of use is increasingly widespread.

4 Results

This section sets out results from estimation of models for trademark renewal and opposition.

[29] This information is available from the authors on request.

[30] Refer to Footnote 20 for further details the trend in single earlier rights.

4.1 The 2016 Fee Reform at EUIPO

Results set out in this section show that the 2016 fee reform caused some trademark owners to narrow trademarks registered by EUIPO in three Nice classes. In all models presented in Table 6 the reference category consists of marks originally registered in five Nice classes.

Table 6: Renewals at EUIPO before and after 23.6.16

	All marks		Matched marks			
	(1)	(2)	(3)	(4)	(5)	(6)
2 NCs	-0.0758^{***}	-0.0763^{***}	-0.0813^{***}	-0.0818^{***}	-0.0854^{***}	-0.0864^{***}
	(0.0077)	(0.0076)	(0.0145)	(0.0145)	(0.0146)	(0.0146)
3 NCs	-0.0680^{***}	-0.0722^{***}	-0.0777^{***}	-0.0790^{***}	-0.0824^{***}	-0.0840^{***}
	(0.0077)	(0.0076)	(0.0144)	(0.0144)	(0.0145)	(0.0145)
4 NCs	-0.0267^{**}	-0.0272^{**}	-0.0330^{*}	-0.0340^{*}	-0.0324	-0.0338^{*}
	(0.0090)	(0.0089)	(0.0167)	(0.0166)	(0.0167)	(0.0166)
Policy dummy	-0.0028	-0.0036	-0.0352^{*}	-0.0361^{*}	-0.0351^{*}	-0.0361^{*}
	(0.0101)	(0.0101)	(0.0173)	(0.0173)	(0.0172)	(0.0173)
2 NCs × Policy	0.0108	0.0119	0.0341	0.0359^{*}	0.0342	0.0363^{*}
	(0.0103)	(0.0103)	(0.0176)	(0.0176)	(0.0176)	(0.0176)
3 NCs × Policy	0.0385^{***}	0.0395^{***}	0.0619^{***}	0.0614^{***}	0.0621^{***}	0.0619^{***}
	(0.0104)	(0.0104)	(0.0178)	(0.0179)	(0.0178)	(0.0179)
4 NCs × Policy	0.0054	0.0056	0.0488^{*}	0.0470^{*}	0.0497^{*}	0.0480^{*}
	(0.0120)	(0.0120)	(0.0214)	(0.0213)	(0.0214)	(0.0213)
US match dummy	-0.0113^{***}	-0.0075^{***}				
	(0.0021)	(0.0022)				
US Nice classes			-0.0074^{***}	-0.0074^{***}		
			(0.0015)	(0.0016)		
Controls		Country		Country		Country
					US NCs	US NCs
Constant	0.0899^{***}	0.0561^{***}	0.1075^{***}	0.1013^{***}	0.0508^{***}	0.0150
	(0.0076)	(0.0116)	(0.0152)	(0.0161)	(0.0151)	(0.0287)
Observations	43515	43515	11475	11475	11475	11475
Adjusted R^2	0.0156	0.0255	0.0173	0.0272	0.0216	0.0316

[1] Robust standard errors in parentheses: $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2 shows that renewal fees generally fell in 2016. Recall that the only incentive to change the breadth of marks being renewed after March 2016 is for marks registered in two or three Nice classes that were broader than actual use, because the marginal cost of renewing marks in additional classes is now positive. Table 6 contains results for all marks filed between 25.3.2005 and 26.3.2007 and renewed a decade later and for the subset of these marks that we matched to marks filed at USPTO. Where we have identified matched marks we are able to include either the count of the number of Nice classes on

the US trademark or a set of dummy variables in our specifications.

The coefficient on the interaction between the dummy variable for marks registered in three classes and the Policy dummy is positive and significant in all six specifications we present in Table 6. The size of the coefficients in Columns 1 and 2 suggests that the probability of narrowing a mark registered in three Nice classes increased by 4% relative to a mark registered in five Nice classes after the fee reform of 2016. Theses results indicate that there are no significant effects on the probability of narrowing a mark for marks originally registered in two or four Nice classes. Focusing only on marks matched to US marks (Columns 3-6) allows us to add controls for the breadth of the mark in the United States. As expected the probability of narrowing a mark at renewal in response to the 2016 fee reform falls, if the matched mark at USPTO is registered in additional Nice classes. This effect is significant throughout.

Notice that the coefficient on interaction effect for three Nice classes after the fee reform of 2016 is now much larger and remains very significant. For EUIPO marks matched to US marks that were originally registered in three Nice classes the probability of narrowing increased by 6% relative to marks registered in five Nice classes. The results suggest that the probability of narrowing marks registered in two and four Nice classes also decreased. These effects are less significant statistically and the coefficients are smaller than those for the marks registered in three Nice classes at EUIPO.

Table 7: Renewals at EUIPO - opposition

	(1)	(1a)	(6)	(6a)
2 NCs × Policy	0.0119	0.0115	0.0363*	0.0352*
	(0.0103)	(0.0103)	(0.0176)	(0.0177)
3 NCs × Policy	0.0395***	0.0391***	0.0619***	0.0609***
	(0.0104)	(0.0104)	(0.0179)	(0.0180)
4 NCs × Policy	0.0056	0.0050	0.0480*	0.0468*
	(0.0120)	(0.0120)	(0.0213)	(0.0214)
ln Oppositions from CTM		0.0092***		0.0085
		(0.0023)		(0.0046)
Constant	0.0561***	0.0548***	0.0150	0.0139
	(0.0116)	(0.0115)	(0.0287)	(0.0289)
Observations	43515		11475	
Adjusted R^2	0.0255	0.0260	0.0316	0.0321

[1] Robust standard errors in parentheses: $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

We also test whether the number of opposition cases which the focal trademark was used in affects the probability that this focal mark is narrowed upon renewal. Table 7 provides further results based on the specifications set out in Table 6. The probability of narrowing a mark increases in the main sample, if that mark has been used more frequently to oppose subsequent applications. The effect is statistically highly significant and adding this additional control does not change the main result for the narrowing of marks registered in three Nice classes. While the coefficient on the opposition variable is similar in

magnitude in the sample of matched marks the standard error is so high that the effect is not statistically significant. This indicates that narrowing of marks that are frequently used for opposition purposes is concentrated amongst firms that do not have US trademarks.

These results show that the 3 for 1 fee schedule used by EUIPO caused firms to apply for and register trademarks that were broader than their use in the product market. Due to the simultaneous reduction in renewal fees the experiment can only produce a lower bound on the extent to which excessively broad marks were filed, which is 4%. The true extent of excess breadth is likely to be much greater.

4.2 The Cost of Refiling for Later Right Owners

Table 8: Linear Probability Models on Opposition Outcomes

	OLS I	OLS II	IV I	IV II	IV III
Dummy grace case (R_i) [marginal effect]			-0.036^{***}	-0.046^{***}	-0.059^{***}
			(0.003)	(0.008)	(0.008)
Dummy grace case (R_i)	-0.038^{***}	-0.038^{***}	-0.038^{***}	-0.051^{***}	-0.059^{***}
	(0.003)	(0.003)	(0.010)	(0.006)	(0.015)
Dummy one mark	-0.000		-0.044		
	(0.004)		(0.046)		
$\ln$(Count previous cases)$_l$	0.008^{***}	0.008^{***}	0.008^{***}	0.008^{***}	0.008^{***}
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$\ln$(Count previous cases)$_e$	-0.001				
	(0.003)				
$\ln$(max(Count previous cases))$_{m,e}$	-0.034^{***}	-0.035^{***}	-0.042^{***}	-0.042^{***}	-0.037^{***}
	(0.004)	(0.003)	(0.009)	(0.007)	(0.004)
Count opponents	-0.039^{***}	-0.039^{***}	-0.039^{***}	-0.040^{***}	-0.040^{***}
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Underidentification statistic			328.794	258.509	2169.966
Underidentification p			0.000	0.000	0.000
Weak identification statistic			89.349	78.634	575.000
Sargan test statistic			3.268	2.141	0.018
Sargan p-value			0.195	0.343	0.894
R^2	0.027	0.027	0.024	0.025	0.025

[1] N = 181,296. Robust standard errors, clustered by earlier right owner in parentheses: $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[2] All models include year and country fixed effects for the earlier right.

[3] Common instruments: Average $\max$ (Mark age), $\ln$ $(\max$ (Count previous cases$))_{e,m}$.

[4] Specific instruments: IV1 $\ln$ $(\max$ (Mark Age)) and IV3 $\ln$ ((Count previous refiling cases$))_{e,m}$.

[5] IV I- IV III estimated using package cmp in Stata (Roodman, 2011).

Section 3.2 shows that the refiling strategy is used with increasing frequency. An increasing share of opposition cases at EUIPO involve older rights asserted in conjuction with an earlier right falling into the grace period. This is costly, as the holder of the earlier right is paying to maintain multiple overlapping rights. This section sets out the effect of refiling on the outcome of opposition for the later right.

Table 8 provides evidence on the probability that the later right is granted. The main variable of interest is the grace case dummy (R_i). This variable is negative and significant across all models set out in the table. We first provide results from estimating OLS. These results are highly likely to be affected by selection bias. Then we provide results from instrumental variables regression. We report first the marginal effect for the grace case dummy from estimating the instrumental variables model with maximum likelihood, to address the binary nature of the dependent variable and the grace case dummy. Below this we report estimates from instrumental variables linear probability models. As can be seen the results from the linear probability models are slightly more conservative than those obtained from maximum likelihood. Identification and further tests are discussed in the Appendix (Section C).

In models IV II and IV III we allow for endogeneity of the grace case dummy and of the count of previous opposition cases based on the most frequently used earlier right. There we find a larger negative effect of using a refiled mark in an opposition case: this reduces the likelihood of grant by between 5% and 6%, relative to a mean of 68% of later rights being granted. This effect is important, it is seven times larger than a one standard deviation increase in the experience of the later right holder with opposition (0.7%) and reduces the likelihood of grant more than adding an additional opponent.

This shows that re-filing has significant benefits for earlier rights holders in opposition cases, as is to be expected. Descriptive analysis of the delay to grant in the data indicates that re-filing also increases the time it takes to reach grant, if the later right is granted. We discuss the implications of our findings in the conclusion.

5 Conclusion

The interests of earlier right owners and later right owners necessarily conflict in any system of intellectual property rights. Where the IP right is a patent the later right is an invention building on the earlier right. The need to determine whether the later right is sufficiently novel and inventive over the disclosure of the earlier right is the principal reason for examination of all patent applications.

Trademarks are linked, if they are similar enough that consumers might confuse their sources. Within the EU's trademark system the earlier right owner may oppose the application of a later right owner. Regulations underpinning EU trademark law state that the earlier right holder is entitled only to protection of their mark in so far as that mark is in use. The exception to this is the five year grace period that starts when the earlier right is first registered. The intention of the grace period is to provide applicants with sufficient time to expand the use of their mark to the full extent of the specification of goods and services attached to the mark. This is an incentive for the creation of new trademarks. Unfortunately, the grace period also attracts bad faith applicants.[31] Our analysis shows that many applicants obtain an exemption from proof of use for much longer periods than intended through the provision of a grace period. This

[31] For instance, 15% of earlier rights younger than 5 years and cited in opposition cases at EUIPO are refiled at national offices, although there is a preceding earlier right granted by EUIPO.

compounds the problems created by lack of review of trademark use by EUIPO.

It is hard to see how reliance on the logic of bad faith can provide a reliable remedy for this problem. That is because it is hard to separate bad faith applications, intended to prolong the grace period, from applications that are made to update an existing mark. This is the problem of earlier rights: not all new rights are really innovations. To separate the real trademark innovations from the incremental updates probably requires administrative review, just as in the patent system. Moreover, it is unclear why an updated mark should benefit from the grace period, if it overlaps with a preceding registration.

Clearly refiling is simpler to implement than oppositions based on the reputation of the earlier right on the basis of Art. 8(5) EUTMR.[32] This is the principal avenue to obtain protection beyond the goods and services for which a mark has been registered. If it were easy to use, excessive breadth and refiling would not be interesting for trademark owners. Our results indicate that trademark owners prefer not to rely on reputation. In addition, where the earlier right's main effect on consumers is derived from associations of the mark with natural language, falling back on reputation will be particularly difficult. Natural language components are found in many marks that are registered at the same time for different goods and services (Beebe and Fromer, 2017), which means confusion between a specific earlier right using the natural language component and the later right will be harder to establish.[33]

Our results show that reliance on third parties has created imbalances within the EU's trademark system. Those trademark owners who can afford to refile and oppose later rights frequently can create a much broader range of protection for their core brands than other users. They may risk the occasional set back when bad faith is successfully asserted, but this does not undermine the incentives they face and respond to. One reaction to this may be to believe or hope that only a small minority of firms act in this way. Then the majority of users benefit from the light touch approach to proof of use currently implemented at EUIPO. Our descriptive evidence shows that increasing numbers of firms rely on refiling and that a significant proportion of opposition cases are based in part of refiled earlier rights. In context of wider trends that result in concentration of many product markets (Philippon, 2019; Bajgar et al., 2019) this creates a further barrier to entry for smaller, younger firms. Light touch regulation of trademark use favours actors with deeper pockets and reinforces concentration.

Our analysis also has a further implication. It demonstrates that IP rights can become barriers to entry for firms that are competing over the benefit of an IP right, rather than for customers in the product market. Here the dispute about the IP right only has indirect effects for consumers. A traditional competition policy analysis would focus on direct effects in a market and may find that the firms competing over the IP right do not operate in the same product market.[34] Yet there is harm, as a registered and unused earlier right can block access to the market it is registered for and that reduces competition in that market. EU trademark law currently seems designed to make this the default outcome, because refiling is very rarely challenged and non-use can't be challenged during the grace period.

[32] Art. 8(5) EUTMR defines protection of reputed marks. Shortcomings of protecting marks on the basis of reputation are discussed by Burrell and Handler (2016).

[33] In Interflora (Case C323/09) Advocate General Jääskinen argued that it is harder to establish links between a keyword and a mark, if that mark is not inherently highly distinctive. The same logic should apply when an earlier right contains an elements common to several other earlier rights and the element is the basis for opposition against the later right.

[34] Khan (2016) argues competition policy can be overly reliant on identifying harms to consumers in product markets.

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A Clutter

The heatmaps below provide an indication of how many Nice classes are filed jointly at EUIPO and USPTO. Filings that only include one Nice class are on the diagonal. All combinations of classes are represented in the off-diagonal fields. Red indicates many filing and blue indicates few filings.

These maps show that noth offices experienced an increase in the frequency of filings combining two or more Nice classes between 1997 and 2007. The maps also show that the space of combinations is used far more intensely at EUIPO than at USPTO in both years. The only classes in which USPTO matches EUIPO in filing intensity off the diagonals is in the service related classes, i.e. classes 35-45.

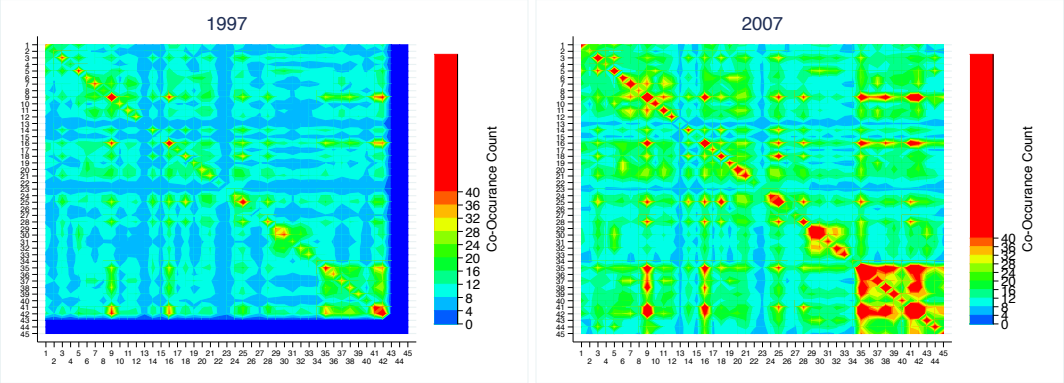

Figure 4: These heatmaps indicate how often two classes are filed in conjunction on filings at EUIPO.

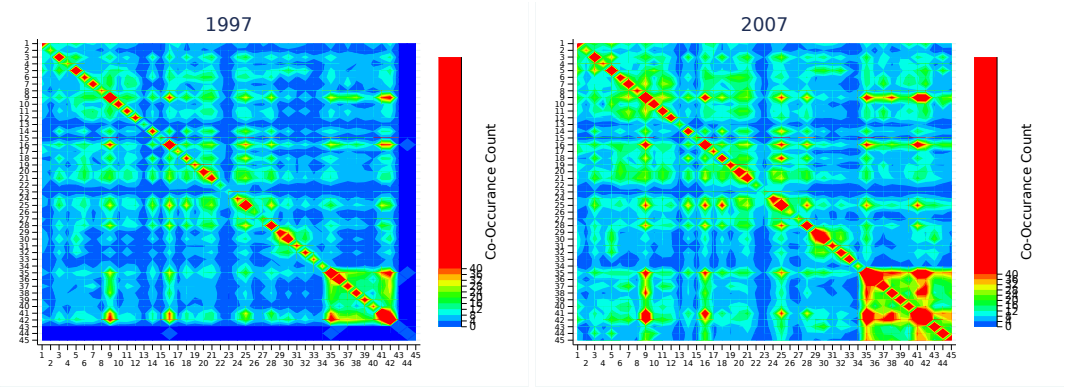

Figure 5: These heatmaps indicate how often two classes are filed in conjunction on filings at USPTO.

B Opposition

This section contains a number of additional descriptive results that complement our main findings. We show that many earlier right holders rely on the refiling strategy in opposition (Figure 6). We also provide detail on outcomes of opposition by number of earlier rights cited in each case (Figure 7).

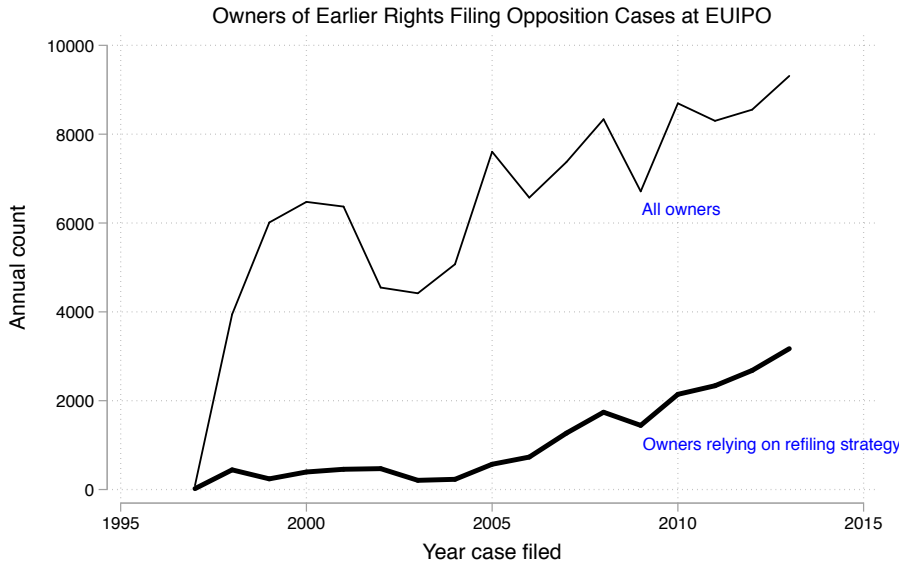

Figure 6: Owners of Earlier Rights using Refiling in Opposition at EUIPO (1996-2014)

Note: The graph shows how many separate owners of earlier rights were involved in opposition cases at EUIPO by year. The thick lower line shows how often these owners relied on the refiling strategy.

C Instrumental Variables

It is highly likely that the decision to use the refiling strategy is correlated with unobserved variables that affect opposition outcomes. Therefore refiling is endogenous. We also allow that the frequency with which the earlier right owner has previously filed opposition cases for the earlier right is endogenous. In Section 3.1 we discuss the rationale for four instrumental variables. Here we test each instrument in

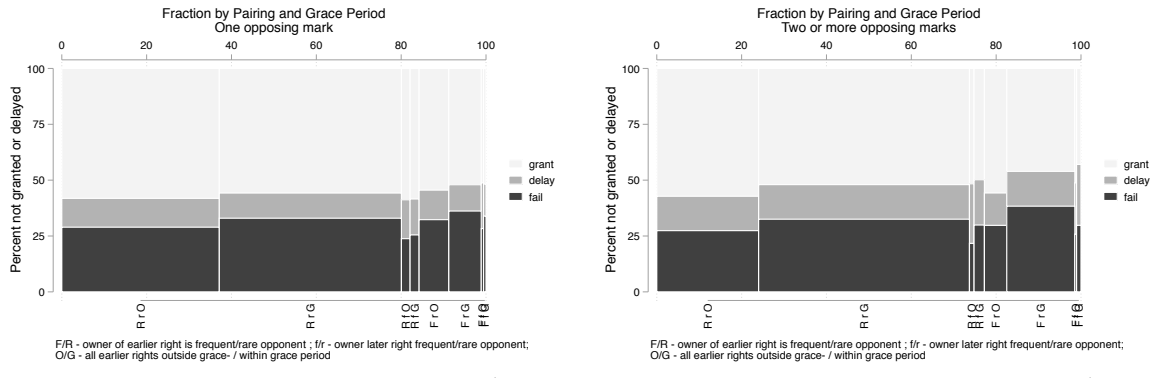

Figure 7: Outcomes of Trademark Opposition at EUIPO (1996-2016)

Note: These graphs show which proportion of opposition cases is brought by frequently opposing firms (F) and which proportion of such cases results in later rights being delayed or not granted at all. The highest proportion of cases not granted is found where the earlier right is owned by a frequent opponent (F), the later right is not owned by such a firm (r) and opposition is based on at least one earlier right that is within the grace period (FrG). Note that marks that are granted may have been narrowed in scope.[35]

turn, relying on the fact that there are more instruments than endogenous variables. Table 9 shows the exclusion restriction is met for each instrument.

Table 9: Linear Probability Models on Opposition Outcomes - Testing Instruments

	IV A	IV B	IV C	IV D
Dummy grace case (R_i)	-0.060^{***}	-0.060^{***}	-0.046^{***}	-0.055
	(0.014)	(0.014)	(0.005)	(0.067)
$\ln(\text{max(Count previous cases)})_{m,e}$	-0.036^{***}	-0.038^{*}	-0.038^{***}	-0.036^{***}
	(0.004)	(0.015)	(0.004)	(0.011)
$\ln(\text{Count previous cases})_e$	-0.000			
	(0.003)			
$\ln$ ((Count previous refiling cases))$_e$		0.002		
		(0.017)		
Average $\max(\text{Mark age})_e$			0.000	
			(0.000)	
$\ln(\max(\text{Mark age}))$				-0.002
				(0.017)
Underidentification statistic	1927.269	1616.077	2526.797	253.940
Underidentification p	0.000	0.000	0.000	0.000
Weak identification statistic	832.292	858.631	8155.441	32.097
R^2	0.024	0.024	0.025	0.025

[1] N = 181,296. Robust standard errors, clustered by earlier right owner in parentheses: $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[2] All models include year and country fixed effects for the earlier right as well as $\ln(\text{Count previous cases})_l$ and Count opponents.