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Who Influences USPTO Patent Examiners?

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Patrick Doran and Elizabeth Webster

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Who influences USPTO patent examiners?

Patrick Doran* and Elizabeth Webster†

*Department of the Treasury, Australia

†Swinburne University of Technology, Melbourne, Australia

Abstract

We test for evidence that the patent attorney has an extraordinary influence on the patent examiner using data on the location of the patent attorney and examiner citations of 167 000 applications to the USPTO. We do find this evidence which raises doubts over the objective basis of examinations.

Introduction

If there are substantial non-merit based factors in the decision to grant a patent, and if the legal right, per se, has a notable commercial effect, then a patent system is unlikely to be achieving its pro-innovation potential. There is newly emerging evidence that the legal right does influence whether or not the invention is commercialised. Unfortunately there is also evidence that non-merit based factors in the probability of being granted (de Rassenfosse et al 2018, for example, find only a weak correlation between the technological merit and grant). In this paper, we examine whether the patent attorney is one of these non-merit based factors influencing the patent examiner, *ceteris paribus*.

As mentioned, there is a slew of evidence, which shows that the legal right has an effect on commercial outcomes, over and above the technological merits of an invention. Economists have recently found that firms with a granted patent (relative to applications that were refused) have higher: stock market capitalizations, and, for patent-assertion entities, litigation rates (Feng and Jaravel 2017); inventor tenure (Melero, Palomeras and Wehrheim 2017); rates of progress to commercialization (Webster and Jensen 2011); and, for startups, employment and sales growth (Farre-Mensa, Hegde, and Ljungqvist 2017).¹

In this paper, we show indirect evidence to suggest that the patent attorney, who is a partisan agent of the applicant, is having notable effects on examiners' reports. As these reports are the determining factor justifying the grant and validation of a patent, this implies that the patent system is being influenced by factors other than the objective scientific merit of the invention.

Why is the examiner important?

To execute the law and realise the intention of innovation policy, patent examiners should judge applications purely on the technological merits of the application before them. An application for a patent should only be granted if the said invention is sufficiently inventive relative to what is already known (this is called 'prior art'). Prior art is represented in a patent report as a 'citation'. Citations can work either for, or against, the application.² They define a boundary of known technologies that deem the said application to be either highly, or marginally, inventive. The applicant is required to cite all

¹ Sampat and Williams (2017) also found that examiner leniency had no dampening effect on follow-on innovation. This 2017 body of research follows earlier work by Cockburn, Lerner and Stern (2003) and Lichtman (2004) Lemley (2009) that found examiner heterogeneity affects the examination outcome.

² According to Alcácer, Gittelman and Sampat (2009), prior art citations may be used to limit or reject a patent, or to strengthen claims by establishing that earlier inventions are different or inferior to the current invention.

prior art they know of, but in addition, the examiner may cite further prior art to justify their decision. Cotropia, Lemley, and Sampat (2013) claim that patent examiners rarely use applicant-submitted prior art to narrow patents but rely almost exclusively on their own prior art.

The examination takes place over an extended period (often several years) during which time there is regular interaction between the patent attorney and the examiner. The patent attorney will typically seek not only a grant for his or her client, but a grant with the broadest possible set of rights. It is well established that examiner fixed effects explain a significant percentage of the variation in grant rates and the extent of the rights embodied in issued patents (Cockburn, Kortum, and Stern, 2003; Lemley 2009; Frakes and Wasserman 2017). The technical complexity, depth and fast-moving nature of scientific knowledge makes the examiner's task difficult, especially as the average time they take to review each application is about 19 hours (Frakes and Wasserman 2017; Kuhn and Younge 2016). By contrast, a patent attorney may spend between 10 - 80 hours on each application depending on the complexity of the technology.³

Method

The frequency with which citing and cited examiner-added patent pairs share the same attorney firm is used to infer whether or not examiner reports have been influenced by attorneys. If this occurrence, is higher than what we would expect to occur 'naturally' (as similar technologies in close proximity will tend to use the same expert attorney), then there is a prima facie case of attorney influence.

We use citations added for the international search as a base-line measure of the propensity for citations to occur between applications which involved the same patent attorney. International search is undertaken at about 16 months after filing without interaction with the attorney, and, as the search authorities sit in central locations (e.g. Washington DC), without undue influence from location.⁴ Accordingly, any tendency for citing-cited patents in international search report to share an attorney should reflect only the tendency for specific technologies tend to cluster in geographic areas and therefore to use the same local attorney firm.

Examiner-added citations should also be blind to both geographic location and identity of the attorney. In an ideal world, examiners make their decisions based purely on the technological merits of the application before them. Any difference in the propensity for examiner citations on the one hand and international search citations on the other, to cite prior art from the same attorney, would therefore suggest an influence of the attorney firm on the examination process.⁵

Data

The main data source is the EPO Worldwide Patent Statistical database PATSTAT. It provides information on applicant name, filing date, and country of residence. The USPTO legal status data were extracted from the Public Pair on-line database. Attorney information was collected during 2016–2017 from the USPTO Bulk Downloads of Patent Application Information Retrieval Data. USPTO

³ Representative estimates of patent attorney fees and time allocations are hard to find. This estimate comes from <http://www.ipwatchdog.com/2015/04/04/the-cost-of-obtaining-a-patent-in-the-us/id=56485/>.

⁴ It is possible that Paris Convention applications to the USPTO convert to PCT after they have had an initial 'first action' by the USPTO examiners. In which case, it is possible that after the first action, some dialogue has occurred with the patent attorney, and this has then influenced the PCT International Search Report. However, given the time to first report was on average between 14.7 to 25.3 months (over 2002 to 2007) and the International Search Reports are done at 16 months, this is unlikely to have occurred. See United States Patent and Trademark Office (various).

⁵ Analysts have previously used data on the co-location of inventors who cite each other to infer whether, or not, there has been some personal interaction between inventors (Jaffe, Henderson and Tratjenberg 1993). If inventors (acting as the applicant) are more likely to cite other inventors in their local area than what is expected given the distribution of all inventors across their field, then it is probable that physical proximity has led to greater personal interaction and familiarity with each other's inventions.

patent attorney firms were identified and harmonised using a bigram match described in Julius and de Rassenfosse (2014).⁶

The dataset contains all US-applicant patents that were filed in at least one of the other IP5 offices (Europe, Japan, Korea and China) between 2001 and 2006 (Paris and PCT applications).

This dataset gives 167 580 distinct US-applicant⁷ patents, in which at least one examiner citation was matched to a patent attorney firm. Only citations to patents within the dataset are included.

Results

Table 1 shows the percentage of citing-cited patent pairs that use the same attorney firm according to the source of the citation. The base case, international search report citations, reported that only 1.8% of pairs use the same attorney firm. In contrast, examiners are citing from the same attorney firm more than four times as often. We include applicant-added citations for comparative reasons only. We expect to see a higher percentage of same attorney citations in applicant-added citations as we know and expect that the attorney will influence his or her client.

Table 1: Use of same attorney firm for citing and cited patent by source of citation, USPTO, 2001-2006

	International Search Report citations	Examiner-added citations	Applicant-added citations ^a
Different attorney firms (%)	98.2	91.6	84.0
Same attorney firm (%)	1.8	8.5	16.0
Total (number)	83,790	62,908	20,882
Total (%)	100.0	100.0	100

Note: Excludes self-cites. Pearson $\chi^2(2) = 7.0e+03$

Table 2 presents the same information in a probit regression framework. The dependent variable = 1 if the same attorney firm is used; =0 otherwise; and the explanatory variables are whether or not the citation is examiner-added; applicant-added (with missing being international search report added: whether in the same IPC 4 digit technology class. We model this equation for the whole sample of 167,534 pairs and for a sample where the citing and cited patent are not from the same local area (US Core-Based Statistical Areas or CBSA).

⁶ http://melbourneinstitute.unimelb.edu.au/downloads/working_paper_series/wp2014n15.pdf

⁷ Applicants are deemed 'US' if they gave at least one US address on their application.

Table 2: Dependent variable = 1 if same attorney used for citing and cited patent, USPTO, 2001-2006 (probit)

Explanatory variables	(1) All citations	(2) Non-CBSA match sample
Examiner added citation (1/0)	0.701** (0.013)	0.473** (0.043)
Applicant added citation (1/0)	1.094** (0.015)	0.702** (0.044)
IPC 4-digit match (1/0)	0.207** (0.014)	0.145** (0.042)
Constant	-2.255** (0.015)	-2.138** (0.042)
Observations	167,534	16,439
Pseudo R-squared	0.0923	0.0514

Note: Standard errors in parentheses ** p<0.001, * p<0.005

Both empirical methods show the same pattern. Examiner citations are proportionately more likely to include prior art that shares the same patent attorney as the citing patent. This leads us to suspect that the attorney is influencing the consideration of the examiner. Whether this influence is a factor in the low quality of US patents is conjecture but the results here suggest it deserves further consideration.

Conclusion

Societies must decide how they use technology and how they reward different types of producers. The patent system is an institution society has designed to hasten innovation and improve global well-being. As with all institutions, it is open to subjective decision and potential client capture. Azagra-Caro and Tur (2014) have found evidence of national bias within EPO patent examiners. This is not to scapegoat examiners. Kuhn (2010) has pointed out that examiners are overloaded with information and it is unrealistic to expect them to be perfect unbiased assessors. The time is ripe and the evidence strong for a reassessment of how the international patent system should operate.

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