

# From Technology to Market: Revelations from an IPC-Nice Concordance Table

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## Measuring Innovation

Patent filing data can be a rich source of information when used as a proxy for measuring a firm's innovation practices. If a firm has filed for a patent, they will make sure that the application is correctly filled out. As a result patent information is typically quite detailed, broad and longitudinal.

However, patent filing information doesn't tell the whole story. Not all inventions are patented, and not all patented inventions are equally as valuable.

In this study we aim to supplement the patent filing information with trademark filing information in order to fill in some of these blanks.

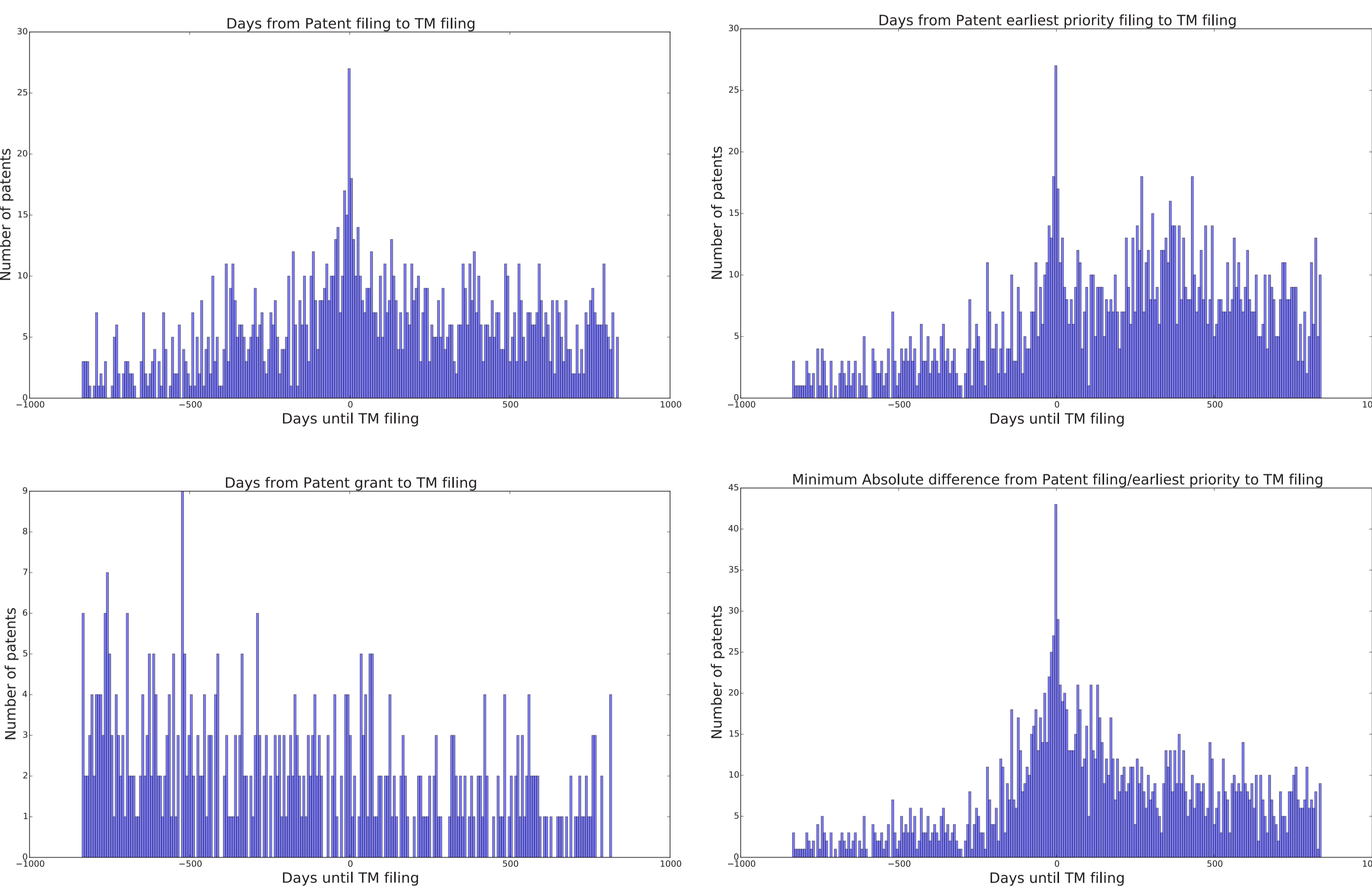


Figure 1: Days between patent activity and trademark filing for firms with 1 patent and 1 trademark family

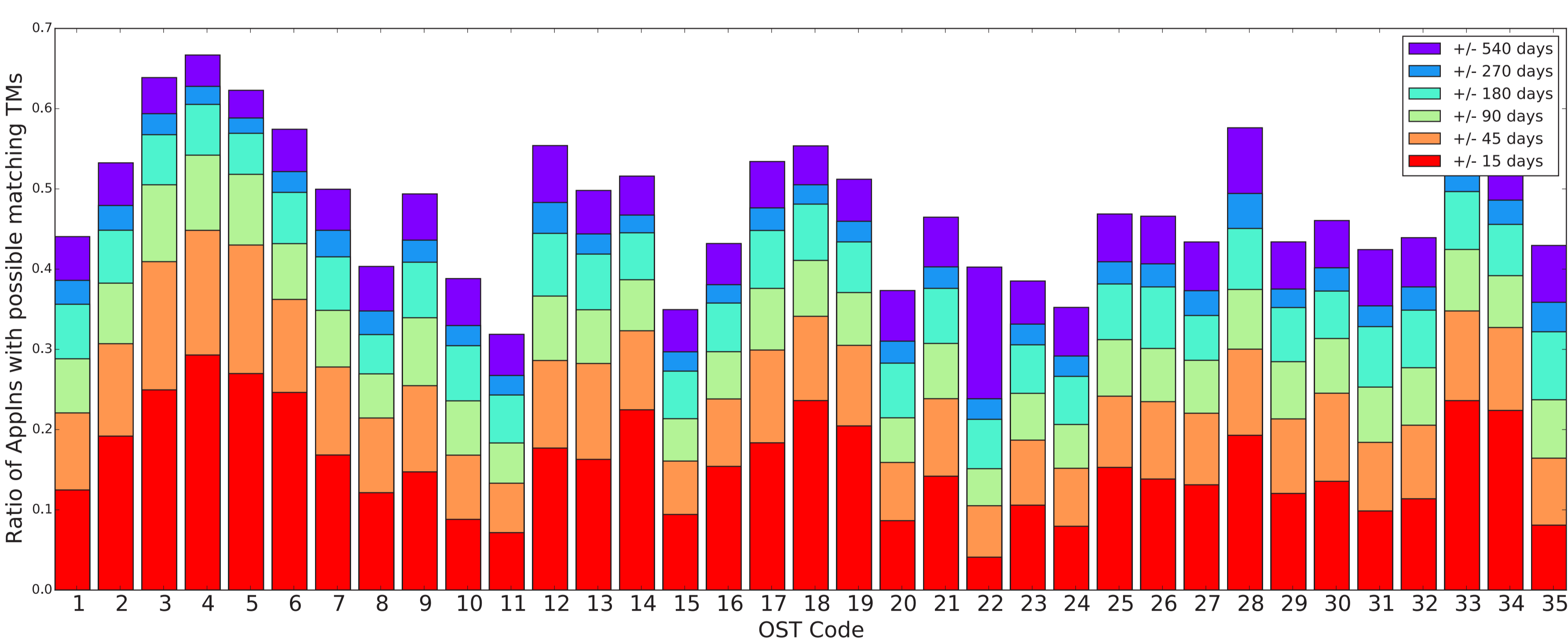
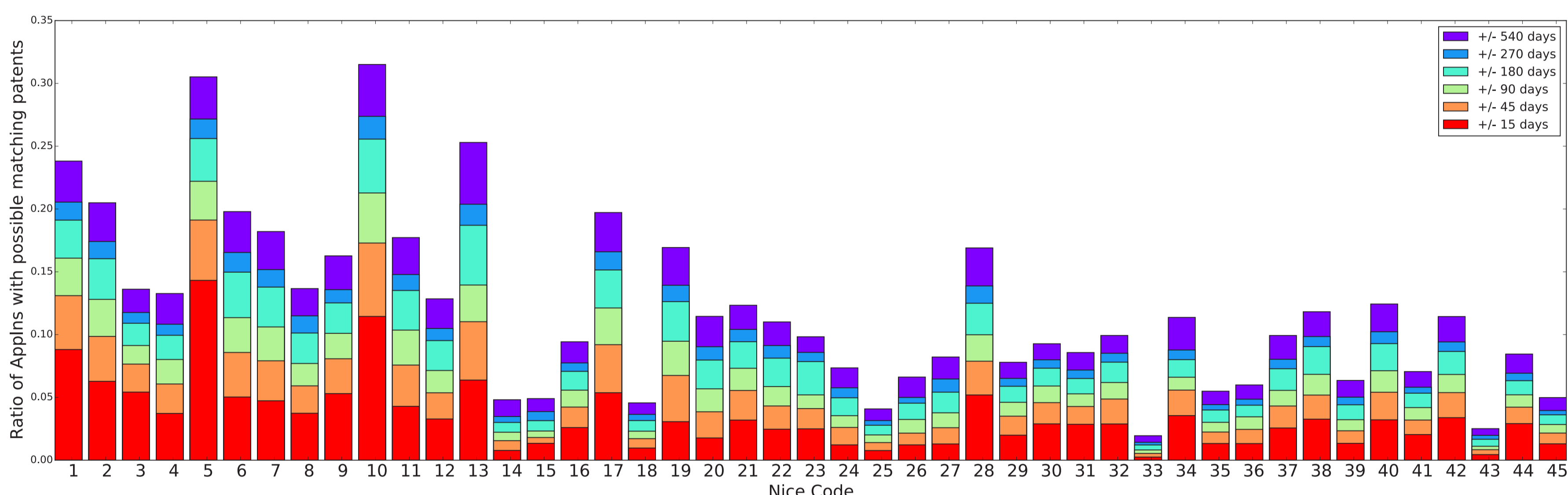


Figure 2: Applications with matching IP rights by class

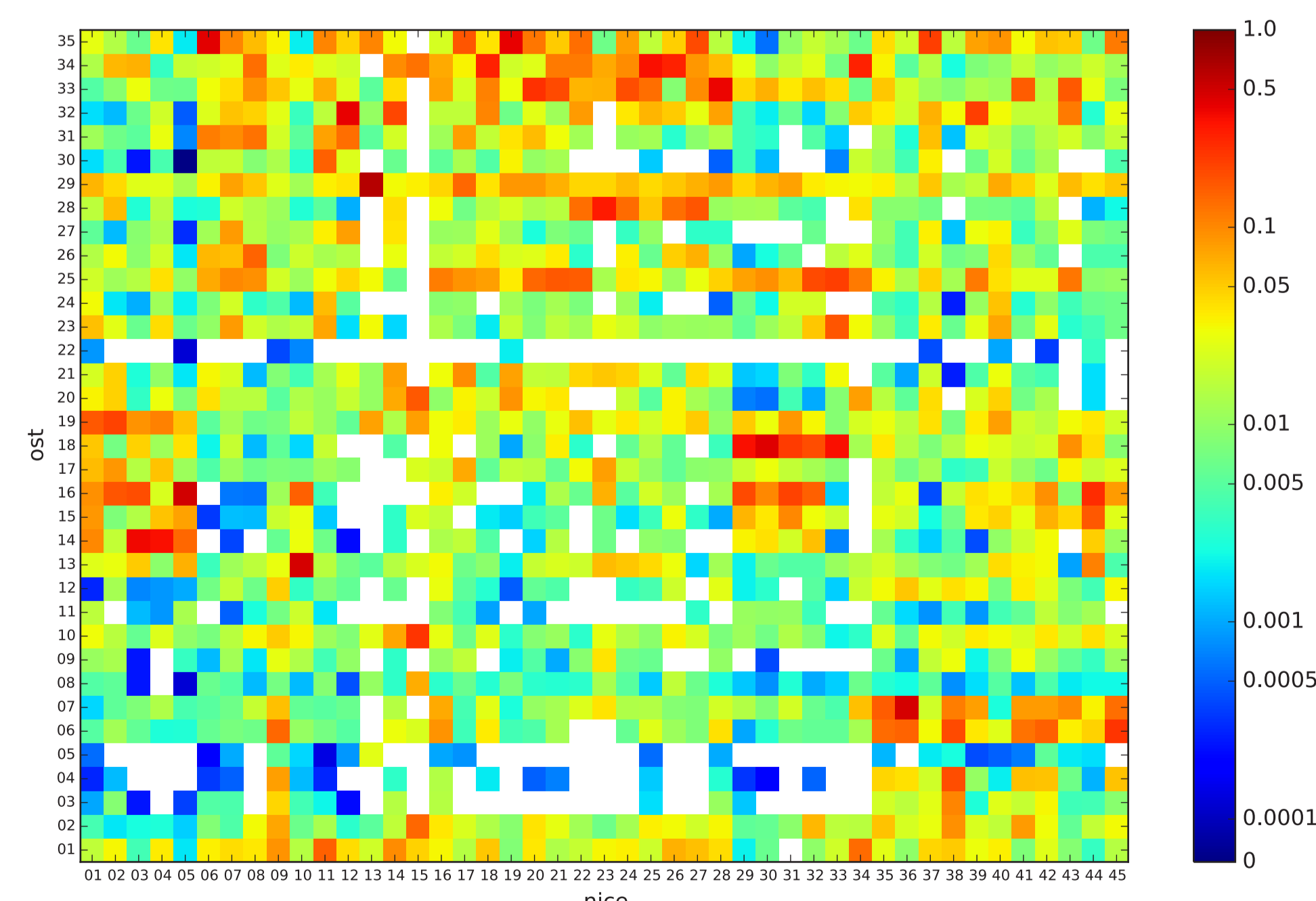


Figure 3: Trademark filing intensity by technology class

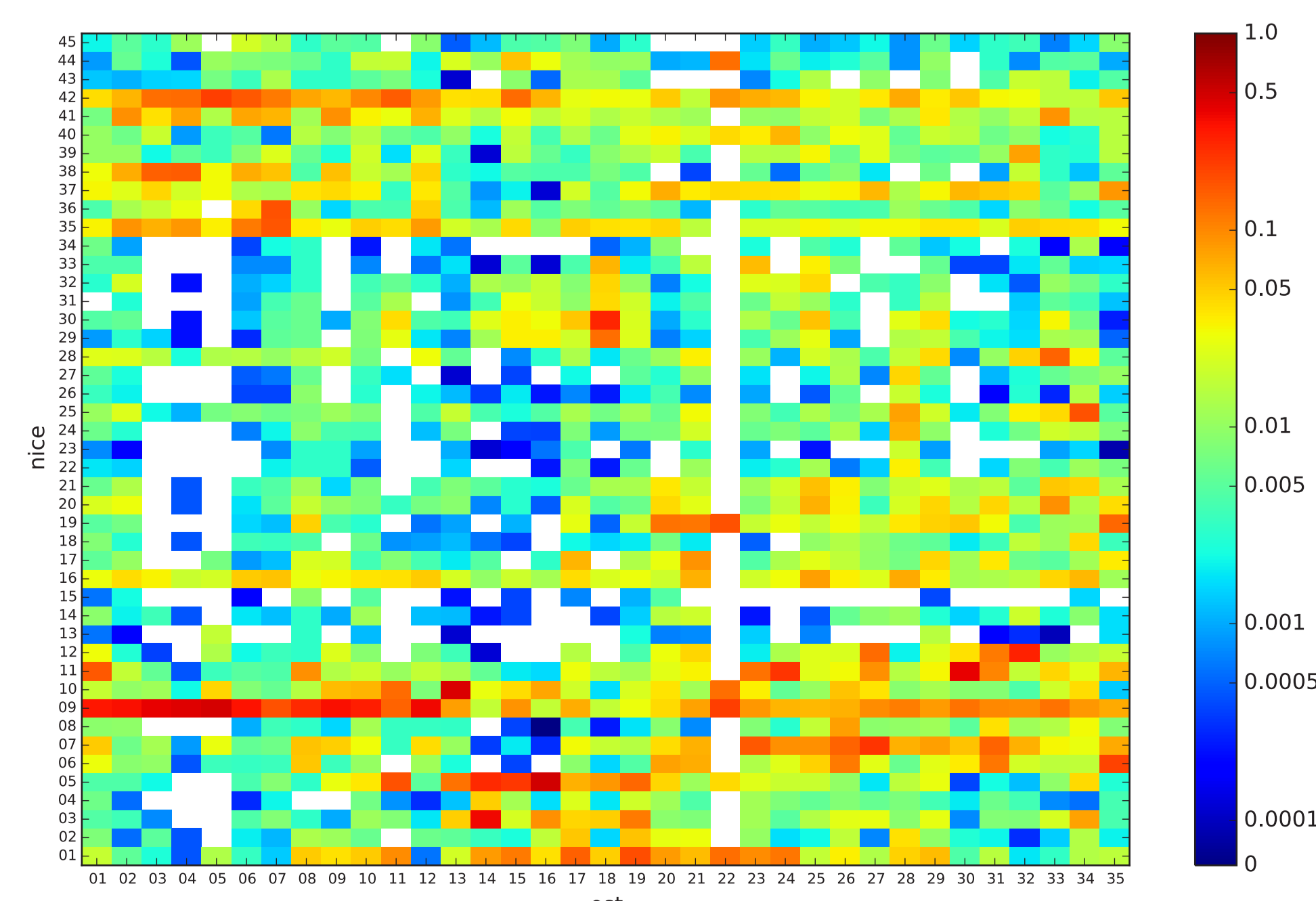


Figure 4: Patent filing intensity by Nice class

## The Data

The Intellectual Property Open Government Data (IPGOD)<sup>1</sup> contains information on all intellectual property rights (patents, trademarks, design and plant breeder's rights), with applicant firm names harmonised and assigned unique identifiers for applications filed since 1980. Australian Business Numbers (ABNs) have been linked to Australian firms where possible.

This is a publicly available dataset that is free to download online.

Number of patent applications	537,619
Number of 'Standard' patent applications	517,815
Number of trademark applications	1,121,388
Number of applicant firms	1,988,875
Number of unique applicant firms after harmonisation	411,384

Table 1: IPGOD Statistics

## Identifying Patent - Trademark Pairs

Due to the amount of data, firm filing activity was measured for the period following 1996. During this period, 306,228 unique firms filed for at least one trademark, 62,763 filed for at least one patent, and 18,068 filed for at least one of each type of IPR.

However, not all patents and trademarks filed by a single firm are necessarily related to each other. By examining the filing behaviour of firms with a single patent and single trademark family (a group of trademarks filed on a single date), we tried to work out what features might help us to distinguish actual Patent-Trademark pairs from background noise.

Trademark filing date was compared to the patent's filing date, earliest priority filing date and grant date. The grant date of the patent was found to bear no obvious relationship to the trademark application date. Trademarks appeared to be filed at a similar time to the patent or the patent's earliest priority date. Ultimately the filing date or earliest priority filing date was used based on which number produced the smallest absolute time difference.

## Generating a Concordance

Patents are assigned International Patent Classifications (IPCs) to describe the technological to which an invention pertains. There are thousands of possible IPC codes, so in order to produce a usable result we have used the 2008 Schmoch IPC-OST concordance<sup>2</sup> to reclassify patents into 35 technological classes.

Trademarks are assigned Nice codes, which identify the area of the market in which a trademark is applied.

By observing the classes in which firms file for patents and trademarks we can identify market areas that are heavily innovative. For instance there is a high density of patenting activity across the technology classes for firms that trademark in Nice class 9, (includes scientific instruments and apparatuses, recording devices and computer software). However, there is not a great deal of innovation happening in Nice 23 (Yarns and threads, for textile use).

Another interpretation is that technology classes with low trademarking activity are indicative of intermediate technologies or technologies that are used in the creation of final technologies, or technologies that are sold directly to the consumer. Intermediate technologies are more likely to be used by other parties using their own trademark rather than by the patent owner.

Intermediate	Final
Semiconductors (8)	Audio-visual Technology (2)
Technologies for Control/measurement/analysis (10)	Telecommunications (3)
Materials; Metallurgy (20)	Information Technologies (4)
Biotechnologies (15)	Agricultural and food Products (14)
Environmental Technologies (24)	Consumer Goods (34)

Table 2: Intermediate and final OST classes

1. <https://data.gov.au/dataset/intellectual-property-government-open-data-2016>  
 2. IPC to OST - Schmoch, Karlsruhe: Fraunhofer ISI (2008)