Do Patent Systems Improve Economic Well-Being?

An Exploration of the Inventiveness of Business Method Patents

A thesis submitted for the degree of
Doctor of Philosophy
of
The Australian National University

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Statement of Originality

This is my original work

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Hazel Veronica Jane Moir

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The above statement is made in accordance with ANU Sub-rule 15(2)
Acknowledgements

This thesis has been written to advance the cause that public policy should be made in the public interest, rather than to the benefit of small sections of the community. It is dedicated to the citizens of all countries where economic welfare has been reduced because of accession to the Treaty on Trade Related Aspects of Intellectual Property Rights (TRIPS).

The research has been made possible by a scholarship funded jointly by the Crawford School of Economics and Government and the Australian National University. I would like to thank the Crawford School and the University for providing this opportunity.

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Finally I would like to thank my friends for their forbearance as I regaled them with new-found stories about the oddities and absurdities of the patent system in practice.
Do Patent Systems Improve Economic Well-Being?
An Exploration of the Inventiveness of Business Method Patents

Abstract

The reach of the patent system has substantially broadened in recent decades. Subject matter extensions (to life forms, software and business methods) were not introduced by parliaments, but by individual judges considering specific cases, often between private parties. The focus in this thesis is whether these changes create a net economic benefit to society. Because of the lack of data on patents, it is not possible to address this question directly. The thesis therefore focuses on a critical aspect of patents: their inventiveness.

Patents were designed to increase the quantum of inventions used industrially in a society, thereby increasing employment, income and wealth. To provide an incentive to the inventor, a limited term monopoly was granted. Society therefore benefits if the induced inventions generate benefits greater than the monopoly costs. This depends critically on the inventiveness threshold for patentability.

The main contribution of this thesis is a detailed empirical assessment of the inventiveness of patents. This assessment breaks new ground by using the *actual claims* in the patent specification as the basis for a qualitative assessment against the yardstick of *whether there is any new contribution to knowledge*. This yardstick is used because a key social benefit from private invention is the spillovers from new knowledge. In addition a low inventive threshold encourages monopoly grants for inventions that would have occurred absent patents, and thus increases social costs without any offsetting benefits.

A small universe of 72 recently granted Australian business method patents is assessed on this basis. Of these, one possibly contributes new knowledge, and three others possibly contribute new ideas, but without any associated new knowledge. It is hard to find any contribution in the rest of the dataset. The data suggest that the large majority of currently granted patents produce no benefit to society, and do not meet the normal definition of the concept of “invention”.

The detailed analysis shows the underlying problems to include identifying previous knowledge, an issue already suggested by the literature, but more extensively documented here. The legal judgement rules developed through case law are shown to be very poor yardsticks for implementation of an important economic policy. The
narrow legal doctrines result in, for example, the computerisation of well-known methods being judged both novel and inventive. They also allow obvious combinations of old ideas, and trivial variations on old ideas to be granted patent monopolies. Despite the analogous use doctrine, patents are granted for the application of known methods to new areas for which they are well suited.

A number of proposals are put forward for reform of patent policy. The underlying theme is that there should be a good chance, and clear evidence, that the patent system enhances national economic well-being. Specific proposals include writing the objective of patent policy into the statute so that judges have clear guidance in their decision-making, limiting the grant of patents to science and technology based inventions, requiring the patent applicant to demonstrate novelty and inventiveness beyond reasonable doubt, setting the inventiveness standard in the context of a balance between benefits and costs, and introducing a defence of independent invention.

As the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) mandates no discrimination under patent law between fields of technology, the results of this investigation may be generalisable to other technology fields. They may also be generalisable to the inventiveness standards in other jurisdictions: of the 72 Australian patents, 32 have already received at least one overseas grant (18 if New Zealand is excluded).
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Acronyms

ACIP  Australian Council on Intellectual Property
ALRC  Australian Law reform Commission
ANZAAS  (The) Australian and New Zealand Association for the Advancement of Science
AUSFTA  Australia United States ‘Free’ Trade Agreement
BERD  Business expenditure on research and development
BIE  (Australian) Bureau of Industry Economics
BPAI  Board of Patent Appeals and Interferences (internal USPTO Board)
CAF C  Court of Appeals for the Federal Circuit
(CAFC) (the US court which hears all patent appeal cases)
CBO  (US) Congressional Budget Office
CEO  Chief Executive Officer
CIPO  Canadian Intellectual Property Office
CIS  Community Innovation Survey (European Union)
CSIRO  Commonwealth Scientific and Industrial Research Organisation
(DSM) (an Australian publicly funded research institution)
DRM  digital rights management
EPC  European Patent Convention
EPO  European Patent Office
EU  European Union
GATT  General Agreement on Tariffs and Trade
IBM  International Business Machines Pty Ltd
IPI  International Intellectual Property Institute
INPADOC  International Patent Documentation Center (EPO database)
IPAC  (Australian) Industrial Property Advisory Committee
IAustralia  Intellectual Property Australia (including the Australian Patent Office)
IPC  International Patent Classification (system)
IPCRC  Intellectual Property and Competition Review Committee
IPER  International Preliminary Examination Report (issued under PCT arrangements)
IPONZ  Intellectual Property Office of New Zealand
IPSR  International Preliminary Search Report (issued under PCT arrangements)
IRS  Internal Revenue Service (US)
JPO  Japanese Patent Office
JSTOR  Journal Storage: an online archive of academic journals (www.jstor.org)
NAFTA  North American Free Trade Agreement
NBER  National Bureau of Economic Research (USA)
NOIE  (Australian) National Office for the Information Economy
PAIR  Patent Application Information Retrieval (a USPTO database)
PCT  Patent Cooperation Treaty
R&D  Research and development
RFID  Radio-frequency identification
SPLT  Substantive Patent Law Treaty
TBA  Technical Board of Appeal (part of European Patent Office)
TRIPS  (Agreement on ) Trade Related Aspects of Intellectual Property Rights
USPTO  United States Patent and Trademark Office
WIPO  World Intellectual Property Organization
WTO  World Trade Organisation
**Glossary, terms and abbreviations**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>art</td>
<td>technology</td>
</tr>
<tr>
<td>citations</td>
<td>the specific pieces of pre-existing knowledge provided in a patent application or identified by the examiner in examining the application</td>
</tr>
<tr>
<td>citations, forward</td>
<td>the extent to which a patent is cited as ‘art’ by later patent applications</td>
</tr>
<tr>
<td>claim(s)</td>
<td>that part of a patent specification which sets out the area claimed as the invention, and thus claimed as a monopoly</td>
</tr>
<tr>
<td>Compustat</td>
<td>a US database of firms, owned by Standard &amp; Poor’s</td>
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<tr>
<td>expedited examination</td>
<td>fast-track examination</td>
</tr>
<tr>
<td>family</td>
<td>a group of patents which are related to each other by way of the priority or priorities of a particular patent document</td>
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<tr>
<td>FDI</td>
<td>foreign direct investment</td>
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<tr>
<td>filing</td>
<td>application</td>
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<td>GL</td>
<td>General Ledger</td>
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<tr>
<td>ID</td>
<td>identification</td>
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<tr>
<td>integer</td>
<td>element</td>
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<tr>
<td>IPR</td>
<td>intellectual property rights</td>
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<tr>
<td>manner of manufacture</td>
<td>defines a patentable invention in Australia, and is interpreted as defined in Section 6 of the 1623 Statute of Monopolies</td>
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<tr>
<td>modified examination</td>
<td>exempted from examination in the country as already examined in an approved overseas country</td>
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<tr>
<td>OCR</td>
<td>optical character recognition</td>
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<td>pdf</td>
<td>Adobe's portable document format (for electronic documents)</td>
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<td>POS</td>
<td>point of sales</td>
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<tr>
<td>prior art</td>
<td>previous knowledge; exactly what material can be used is defined in statute and case law and differs depending on the purpose for which previous knowledge is being used</td>
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<td>priority date</td>
<td>the date which defines the body of existing knowledge for a particular patent claim (knowledge at this date)</td>
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<tr>
<td>prosecution</td>
<td>the process of applying for a patent</td>
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<tr>
<td>PSA</td>
<td>person skilled in the ‘art’</td>
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<tr>
<td>Section 301</td>
<td>of the US Trade Act (empowers US government to deny access to the US market if patent or copyright legislation in that country is judged &quot;unfair&quot; to US producers)</td>
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<tr>
<td>SME</td>
<td>small and medium sized enterprise</td>
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<tr>
<td>SMS</td>
<td>short message service (text message, usually sent by mobile phone)</td>
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<tr>
<td>VAT</td>
<td>value added tax</td>
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<tr>
<td>WAP</td>
<td>UK patent status code (withdrawn or refused or deemed either)</td>
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<tr>
<td>Yale survey</td>
<td>Yale University Survey of firms (1984, US)</td>
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**Patent country codes**

Country codes indicate the country or organisation where the patent application was filed or granted. Selected standard codes used for patents are:

<table>
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<td>South Africa</td>
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<td>IT</td>
<td>Italy</td>
<td>WO</td>
<td>World Intellectual Property Organisation (WIPO)</td>
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**Note:** The patent community uses GB as the code for the UK. But as the UK patent system also covers Northern Ireland, the technically correct abbreviation for the United Kingdom, UK, is used here. Great Britain correctly refers only to England, Scotland and Wales (see [http://www.direct.gov.uk/en/Hl1/Help/ YourQuestions/ DG 10015114](http://www.direct.gov.uk/en/Hl1/Help/ YourQuestions/ DG 10015114), accessed 2 January 2008.)