

The Breadth of Patents

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I. Introduction

The breadth of patents means how broadly the claims are interpreted.

If we consider broad and narrow patents simultaneously, we can understand it much more clearly. Under broad rule, there occurs incentives for basic research.

We can discuss optimal patents duration considering pro and cons of a certain range of patents protection.

We distinguish research from development from the perspective of stages of innovation. Broad patent rule gives incentive for basic research rather than applied research or commercialization.

Table 1: Patent Breadth Rules Gives the Incentive for Different Research (Cooter and Ulen, 2003)

<Patent Breadth, Cooter and Ulen 2003>

1 Broad Rule: fast, duplicative research

Narrow Rule: slower, complementary research

2 Broad Rule: pioneering, fundamental research

Narrow Rule: development, small improvements, commercial applications

Fundamental research jointly produce pioneering inventions and commercial applications.

It is important to see which effects the breadth of patent gives to industry. It may also be important to find optimal (horizontal) range of patent protection. To do this, this paper first tries to make an introductory discussion based on the concept of patent thicket in Section 2. In Section 3, it also summarizes and concludes.

II. Optimal breadth of patent

1. Optimal Patent Breadth

Table 2 shows most efficient case depending whether social value of research is larger or smaller than that of development.

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Table 2: Efficient Patent Breadth Rules(Cooter and Ulen, 2003)

Invest	commercial value	social value 1	social value 2	efficient breadth
\$100,000 in research	0	research >	< development	broad
\$50,000 in development	\$1 million			narrow

Research produces pioneering invention sometimes. Under a broad rule, the incentive for fundamental research is increased. In the case of the above table, if social value of research with commercial potential is larger than that of development, government should set broad rule for yielding pioneering discovery.

Tirole(1988) classifies three stages of research:

...basic research aimed at deriving fundamental knowledge

...applied research associated with engineering

...and development, which brings product and process into commercial use...

We can show that different rules for patent breadth yield different incentives for each stage of research.

2. Patent thicket

Recently, firms have invested in acquiring patent thicket, which is owning a broad range of patents. (Varian, 2006)

For example, Microsoft licensed InterTrust(computer security), and Sun Microsystems(patent issues) paying enormous amount of money. The value of thicket is to use in cross-license agreement. That is, it is used as bargaining chips.

That is, if HP sues IBM, than IBM can countersue using other patents as patent thicket.

Bessen and Hunt(2003) showed that SW patents are substitutes for firm R&D, and that firms use SW patents as strategic patent thicket to limit their competitor.

Table 3: Distinguishment of research on two inventions

Types	
Basic	Development
Pioneering	Commercial applications
Duplicative	Complementary
Dominant patent	Subserviant patent
Fundamental	Commercial applications
Fast	Slower

3. Role of Breadth

With regard to optimal breadth, there is an argument of Kitch that letting the the discoverer get on with the management property.

Scotchmer argue that pioneer and follow-on research coordination is important in patent protection. So, optimal breadth should be set to balance these two research efforts.

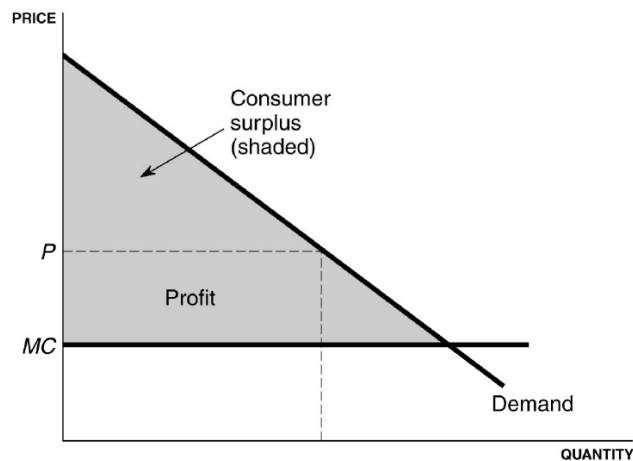


Figure 1: Patent protection and Consumer-surplus effects

As Fig 1 shows, patent protection is inefficient, since consumer's surplus is transferred to monopoly profit. In determining optimal patent breadth, we should consider this efficiency.

For references, we examine the distinguishment for product, market, and industry.

In monopolistic competition theory, the industry of differentiated products are defined as: First, consumers think they are different. Second, if two brands are substitutes, then the pricing strategy of one brand affects that of the other. Third, a product group has many firms producing differentiated commodities.

In anti-trust law, the definition of market is important. In merger or antitrust cases, this job affects social welfare in diverse way. Marshall(1920) defined market: prices of the same goods tend to equality..... This market definition specifies the competing commodities where competition occurs.

Compared to these definitions, the range in patent law is mainly about the distinguishment between fundamental and complementary inventions. So, more sophisticated classification is needed for enhancing (production) efficiency.

III. Conclusions

Patents have three dimensions: length, breadth and height.

Length means the duration of protection, breadth the extent or range for protection, and height the standard of novelty.

Cooter and Ulen(2004) provide the following exaple for discussing optimal breadth of patent.(Tab 4) They say that under a broad rule, incentive for fast and duplicative research is increased. So, we can conclude temporarily that courts should compare social value of two investment: fundamental invention vs developing applications.

Table 4: Comparison of Social Value Between Two Inventions

Types	
Basic	Development
At universities and government agencies	Brings products and processes into commercial use
Case 1. Improving oil-cracking processes	Providing a substitute for lead in gasoline
Case 2.	
.....	

It seems that major discussions for patent are for duration. In determining policy goals for the incentive of basic research or development, the decision for the range of protection is important.

This article aims to introduce briefly the issue of boundry line of patent protection. “Fundamental research” may be postponed to future research.

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