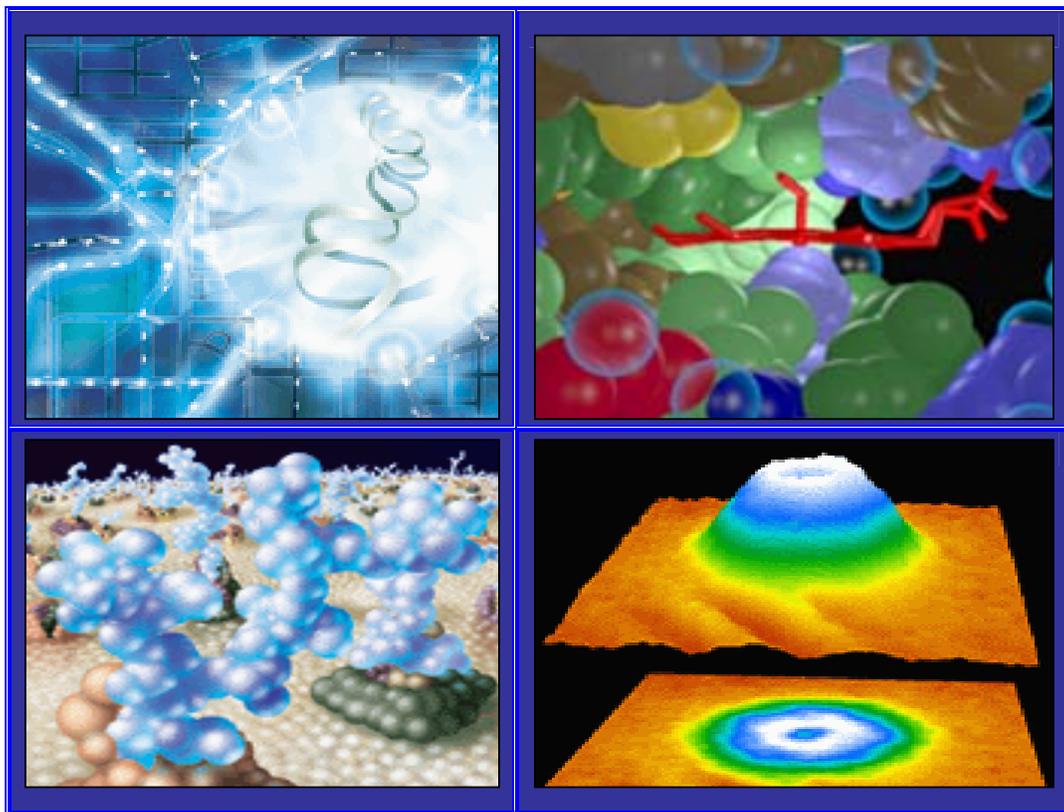


UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

# INTELLECTUAL ASSETS: VALUATION AND CAPITALIZATION



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**SERIES: INVESTMENT PROMOTION**

**INTELLECTUAL ASSETS:  
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## STRATEGIC QUESTIONS REGARDING THE PATENTING SYSTEM - GLOBAL MARKET ACCESS DEMANDS IPR PROTECTION

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### Introduction

The role patenting is playing in corporate strategy and more generally in the global economy at large is changing. During the last two decades, it has become a key instrument for *market access* and *trade* strongly associated with economic development in a more “co-productive” fashion. The previous “monopoly right” is converging in *usage* towards an instrument to secure market access through intellectual assets, or property, when the economy goes from a regional product economy to a global service economy.

### Management of risk<sup>53</sup>

The sole purpose of patenting, from a corporate perspective, is then to manage the risk and uncertainty in the (global) market. This view of patenting best explains the usage of the patenting system. It also gives a way of thinking for changing the system to become more efficient in absorbing risks and uncertainties in today’s more complex and uncertain world. The patent *right* is transferable with mutual consent and thereby provides a basis for a “market in ideas”. Not only the customer’s are customers but also strategic partners become customers to the technology you have developed. This transferability or right puts competition closer to the customer. Knowledge becomes a tradable commodity in the patenting process. This commodity can be traded, licensed, cross-licensed, introduced in international standards and securitized (to get a financial value and access to capital markets), etc.

### I. Management of intellectual resources

#### General structure

The general legal structure of assets is divided into two categories: Physical assets and intellectual property rights.

Physical assets are defined as “value in possession”. This means that the value is there whether you do something or not. You must use it to create value but the right, and the value, is in the possession of the object. Here a portfolio strategy can be developed to spread risks effectively.

Intellectual property rights, IPR, on the other hand, are “value in action”. You don’t possess any asset but the only value is in doing something with the right. These rights are therefore much more connected to the *management* of this opportunity. A portfolio of IPRs has been used for long to spread risks here but since the action part demands knowledgeable people (working typically in companies) a more “systemic” view of the value creation is demanded to get the most out of the asset. This is true both for the creation of these assets and the exploration of the assets. Trading these rights therefore becomes a basic tool, a commodity, of the new, more knowledge driven, service economy. Here several constraints are present today due to the rather recent development of this trade. The developing countries, and small countries, are here challenged the most to be able to participate in the “global trade” of IPR. The usage of *patents* for market access then becomes most challenging for economic actors in securing their intellectual property worldwide.

### II. Capitalization

The capitalization refers to the theme of the paper – “Strategic questions regarding the *patenting* system - Global market access demands IPR protection”.

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<sup>53</sup> Risk management issues discussed: *Risk Management – from portfolio strategy to value creating systems strategy*, Ullberg, et. al. Geneva Papers, July 2002.

### III. The patenting system challenged

This development towards the *usage* of patents and IPR is moving the whole patent industry “from patent to patenting”. A *system* of value creation is developing, rather than “technology monopolies” of competing actors. This is in particular true in complex technology industries like IT, where no single actor has “monopoly” on all technologies used in a product, for example a single computer, to be competitive in the market place.

This challenges traditional ways of doing business and managing risk. The “obvious” rights to market access it not so obvious anymore. The need for securing IPRs increases if one wants to have direct customer relations and not only become a “supplier” in the system.

This development is however not only technological nature but of a business logic nature. The previously dominating “production logic” where the production of the product is at the center is being replaced by a “service logic” type of value creation where the knowledge is at the center. This shift in logic challenges the whole patenting system. New ways of doing business, in close collaboration with the customer, innovating “business concepts” rather than innovating technology also poses needs for increased risk taking. However, the patenting systems of were not made for this “non technology” aspect of innovation.

This has led to different position worldwide. In the US “business method” patents are in fact granted. These patents are not technology patents but “schemas” of doing business. “Abstract schemas” are traditionally not patentable. In Europe the technology position is firm – no business method patents. Japan follows the US approach. The effect of this is that other, less efficient, IPRs are used to manage risk like trademarks, copyright, design, undisclosed information, geographical indication, licensing agreements (for software) (WTO/TRIPS IPRs).

The patenting system is therefore challenged as instrument to absorb risk in the “new” global service economy.

At the same time it is the “service sector” or service activities of the economy that dominate and grow. This has created an increasingly complex situation for policy makers, investors and inventors.

Valuation of these assets also poses challenges. Since they are very uncertain on average when it comes to value – only 2% of all patents lead to any business – a more “innovation system” approach is necessary.

A “risk management” approach to the patenting system is therefore a key to understanding the strategy of patenting systems and their usage. The system becomes an “infrastructure” to the economy.

This has policy implications for patenting institutions. A more “active” role is demanded in the economy being part of the risk management of companies.

There is also a “chicken and egg” problem related to adopting patenting systems for developing countries. The European Patenting Office, EPO, is an interesting case with respect to strategic moves to an “infrastructure for growth”.

#### ***1. From Patent to Patenting – how business capitalizes on patents***

*The usage of patents has changed since first conceived.*

During the 18:th century “protection” was on the agenda. The development of national industry required trade barriers. Manufacturing monopolies in the UK allowed boosting the industrial revolution. This protection was the fundament of the system: The industrial manufacturing logic – “the product”.

During the 19:th and 20:th century, the formula changes somewhat to “innovation and information for monopoly”. The idea was to enable companies to recover R&D expenses by monopoly pricing of products.

Towards the end of the 20:th century and now in the 21:st century, it seems that the usage is changing again towards “market access”.

Patenting becomes “a business” (through extensive licensing/cross licensing). With more complex products that turn into systems not a single supplier can make all R&D investments. A multiple of patents are needed to make a “system”. This development moves into services as indicated above. This means that portfolios of patents are interesting for all actors just to get market access – something new for many industries. These portfolios thus gives incentives to competitors to cross license since they also would like to have access to all and the best technology. In a global market, building a national industry is no longer relevant, nor is recovering cost the only way to capitalize on knowledge. The capitalization reaches far beyond and increasingly becomes a source of income. New risk management strategies are developing with these new perspectives.

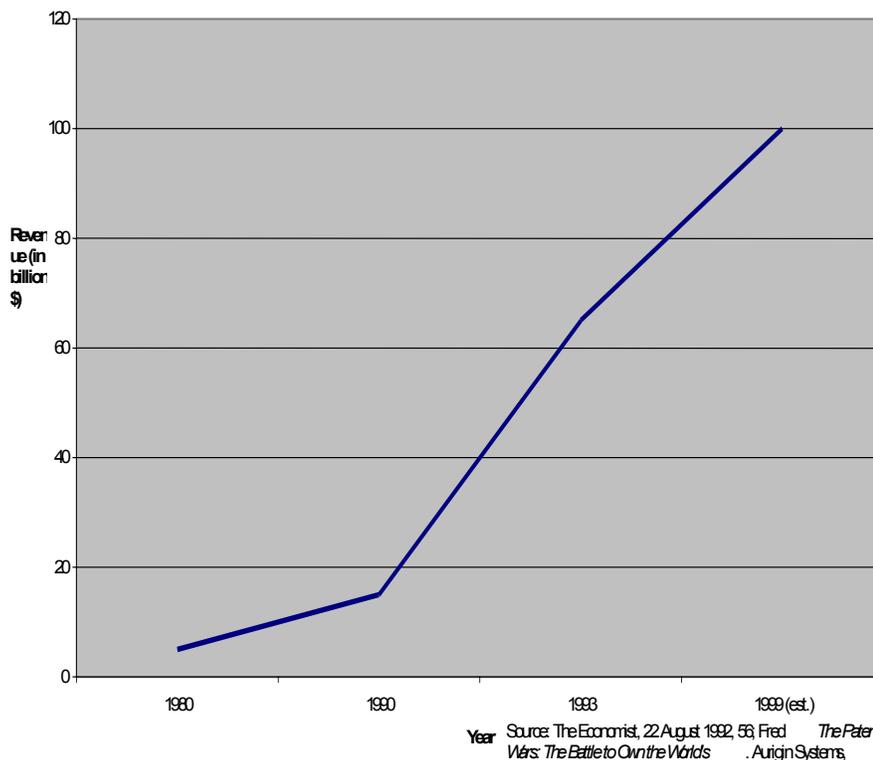
#### a) Usage of patents on “everyone’s” strategic agenda

Different strategies are developing in this more

competitive global, innovation driven, service economy. IBM for example, “the inventors” of modern patent portfolio management only patents in the large patenting markets in the world. Here large patent portfolios are built up. These are used to cross license with actors from small countries. In that way both actors get a wider market access – but at lower cost for IBM. Apart from these cross licensing activities, IBM licenses patents for more than 1b\$ per year. This equals 1% of world licensing revenues!

Telecom companies used to have “gentlemen’s agreements” on innovation and patenting. Towards the end of the 1980’s, this lack of patenting strategy “stopped” European manufacturers to enter the US market. Now these “gentlemen’s agreements” are replaced by global competitive market where IPR plays a role. Companies also tend to include patented technologies in to world standards. This give the *right* to licensing revenues (under RAND conditions), replacing the original “monopoly

Patent Licensing Revenues, 1980 - 1999



idea” of patenting with a market access idea where standards play the most important role for market access: example GSM, GPRS, etc for mobile telephony.

This change in patenting strategy (the usage of patents as enabler of new more competitive corporate strategy) reflects a shift in competitive focus towards a service logic and economy.

**b) The challenge for the patenting system – the service economy is where the value is created**

The development of the service economy has changed the driver in the economy. It is not totally driven by customer oriented usage concepts. The west has a lead of 30 years to the rest of the world in this development. Intellectual property and innovation here plays a critical role in a country’s knowledge strategy for the future<sup>54</sup>.

Service sector in % of GDP <sup>55</sup>		
Year	West	World
1900	25%	
1970	50%	
2000	>70%	~50%

**c) Patenting system competition**

Innovation is now taking place on a global basis. Experience from South-East Asia is shared with those of US, Sweden, Australia, etc. This “global innovation” needs global protection. The protection can today only be given nationally (even the EPC is a “bundle” of national patents) thus putting patenting systems in competition with each other. Their respective risk management capabilities play an essential role in attracting IPR and then enabling to for example cross license and open “global” market access<sup>56</sup>. The competition is national versus “regional” in Europe. US – Europe – Japan when it comes to where to patent first. This is guided by language, market size, presumption of

validity, enforcement, etc<sup>57</sup>. With high presumption of validity, more risk can be assumed and stimulate investment in innovation. Competing systems then gets increased importance for market access. Today, when many international customers choose, they use increasingly the PCT route since it manages risk better, faster, more uniform (one standard), etc.

**2. Complex issue**

The issue competing patenting systems and importance of IPR is a complex issue for: a) policy makers, b) investors and other stakeholders as well as 3) the inventors.

**a) Policy makers**

Policy makers are in the situation of choice of system. This has to be done in coordination with other overall economic and international trade policy decisions.

The USPTO with “internet patents” have extraterritorial ambitions. If using certain technology on the Internet, then you are infringing US patents.

The EPO has an “extension system” which allows, as the only system in the world, to engage in *bilateral* agreements. A nation can choose to opt in / opt out of a validation system, which grants patents on state-of-the art basis (all major technology is patented in US, Europe, Japan). The concept of “back-yard” (The Wilson doctrine) does not hold any longer. New approaches to intellectual property field can be made after WTO/TRIPS. The WIPO standard, PCT, is the “preferred choice” of international users.

Standards, which are set by WTO/TRIPS, are not easy to fulfill and not obvious for all economic development levels. IPR depends on a certain innovation activity. Since TRIPS standards are “maximum” standards rather than “minimum” standards it is difficult to set standards at will. It is also very challenging, if

<sup>54</sup> Ref. to presentation at UNECE IP Advisory Group in Belgrade, 2004-03-27, “Management of IP Assets for Strategic Advantage and Development of IP-driven growth strategies”, E. Ullberg.

<sup>55</sup> Geneva Association and other sources

<sup>56</sup> Much additional research is needed here to get empirical facts on the relationship between IPR and FDI (Foreign Direct Investment).

<sup>57</sup> In the US, since early 1980, a change in principle was made regarding the presumption of validity. The view used to be that the courts made a fresh investigation upon challenge of a patent. Now the courts presumed that it was valid.

not almost impossible to build a database of all state-of-the-art in the world if one does not get all applications of relevance to the art. This economic equation then favors centralized *handling* of patents.

### **Developing a patenting system- "Chicken and egg" problem**

For nations, the patenting system can be a "chicken and egg" problem. All European patenting systems have come into place after an extensive copying of technology from abroad. German and Swiss chemistry is an example. The copying led to growth of a national industry in the field. The national industry then demanded protection from national competition – and got it. Some recent examples of this are Taiwan and India.

Taiwan started out as a high tech US manufacturing facility. This spurred local innovation. Demand from local inventors – and investors – for protection in the local market brought the patenting system in place.

India is a big ("illegal") medicine manufacturer, which is spurring local innovation. Now voices are raised from local inventors for protection in the local market. Soon maybe an efficient patenting system will be in place.

Now it is the quality issue of patent that is the predominant issue: EPO "quality" of search etc. versus US "registration" policy with extraterritorial claims.

#### **b) Investors and other stake holders**

From the investor perspective, the risk management issue dominates. Here financing issues are driven by the uncertainty of investments in R&D activities. A strong right reduced the uncertainty. Other measures of the value include groundbreaking research by Prof. B. Lev. Based on citations. If a certain patent is cited much in comparison with other new applications is has been shown to indicate future earnings from that patent / technology very well. The quality issue is a real issue here. Quality of search is crucial for any judgment on the value of the patent.

#### **c) Inventor**

For the inventor today's system lack much. It is heavy, cumbersome, slow and not very transparent (timeliness of decisions easily manipulated, etc.) The system is predominately used - and therefore also built – for the industrial policy is should support. These have been primarily large companies, not small. Although the IPR has "equalizing" effect between companies and countries, the procedures and efforts needed to secure one's assets are far from "efficient" for smaller companies.

A democratization of IPR seems to be a good idea for the global economy, when the economic differences are exposed in free trade.

### **3. Summary Capitalization**

Summarizing this section on capitalization, patents (or IPR) become part of every business as the only way to secure freedom to market.

This is not a simple granting issue any more but a complex, business issue with strong global undertones (innovation, patent systems, etc) in fierce competition, multiple laws and possibilities to cheat.

This development is different from industry to industry but globalization drives even medical companies to rethink their market policy<sup>58</sup>.

## **IV. Valuation**

### **1. Valuation – a system's issue**

In valuing a patent or IPR is typically not a "single patent" issue but a much more systemic issue. It is the "technological capabilities" of the company that are valued.

#### *Biotech and Citations*

Valuation of hi-tech biomedical companies in the US shows a direct relationship between citations of researchers / patents and market value of companies<sup>59</sup>

<sup>58</sup> Ref. to Economist article on Pharmaceutical companies, July 13<sup>th</sup> 2002, page 51-52.

<sup>59</sup> B. Lev, et al., Stern, N.Y. Univ.

This indicates that it is not an individual patent issue but more a "technological capability" issue.

#### *IT and # Patents*

IBM states # patents in annual report for the purpose of consistency in technological capability and R&D investments.

#### *Citations/patent*

According to B. Lev's research consistency in performance of new technology is a good differentiator of relation between investments in R&D activity and market value. For example, Dow Chemical has low citations/patent but DuPont high citation/patent. Consistency in patenting is the value. The "R&D activities" are given a number by the fact that a lot of things are going on with relation to a specific technical area.

From a policy point of view, a good idea would then be to provide for "valuation systems" actors (in other words not to preempt that market with for example government subvention statistics).

## **2. Valuation – corporate side**

#### *Risk in R&D investments*

Risk in R&D investments can be managed by classifying patents according to citations give a sharp instrument for investors and management. The patenting system can thereby help create great institutions.

The typical average patents has a 2% success rate but taking "high quality" patents and innovation systems (with high number of citations) into account the volatility of future earnings with respect to investment in R&D activities goes down with a factor of 460. The risk is then at comparable level to physical assets.

Generally valuation is then related to "innovation system" and "inventor". Valuation is also linked to *access* to global experiences.

Actors outside the innovator's and company management's control in this case hold the citation information. It provides for a neutral, transparent position, rather than overstated company "innovation reports".

A great institution can then be built not a "bright idea", nor on a "great company" but more **the management** of that organizations capacity to produce consistently hi quality hi tech.

## **V. The system**

#### ***EPO Case***

The European Patent Office, EPO, has adopted this risk management view of the patenting system, for the benefit of the economy as a whole. They focus on the role of creating an "infrastructure for the economy" – managing *economic* risk and uncertainty. The ultimate potential of this is a more efficient patenting system. More on this can be found on the EPO website.

#### ***Rethinking the patenting system***

Strategic issues related to the patenting system from a policy and corporate perspective then arise from several sources:

- From patent to patenting – adopting a systemic view and risk management focus
  - The usage of the system has gone from a simple monopoly right to global market access. The success and challenge is more in business concept innovation.
  - Global patenting system competition create efficiencies by the customers choice
  - Introducing a patenting system successfully - a "chicken and egg" problem. Yesterday local innovation was the driver. Today we have global innovation. New institutions are needed to absorb this risk more effectively.
- 
- Valuation of patents - a system's issue
  - From the individual investor - "democratization" of patenting

The issue of “survival” of the patenting system is challenged. The local protection argument is gone in a global economy with TRIPS-agreements. The usage is changing with “global innovation” and the service economy – standards must also change!

The patenting system then gets a new goal: Generating growth for the economy. This goal supersedes the national industry protection, R&D recovery and focuses on a new dimension demanding:

- Global standards/competition
- Independent from government policy
- Service economy
- Private inventor usage (democratization)

The new goal can be achieved by giving the patenting system a **global (economic) risk management focus**.

## VI. Recommendations

There are several issues of interest to discuss further. First the “systemic view” of patenting based on the risk management aspects of the system.

Secondly there is a multi government agency issue. Typically several agencies are involved in the patenting system: Legal, economic, financial are the most commonly used to “host” the system. They have conflicting interests and in order to create an efficient patenting policy these initiatives must be coordinated in some way.

Thirdly the “chicken and egg discussion” needs much empirical evidence.

Fourth there are public issues here: efficiency of patenting system, quality of system, scope of patenting (value driven), transparency (sharing information), etc.

Fifth there are private challenges in creating global protection of intellectual *property* enabling a global market economy. This is a very central economic policy point of view.

Taking the role to manage risk for growth combines the private and public interests – not simply “granting monopolies”. How patents (both the innovation and the right) are *used* to manage risk then becomes the key issue to understand.