

The Role of Claims Construction in Patent Valuation

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Advanced Topics in IP Valuation and Analysis

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Patent Valuation



Valuation Contexts – Transaction Based

- M&A – Price Allocation, Exchange Ratio, Premium
- Technology Divestiture – Spin Out (Newco) vs. Spin-Off (sale)
- Joint Venture or Strategic Alliance – In-kind contribution value
- Venture Investment Decisions – Angels, VCs, Private Equity
- Patent Brokerage - Purchase/Sale of IP only (vs. technology)
- License Fees - Paid-up, Upfront payments & royalty rates
- Collateralization and securitization of IP
- Inter-Affiliate Transfers – Transfer pricing issues

Patent Valuation



Valuation Contexts - Non-Deal

- Strategic IP Position Enhancement – IP Aggregation

Purchase vs. Exclusive License vs. Non-exclusive License

- Litigation –

Damages - greater of infringers profits or *reasonable royalty*

Settlement value

- R&D Investment – Make vs. buy decisions, Determination of IP-ROI
- Portfolio Management – Foreign filing and prosecution costs, Maintenance fees
- Charitable Donations – Tax benefit

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Changes to FASB Financial Disclosure/Accounting Rules (June 2001)

- **SFAS 141 – *Business Combinations***

Reflects Change from Pooling-of-Interests to Asset Purchase Accounting

Requires purchase price allocation for 5 categories of *Identifiable Intangibles* based on *Fair Value* (typically measured by present value of estimated net cash flows)

Amortization changes - II having finite useful life - Yes,
 II having indefinite useful life - No

- **SFAS 142 – *Goodwill and Other Intangible Assets***

Amortization of Goodwill replaced with *Impairment* of Goodwill (which occurs when Fair Value falls below Book Value) - tested at least annually

Shown on income statement as an operating loss

AOL Time Warner - \$50 billion, Qwest - \$30 billion

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SFAS 141/142 - Categories of Identifiable Intangibles

- **Marketing-related:** trademarks, trade dress, domain names, non-competes, etc.
- **Customer-related:** customer lists, contracts and non-contractual relationships
- **Artistic-related:** print publications, video, music, photos, etc.
- **Contract-based:** license agreements, employment contracts, broadcast rights, etc.
- **Technology-based:** patented technology, trade secrets, software, databases, mask works, unpatented technology (non-T/S know-how)

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Relative Importance of Intangible assets in Company Value

S&P-500 Market to Book (M/B) Value Ratio - 1970's - 1:1; 2000 - 6:1 (83.3%)

Coopers & Lybrand ('97) - 2/3 of \$7 trillion market value of all public companies is attributable to intangible assets

Examples (2000 figures): Merck - 93.5%, Microsoft - 97.8%, Yahoo - 98.9%

Intangible Assets include:

Intellectual Capital - undocumented know-how, customer loyalty, management expertise, inter-company relationships, etc.

Intellectual Property - Legally enforceable rights in patents, copyrights, trademarks, trade secrets, mask works, databases, domain names, etc.

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Why are IP assets more difficult to value than tangible assets?

- Historically, no public trading markets (but this is changing, e.g., yet2com)
- Terms & Conditions vary widely.
- IP assets are inherently dissimilar
- IPR transfers are often motivated by unique strategic considerations
- Details of IPR transfers are usually not widely disseminated

Patent Valuation



The Three Basic Valuation Methodologies

A. Cost -

Based on cost to replicate, e.g., independently develop (less functional or economic obsolescence)

Advantage: Easy to calculate

Problems:

No relationship to utility or market value

Independent development is not a defense to patent infringement

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The Three Basic Valuation Methodologies - cont.

B. Market -

Based on market transactions involving *comparable assets*
(with adjustment for differences)

Requires: (a) an active market; (b) sufficient number of similar exchanges; and (c) publicly available price information

Sources: M&A Databases, SEC Disclosures,, Subscription-based services (e.g., NERAC), Trade Magazines, Industry websites, etc.

Problems: What is comparable IP? Ignores Deal Leverage

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The Three Basic Valuation Methodologies - cont.

C. Income -

Discounted Net Cash Flow (royalties/profits/savings)

- *Price Premium* (vis-à-vis comparable goods without IP)
- *Production Cost Savings* (contribution of inputs)
- *Relief from Royalty* (what rate?)
- *Residual Earnings* (requires disaggregation of intangible assets)

Adjusted for technology and market risk (15-70%) and financing cost

Problem: Future uncertainty, especially. if no track record (i.e., not applicable to “new” IP or strategic IP held for competitive advantage)

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IP-Specific Valuation Methodologies

- The Twenty Five Per Cent Rule
- Industry Standards
- Rating & Ranking
- Surrogate Measures
- Monte Carlo Analysis
- Real Options
- Other

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IP-Specific Valuation Methodologies - Cont.

The *Twenty Five Per Cent Rule*: Licensor should receive 25% of licensee's gross profit attributable to the licensed technology

Apportionment not valuation rule

Rule of Thumb only - Adjust percentage up or down to reflect parties' respective investment and risk in licensed technology

Better for process than product technology - Allocation problems

Crude guideline for order of magnitude royalty rate

Opinion varies on usefulness of rule

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IP-Specific Valuation Methodologies - Cont.

Industry Standards -

Derived from Market approach

References royalty rates (or purchase prices) in *similar past transactions*

Reflects Industry, technology, degree of innovation, etc.

Typical rates:

Infotech: hardware - 1-5%, software - up to 25%, games - up to 50%
Consumer electronics: 1-3%, Biotech: 8-12% (w/large upfront fees),
Automotive: 2-5%, Health Care: 2-10%

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IP-Specific Valuation Methodologies - Cont.

Rating & Ranking -

Compares *relative value* of IP assets on a subjective or objective *scale*

Often used in conjunction with Industry Standards method

Five components; (a) scoring criteria; (b) scoring system; (c) scoring scale; (d) weighting factors; and (e) decision table

15 Georgia-Pacific factors is often used set of comparative criteria

Patent Valuation



Surrogate Patent Value Indicators

Patent portfolio data -

Number of patents issued to company (reflects R&D level and filing activity, but not necessarily quality)

Payment of patent maintenance fees (does not necessarily reflect how well patent portfolio is being managed)

Forward prior art citations (reflects importance of disclosure, not necessarily coverage, i.e., claims scope)

Royalty income -

Studies indicate that investors value a dollar of patent royalty 2-3 times higher than a dollar of ordinary income (higher profit margin, more stable income)

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Monte Carlo Analysis

Refinement of Income method

Assigns a range of values to variables used in calculating NPV, e.g.,

Price variables: price premium, additional unit sales

Cost variables: COGS, SG&A

Assigns a probability to individual values within a range -

Probability distributions: uniform, triangular, normal, log-normal

Calculation of NPV is repeated 500-1,000 times based upon random selection of probability weighted values assigned to each variable, multiple NPVs are then plotted by frequency of occurrence, indicating most likely NPV

Accuracy of NPV values is no better than accuracy of value ranges and probabilities assigned to individual values.

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Real Options

Based on *Black-Scholes* formula for valuing stock options -

Five variables: (a) remaining development cost to commercialize IP; (b) mean market value of products embodying similar patents; (c) time until commercial utilization; (d) product value volatility; (e) risk-free rate of return; (f) patent expiration

Option value resides in *right to wait and see* what happens to stock price and to exercise or not based thereon

IP investment is viewed as an option to develop the IP further or to abandon it depending on future technology and market information

RO is most useful for IP investments with long-term returns and high risks because it recognizes that risk of IP investment is not uniform over time but decreases as additional technical and market information becomes available



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The *Black-Scholes* formula for valuing stock options

$$c_t = S_t N(h) - X e^{-rt} N(h - \sigma \sqrt{\tau})$$

c = call option present value

S = market price of underlying stock

X = option strike price

τ = time until option must be exercised

σ^2 = variance (variability) of underlying stock price return

r = risk free rate of return (e.g., rate offered on 5 year US bonds)

h = $\{\ln (S/X) + r\tau + \sigma^2\tau/2\}/\sigma \sqrt{\tau}$

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Mapping the *Black Scholes* variables from the stock call option space to the patent value space --

- **C** becomes the present value of the patent(s)
- **S** becomes the value of the underlying commercializable technology (“market-driven mean enterprise value per product at launch”) – supplied by market data in the form of “other ‘pure play’ companies with products in the same technology niche as subject patent”
- **X** becomes the remaining development cost to get to commercial product (covered by patent) – supplied by patent owner
- **τ** becomes the remaining development time until launch of product (covered by patent) – supplied by patent owner
- **σ^2** becomes the variance of product value (ROI) vs. time
- **r** (the risk-free rate of return) remains the same

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Take Away:

The best that can be said about current methods of IP valuation is that they are *better than nothing* -

(but how much better is a matter of substantial disagreement).

“It is a sign of an educated mind not to expect more certainty from a subject than it can possibly provide.” (Aristotle)

“Valuation requires an intermediate perspective between ignorance and certainty, involving the exercise of skill, experience and judgment” (Razgatis)

Patent Valuation



So, what about the role of claims construction? --

Present quantitative valuation methods are essentially actuarial in nature:

i.e., they deal with individual patents, and patent portfolios, on a semi-statistical basis, approximating value based on comparison with past transactions involving similar patents, or using analogies to other kinds of intangible rights (e.g., stock options).

In the future, economists and patent lawyers will work together to create a valuation that better reflects the *exclusivity domain*, i.e., the market, defined by the patent claims.