
How Much Is Your Patent Portfolio Worth?

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Introduction

- Why try to determine the value of a patent portfolio at all?
 - A goal of every company is to leverage its business assets to maximize their value
 - Portfolio valuation theories help explain the role of a patent portfolio as a business asset
 - This helps the patent attorney manage the patent portfolio better
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Introduction

- How this presentation will explore the role of a patent portfolio as a business asset
 - Present various models used for IP valuation
 - Discuss the assumptions of the models
 - Apply the models using different examples to attempt to determine IP valuation
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Four Models of Patent Portfolio Valuation

- Fair market value of the portfolio to a purchaser
 - Net present value of revenue stream generated by the portfolio
 - “Real option” model
 - Contribution to market capitalization
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1: Fair Market Value to Purchaser

- This model asks:
 - “What would be the fair market value of the portfolio if it were put up for sale?”



Fair Market Value to Purchaser

- Assumptions of the model:
 - A patent portfolio has a value separate from other business assets on which a value can be placed
 - But, it is difficult to assign a value to various company assets in isolation
 - Like asking, “What is value of engine to automobile?”
 - Better question:
 - What is relative value of strong versus weak portfolio?
 - E.g., What is relative value to automobile of V8 versus V6 engine?
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Fair Market Value to Purchaser

- Example: Purchase of Amati Communications

- Amati Communications

- In 1997 the company had \$30 million in losses on sales of \$13 million
 - Most valuable asset of company: patent portfolio in DSL technology
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Fair Market Value to Purchaser

- Texas Instruments purchased Amati
 - Purchase price: \$395 million
 - Justification for purchase price:
 - TI believed the market for digital modems was \$6 billion
 - Valuation of 30-times sales for a company is in line with growing companies that are not making a profit
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Fair Market Value to Purchaser

- Model applicability:
 - Mergers and acquisitions
 - IP portfolios are part of value company brings to the deal
 - Model weakness:
 - Fails to adequately explain why a particular value is assigned to patent portfolio by the purchasing party
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2: Net Present Value of Patent Portfolio

- This model asks:
 - “What is the net present value of a patent portfolio that produces a particular revenue stream?”



Net Present Value of Patent Portfolio

- Assumptions of the model:
 - Using established financial tools one can determine the value of patents based on the revenue stream they generate
 - “Net present value” is the value today of an income stream in the future
 - A patent license produces a future income stream in the form of royalties
 - The model treats royalty income as if it were an “annuity”
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Net Present Value of Patent Portfolio

- Annuity:
 - An income stream produced by an investment for a specified term of years
 - Pays a certain income annually
 - Number of payments is limited
 - Investment may be exhausted at end of payments
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Net Present Value of Patent Portfolio

- Annuity (Cont'd):

- Net present value depends on “discount rate”
 - The discount rate is an assumption of what interest rate you should get based on level of risk of investment
 - The higher the perceived risk, the less you will be willing to pay (invest) today for the annuity
 - Net present value of an annuity is determined by an established formula that takes these factors into account
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Net Present Value of Patent Portfolio

- Example:
 - IBM had \$1 billion in royalty revenue last year
 - What is the net present value of a portfolio that produces this income?
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Net Present Value of Patent Portfolio

- Calculation of net present value:
 - Amount of the annuity income
 - Expected \$1 billion-per-year
 - Number of royalty payments
 - Depends on time left on patent term
 - Presume for this example ten years left of patent life and 1 payment-per-year
 - = 10 payments
 - Residual value of investment after last payment
 - \$0 (patents expire)
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Net Present Value of Patent Portfolio

- Calculation of net present value (cont'd)
 - Discount rate
 - Compare royalty payments to expected return on other investments at different risk levels
 - 30-year treasury bill
 - Very safe investment
 - Yields about 5.5% annually
 - S&P 500
 - Good long term return, but volatile in the short term
 - Return for last 20 years averaged about 12% annually
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Net Present Value of Patent Portfolio

- Calculation of net present value (cont'd)
 - Patent portfolio with royalty income
 - Riskier investment than either treasury bill or S&P 500 because it is hard to predict the amount of sales each year
 - Therefore, you would discount the present value of the investment more
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Net Present Value of Patent Portfolio

- Net present value of \$1 billion revenue stream for 10 years at various discount rates:
 - 5.5% = \$7.5 billion
 - 12% = \$5.6 billion
 - 17% = \$4.7 billion
 - 20% = \$4.2 billion
 - If you believe an investment in IBM's royalty stream has greater risk than investing in treasury bills or the S&P 500, its value is about \$4 billion to \$5 billion
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Net Present Value of Patent Portfolio

- Model applicability:
 - Licensing situations
 - Model weakness:
 - Applicability limited to patent portfolios generating a measurable and stable revenue stream
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3: “Real Option” Model

- This model asks:
 - “How much would you invest today for the right to develop a new technology into a business that may be very valuable in the future?”



“Real Option” Model

- Assumptions of model:
 - Making an early stage investment in a company is like purchasing an “option”
 - Option: Purchasing the right today for an opportunity to take action in the future
 - “Real” action is turning technology into a business
 - The value of portfolio in early stage company lies more in the opportunity it provides than in present intrinsic value
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“Real Option” Model

- The early stage investment
 - Venture capitalist asks whether a successful business can be built around the technology
 - Success = ten-fold increase in investment
 - Assessment will consider many factors, including:
 - Proprietary rights to the technology
 - Management team
 - Proprietary rights in the technology are most valuable when:
 - Business is technology intensive
 - Technology represents a breakthrough
 - There are no good alternative technologies in the space
 - Turn time of technology is slow
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“Real Option” Model

- The early stage investment (cont'd)
 - Decision to invest frequently will be “Yes” or “No”
 - Any number of factors can make or break a deal, and proprietary rights in the technology is one of them
 - In early stage companies, the patent portfolio and the management team are the main assets of the company
 - In this case, the value of the portfolio can be said to be the portion of company valuation aside from the founders stock
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“Real Option” Model

- Typical example:
 - Series A (seed) round financing:
 - Investors purchase 5 million shares of stock at \$1-per-share
 - Remainder of shares go to founders
 - Interim rounds of financing
 - Issuance of 15 million more shares at increased prices
 - Initial public offering
 - Issue 5 million shares at \$10-per-share
 - Value of initial investment:
 - 5 million shares x \$10-per-share = \$50 million
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“Real Option” Model

- Model applicability:
 - Valuing patent portfolios of early stage companies
 - Model weakness:
 - Questionable assumptions about what portion of value of option depends on patent portfolio
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4: Contribution to Market Capitalization

- This model asks:
 - “How much does a patent portfolio contribute to a company’s market capitalization?”
 - Assumptions of the model:
 - The market incorporates its estimation of the value of the patent portfolio in the market capitalization of the company
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Contribution to Market Capitalization

- Market capitalization is the market's measure of a company's value
 - Market capitalization = price-per-share x number of outstanding shares
 - Market capitalization represents the market's idea of a company's income or growth prospects over the long term
 - Price/earnings ratio is a popular determinant of value
 - $P/E = \text{price-per-share} \div \text{earnings-per-share}$
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Contribution to Market Capitalization

- The patent portfolio contributes to market capitalization by enhancing a company's competitive advantage
 - Reflected in higher sales margins due to decreased competition
 - If the market perceives a change in risk due to threat to patent portfolio:
 - This will be reflected in change in share price
 - And, therefore, a change in the market capitalization
 - What increases level of risk perceived in marketplace?
 - Patent litigation
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Contribution to Market Capitalization

- Example: Amgen v. Genetics Institute
 - Amgen and Genetics Institute both wanted to market recombinant erythropoietin
 - October 1987: Amgen's patent on the gene for erythropoietin issued, Amgen sued Genetics Institute
 - Amgen's market capitalization: about \$3 billion
 - March 1991: Federal Circuit decides patent suit in favor of Amgen
 - Amgen's market capitalization: about \$9 billion
 - Value of patent: \$6 billion?
 - Hard to say what other factors played a role in this change
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Contribution to Market Capitalization

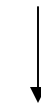
- Where was Amgen in 2002?
 - Annual sales of Epogen: \$1.7 billion
 - Annual sales of Neupogen: \$1.2 billion
 - Patent portfolio protects almost \$3 billion in sales
 - Market capitalization: about \$60 billion
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Contribution to Market Capitalization

- Where was Genetics Institute in 2002?
 - 1992: American Home Products acquires 60% interest in Genetics Institute
 - 1997: American Home Products acquires remaining interest in Genetics Institute
 - Total purchase price: \$1.3 billion
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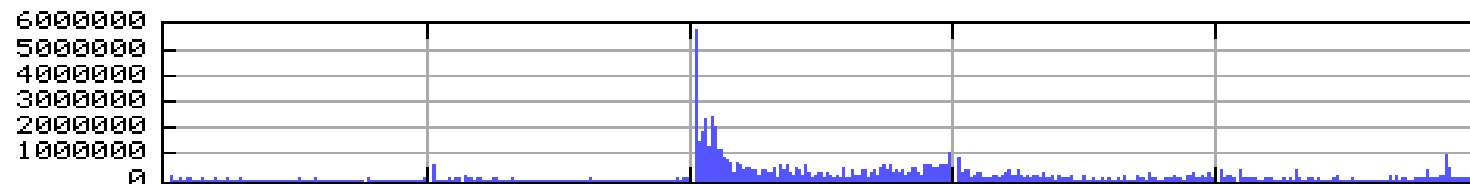
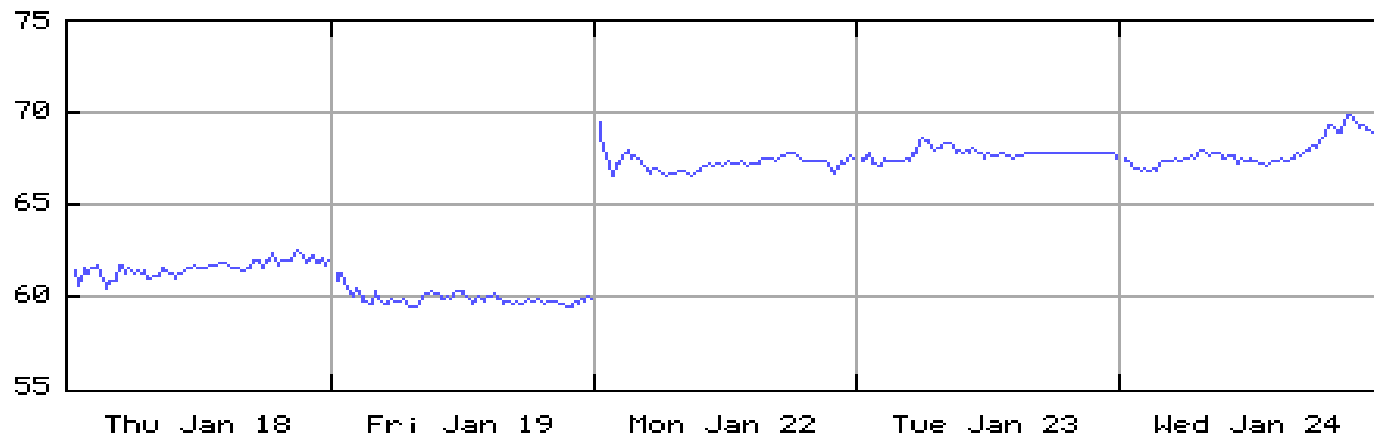
Impact Of 2001 Court Ruling On Value Of Amgen: From Uncertainty to Certainty

Court rules TKT Infringes Amgen's patent



Amgen Inc

@ 3:59pm



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Contribution to Market Capitalization

- Model applicability:
 - Valuing portfolios of public companies
 - Model weakness:
 - Difficulty in assigning changes in stock price to status of patent portfolio
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Conclusions

- Models of portfolio valuation depend on perspective:
 - Presuppose value to whom for what purpose
 - The assumptions of the model are inherent in these presuppositions:
 - Are you an acquirer, licensor, venture capitalist or shareholder?
 - Patents are not well valued in isolation, but in terms of what the company can do with them over time
 - Because the assumptions on which the models are based can never be complete or accurate,
 - The valuations generated by these models are not to be taken as an ending point, but rather as ballpark figures forming the basis for further discussion
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