Intellectual Property Finance

What attracts investors and financial institutions to invest in IP assets?
ABOUT ME

1994: Master in Chemical Engineering, Univ. Stuttgart
2000-now: Co-Founder of Intracom GmbH, Bonn – development of automated patent valuation method
2006-now: Guest professor patent management in Cluj-Napoca
2013: Co-Founder of IP Business Information in NL, generation of patent value data
2017: Advisor to IPR Strategies in IRL, generation of financial products based on patent value data
2022: Member of LES patent valuation team, composing the “SDG IP index”

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• Introduction
• Expectations of the different financial institutions:
  – Venture Capital: due diligence
  – Banks: corporate lending
  – Asset management: fundamental & quantitative
• Summary
• Q&A
How many company assets are visible?

For an ever increasing number of companies their IP is the essence of the business. Business info shows revenue, size, balance total, market cap, profit,... but not IP value. A major hidden value...
Invisible assets may lead to major problems

Example:
Nortel’s 5 year average Book Value before insolvency:

1,2 b$

It’s later sold patent Portfolio Value:

4,5 b$

They were never gone bankrupt if this value was known before.

Apple and Microsoft Beat Google for Nortel Patents
BY CHRIS V. NICHOLSON

8:31 p.m. | Updated

Nortel Networks, the defunct Canadian telecommunications equipment maker, says it has agreed to sell more than 6,000 patent assets to an alliance made up of Apple, Microsoft and other technology giants for $4.5 billion in cash.

The group of companies, which also includes Research in Motion, Sony, Ericsson and EMC, beat out Google and Intel for the patents and patent applications that Nortel had accumulated when it was still one of the largest telecommunications equipment makers in North America.

Nortel, which filed for bankruptcy in 2009, said in a statement late Thursday that it had sold its last remaining patents, covering businesses including wireless and networking technology and semiconductors, in an auction that it called “very robust.”
Example: patent value changes 2010 vs. 2022 in m€

<table>
<thead>
<tr>
<th>Company</th>
<th>2010</th>
<th>2022</th>
<th>2010 Value Change</th>
<th>2022 Value Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon</td>
<td>3836%</td>
<td>1779%</td>
<td>3836%</td>
<td>1779%</td>
</tr>
<tr>
<td>Huawei</td>
<td>1873%</td>
<td>457%</td>
<td>1873%</td>
<td>457%</td>
</tr>
<tr>
<td>Apple</td>
<td>185%</td>
<td>134%</td>
<td>185%</td>
<td>134%</td>
</tr>
<tr>
<td>Airbus</td>
<td>110%</td>
<td></td>
<td>110%</td>
<td></td>
</tr>
<tr>
<td>Siemens</td>
<td>86%</td>
<td></td>
<td>86%</td>
<td></td>
</tr>
<tr>
<td>P&amp;G</td>
<td>58%</td>
<td></td>
<td>58%</td>
<td></td>
</tr>
<tr>
<td>L’Oréal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shell</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mercedes</td>
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</tbody>
</table>

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Investors view on IP

20%  
10%  
70%
In principal 2 types of investors:

**Growth investor:**

- Do not really care about IP, but look at growth KPIs like number of user, subscriptions, revenues etc.
- Are more interested in brands, trade secrets and intellectual capital
Value investor:

- Interested in all types of IP, namely patents and brands
- Problem: IP in balance sheet are costs and not “value”
**Example from a balance sheet: BASF SE**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td>37,422,000</td>
<td>35,051,000</td>
<td>29,868,000</td>
<td>30,990,000</td>
<td>43,221,000</td>
<td>31,145,000</td>
<td>25,946,000</td>
<td>24,566,000</td>
</tr>
<tr>
<td><strong>Intangible assets</strong></td>
<td>13,273,000</td>
<td>13,499,000</td>
<td>13,145,000</td>
<td>14,525,000</td>
<td>16,554,000</td>
<td>13,594,000</td>
<td>15,162,000</td>
<td>12,537,000</td>
</tr>
<tr>
<td><strong>Goodwill</strong></td>
<td>7,696,000</td>
<td>7,520,000</td>
<td>6,959,000</td>
<td>8,105,000</td>
<td>9,211,000</td>
<td>9,353,000</td>
<td>10,073,000</td>
<td>8,363,000</td>
</tr>
<tr>
<td><strong>Other intangible assets</strong></td>
<td>5,577,000</td>
<td>5,979,000</td>
<td>6,186,000</td>
<td>6,420,000</td>
<td>7,343,000</td>
<td>4,241,000</td>
<td>5,089,000</td>
<td>4,174,000</td>
</tr>
</tbody>
</table>

Data provided by Moodys, Orbis company information
# Venture Capital: IP in due diligence

## Apple Inc.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSETS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-current assets</strong></td>
<td>222,968,721</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Intangible assets</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Tangible fixed assets</td>
<td>53,892,358</td>
<td>42,7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Other non-current assets</td>
<td>169,076,663</td>
<td>143,914</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current assets</strong></td>
<td>138,905,358</td>
<td>116,448,6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Stock</td>
<td>5,673,859</td>
<td>5,682,69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Debtors</td>
<td>28,912,585</td>
<td>22,694,522</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Other current assets</td>
<td>104,918,914</td>
<td>88,071,465</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Of which cash and cash equivalent</td>
<td>49,552,708</td>
<td>54,097,046</td>
<td>77,675,042</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>361,874,079</td>
<td>303,136,503</td>
<td>276,638,175</td>
<td>310,878,877</td>
<td>317,905,322</td>
</tr>
</tbody>
</table>

Data provided by Moodys, Orbis company information

- 11,682 companies with total assets > 1 < 10Bn€ have intangible assets zero
- 1,193 companies with total assets >10 Bn€ have intangible assets zero
Approx. 70% of the equities in Nasdaq100 have higher intangible than tangible assets.
### Venture Capital: IP in due diligence

<table>
<thead>
<tr>
<th>Index</th>
<th>Total Intangible assets</th>
<th>Total Intangible assets</th>
<th>Total Intangible assets</th>
<th>Total Intangible assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enterprise value</td>
<td>Total assets</td>
<td>Market capitalisation</td>
<td>Tangible fixed assets</td>
</tr>
<tr>
<td>STOXX600</td>
<td>35%</td>
<td>29%</td>
<td>43%</td>
<td>400%</td>
</tr>
</tbody>
</table>
Shares of the brand value related to enterprise value:

<table>
<thead>
<tr>
<th>Company</th>
<th>Total intangible value</th>
<th>Intangible value /enterprise value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>$2.15 trillion</td>
<td>94%</td>
</tr>
<tr>
<td>Amazon</td>
<td>$1.69 trillion</td>
<td>96%</td>
</tr>
<tr>
<td>Saudi Aramco</td>
<td>$1.65 trillion</td>
<td>84%</td>
</tr>
</tbody>
</table>

*based on analysis from Brand Finance, 2020*
Venture Capital: IP in due diligence

Value investor – reasons for IP:

**Investment & Exit**: Patents are seen as intangible assets that can increase a company's valuation and improve its financial stability. Very valuable at the exit stage!

**Collateral for Financing**: Companies can use patents as collateral to secure loans, providing them with additional liquidity to fund operations, research, and development.

**Licensing Revenue**: Companies can generate significant revenue by licensing their patents to other firms. Licensing agreements often involve upfront payments and ongoing royalties, directly contributing to cash flow.

**Brand Value and Reputation**: Companies with strong patent portfolios are often viewed as innovative and forward-thinking, enhancing their brand value and attracting customers, investors, and business partners.
Venture Capital: IP in due diligence

Value investor – reasons for IP:

**Market Expansion:** Patents can enable companies to enter new markets or create entirely new markets, providing new revenue streams.

**Joint Ventures and Alliances:** Companies with valuable patents can form strategic alliances or joint ventures, sharing the technology in exchange for capital, expertise, or access to new markets, which can enhance cash flow.

**Mergers and Acquisitions:** Patents can make a company an attractive target for acquisition, often leading to significant financial inflows from the sale or merger.

**Most important reason for VC is:**

Board is dedicated to innovation and committed to produce “real values”.
Banks: IP in corporate lending

Companies with highest patent value in Germany:

- Siemens AG: $7,642,716,000
- BASF SE: $5,952,469,000
- Infineon Technologies AG: $4,024,679,000
- Bayer AG: $3,472,732,000
- Bayer Pharma AG: $2,088,516,000
- Daimler AG: $1,718,685,000
- Volkswagen AG: $1,016,973,000
- Continental AG: $716,168,000
- Deutsche Bank AG: $711,011,000
- Evonik Industries AG: $638,391,000
Primary reasons for IP collaterization:

- Loan securitization
- Blocking shareholders/owners to restart a new company after bankruptcy or asset transfer

But:

Banks normally **do not** increase the lending volume based on IP assets, because they are not able to assess the monetary value of IP and to monetize in case of default.
Example:

Business Development Bank of Canada
https://www.bdc.ca

$160M financing envelope to support IP development in Canada
Main theory:

“Companies with relative high patent value have much less default”
Analysis of 10-year survival rate of corporate bonds

Backtest history: year 2012 – Sept 2022

62,893 listed equities in this period

Grouping into 4 revenue-size categories: Small (S), medium (M), large (L) and very large (XL) companies

Research how many equities went into bankruptcy/were liquidated within the time period per respective group

Research how many equities had a patent value >10mUSD of patent value in the time period
Banks: IP in corporate lending

<table>
<thead>
<tr>
<th>Size</th>
<th>Default Risk</th>
<th>Liquidations + Bankruptcies</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Reduced by factor 34</td>
<td>23</td>
</tr>
<tr>
<td>M</td>
<td>Decrease to 0</td>
<td>22</td>
</tr>
<tr>
<td>L</td>
<td>Decrease to 1</td>
<td>4</td>
</tr>
<tr>
<td>XL</td>
<td>No liquidations nor bankruptcies at all</td>
<td>1</td>
</tr>
</tbody>
</table>

For small sized companies (S), the default risk was **reduced by factor 34**.

For large medium sized (M) companies with valuable patent portfolios the **default rate went down to 0**.

For large (L) companies with valuable patent portfolios the **default rate went down to 1**.

For the very large companies (XL) there was no default at all.
Asset management: IP in investment strategies

Asset management:

- Wealth management
- Hedge Funds
- Fundamental asset management
- Quantitative asset management
- Quantamental asset management
- Fixed income
- Other (e.g. high frequency, FX etc.)
Main theory:

“Equities with relative high patent value have much better performance than those without”
Portfolio construction: An equal-weighted DJ Stoxx Europe 600 Portfolio is separated in Patent shares (red line “select Stoxx”). These Patent shares are ranked by the primary key figure PatentLEVERAGE putting them in several groups. The Patent stocks were split into three portfolios according to the Patent leverage ranking: the top 30% as the high IP, the bottom 30% as the low IP, and the remaining 40% as the med IP. The chart clearly demonstrates that higher (lower) PatentLEVERAGE portfolios yield relatively higher (lower) returns.

Source: Nasdaq Survey, 2019
**Patent value threshold – outperformance with sectorbias**

**Portfolio construction:**
An equal weighted MSCI World Portfolio is separated in Patent shares with a patent value equal or greater EUR 10m. “Selected backtested strategy”: Performance 12/2012-12/2022: 142 % (blue line). Degree of investment = 100%; no risk management; no fees; ex dividend; all stock prices are calculated in EUR; half yearly adjustment per 06/30.

![Graph showing significant outperformance vs. MSCI World Index](image)

⇒ significant outperformance vs. MSCI World Index also stems from the overweight of technology-strong sectors (Industrials, Technology, Automobiles, Internet) or the underweight of technology-weak sectors (banks, financials, utilities)
SMEs that have made use of intellectual property rights have +21% chance of growth in subsequent years compared to SMEs that have not invested in intellectual property rights, and +10% chance of high growth in subsequent years\(^1\)

Companies with qualitative patents and a strong IP activity tend to outperform those with relatively smaller patent activity\(^2\)

The higher the patent portfolio value, the better the free cash flow generation\(^3\)

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\(^1\) High-growth firms and intellectual property rights. IPR profile of high-potential SMEs in Europe, May 2019, European Patent Office

\(^2\) Hall, Bronwyn H.; Thoma, Grid; Torrisi, Salvatore: The market value of patents and R&D; National bureau of economic research; Cambridge, Sept. 2007

\(^3\) A.Gorius, A.Zagos, Building an IP Economy: the role of Patent Value, 2024
Financial products based on IP signals

Innovators Completion Cap Index - „NCX“

Invesco NASDAQ Future Gen 200 ETF (QQQS)
Financial products based on IP signals

Select Disruptors - „DRUP“

GraniteShares Nasdaq Select Disruptors ETF (DRUP)
Financial products based on IP signals

L&G Global Brands UCITS ETF

Investment strategy that offers exposure to companies with best-in-class brands

Global Brands 100 universe

Brand value

<table>
<thead>
<tr>
<th>Brand investment</th>
<th>Brand equity</th>
<th>Brand performance</th>
<th>Brand impact</th>
<th>Forecast revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs used to create brand loyalty and market share</td>
<td>Scores from customers, staff, investors, and externals, gauging perception</td>
<td>A Brand's ability to drive financial value</td>
<td>Impact of the brand in the context of the business in which it operates</td>
<td>Expected royalties that are attributable to the brand</td>
</tr>
</tbody>
</table>

Each year, Brand Finance® deliver the top 100 companies based on their aggregate global brands valuation.

https://lgim.com
Enhancing ESG/SDG ratings with IP

ESG: Environment Social Governance
SDG: Sustainable development goals

Major problems:

• Contrary ESG ratings of companies
• Ratings on company input not output
• Performance of ESG products
Major problem: Self-reporting in ESG Ratings

Traditional Ratings → Self-reported company data

- Disclosures/ filings
- Sustainability surveys
- Sustainability reports
- Company websites
- Press releases, marketing, news

“Only reflects the perspective of the issuer”

Third party sources are required for an objective view on the sustainability ability - tamper-proof

Patents can help identifying the active sustainability contribution:

„innovation ability in sustainability“, e.g.
- potential future sustainable products
- sustainable processes
- sustainable applications
Sustainable company gets loan by bank

Multiple „green“ loans increase sustainable ranking of bank

„Green“ loans can be collected as a green bond financial derivate; increasing investment interest („principles of responsible investing“)
### ESG and SDG Rating

...Green patents rating of petrochemical companies

<table>
<thead>
<tr>
<th>Company</th>
<th>Chevron</th>
<th>Saudi Arabian Oil</th>
<th>BP</th>
<th>Shell</th>
<th>Exxon</th>
<th>Total</th>
<th>China Petroleum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio value in m€</td>
<td>1,324</td>
<td>3,353</td>
<td>303</td>
<td>762</td>
<td>596</td>
<td>3,200</td>
<td>5,300</td>
</tr>
<tr>
<td>Green patents value in %</td>
<td>3.2</td>
<td>4.2</td>
<td>4.5</td>
<td>4.9</td>
<td>5.2</td>
<td>6</td>
<td>18</td>
</tr>
</tbody>
</table>

### SDG Goals

- **1. No Poverty**
- **2. Zero Hunger**
- **3. Good Health and Well-being**
- **4. Quality Education**
- **5. Gender Equality**
- **6. Clean Water and Sanitation**
- **7. Affordable and Clean Energy**
- **8. Decent Work and Economic Growth**
- **9. Industry, Innovation and Infrastructure**
- **10. Reduced Inequalities**
- **11. Sustainable Cities and Communities**
- **12. Responsible Consumption and Production**
- **13. Climate Action**
- **14. Life Below Water**
- **15. Life on Land**
- **16. Peace, Justice and Strong Institutions**
- **17. Partnership for the Goals**
“Sustainable-oriented” companies with high share on green patents perform better

Portfolio construction:
The ESG score is the ratio of sustainable ESG patent value to total patent value, i.e. it indicates the proportion of sustainable ESG patent values. All stocks with an ESG score > 0 are considered for the construction of the portfolio (“Selected backtested strategy”):

ESG score = sustainable ESG patent value / total patent value

Degree of investment = 100%; no risk management; no fees; ex dividend; all stock prices are calculated in EUR; half yearly adjustment per 06/30.

➔ significant outperformance vs. MSCI World SRI Index

Source: IPR-Strategies Ltd
SUMMARY: Why use IP as an indicator for investing?

1. **Early indicator:**
a patent is filed long before a product is launched. “Forward looking indicator”

2. **Sustainable business model:**
The value of IP is a factor in the **sustainability** of the business model.

3. **Hidden value is invisible in the balance sheet:**
if at all, companies only state the cost of the IP in their intangible assets, but not their "value". However, IP value may determine **innovation strength**.

4. **Proven better performance**
Studies show that companies who own high and growing patent portfolios outperform companies who don’t.