

Estimating Technological Obsolescence

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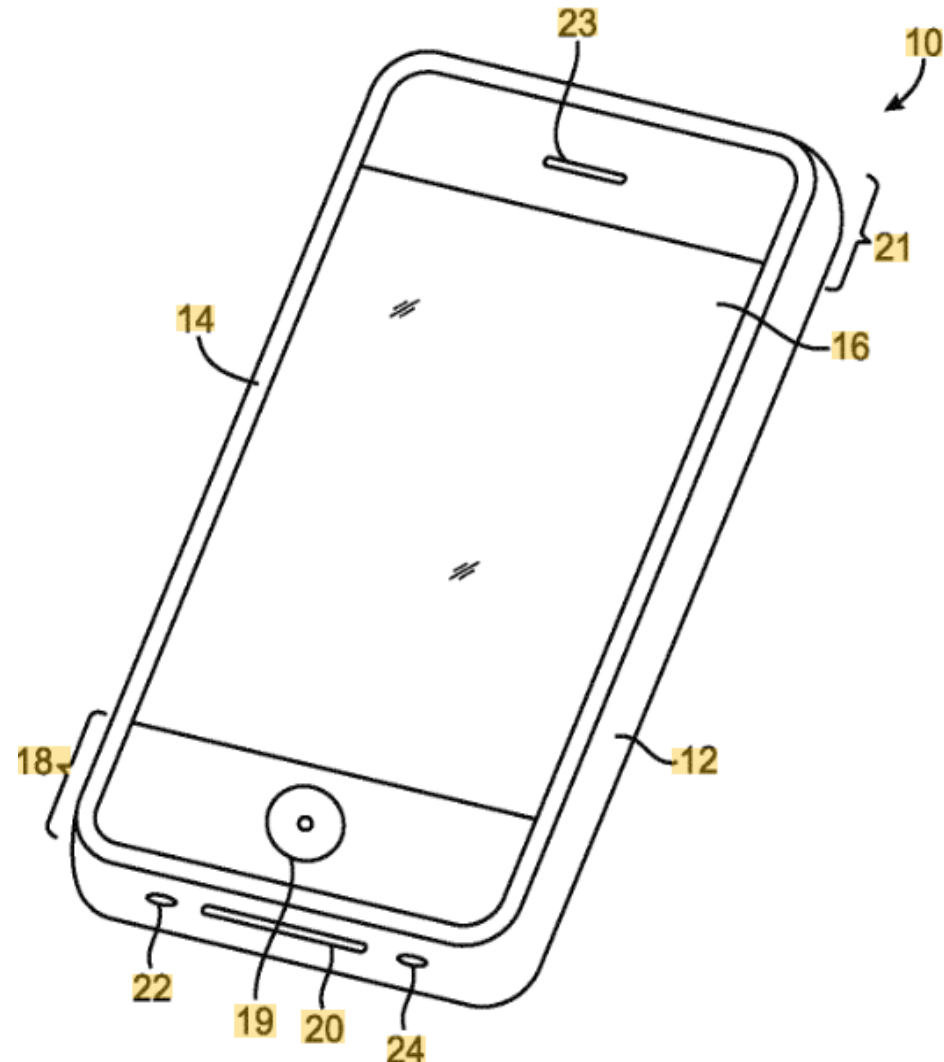
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- **I am not dogmatic**
 - Some use decades-old methods/guidance without question
 - Defend as gospel
 - Never test conclusion soundness
 - Misses bigger picture—does applied theory match reality?
- **Result: I am not a parrot**
 - I present content that some view as controversial
 - Every bit of what I present is testable independently
 - My work has survived “spirited” attacks
 - Many examples support today’s content
 - Views in this presentation are my own

- **Obsolescence errors drive significant valuation errors**
- **Goal:** Send you home with new analytical approaches
- **How:** Presentation will introduce approaches with auditable, testable, real examples
 - Examples based on companies familiar to audience
 - I have no personal axe to grind against companies mentioned
- **Examples are:**
 - Interesting
 - Well vetted
 - Relatable for many
 - Relevant to the points made

Steve Jobs Didn't Die

- Press reports state he died on October 5, 2011
- Patent data indicates he still invents for Apple
 - Most recent application “Portable electronic device with two-piece housing” published on August 26, 2022
 - Picture is of iPhone 3
- Is this obsolete?
 - Why patent something not sold for 15 years?

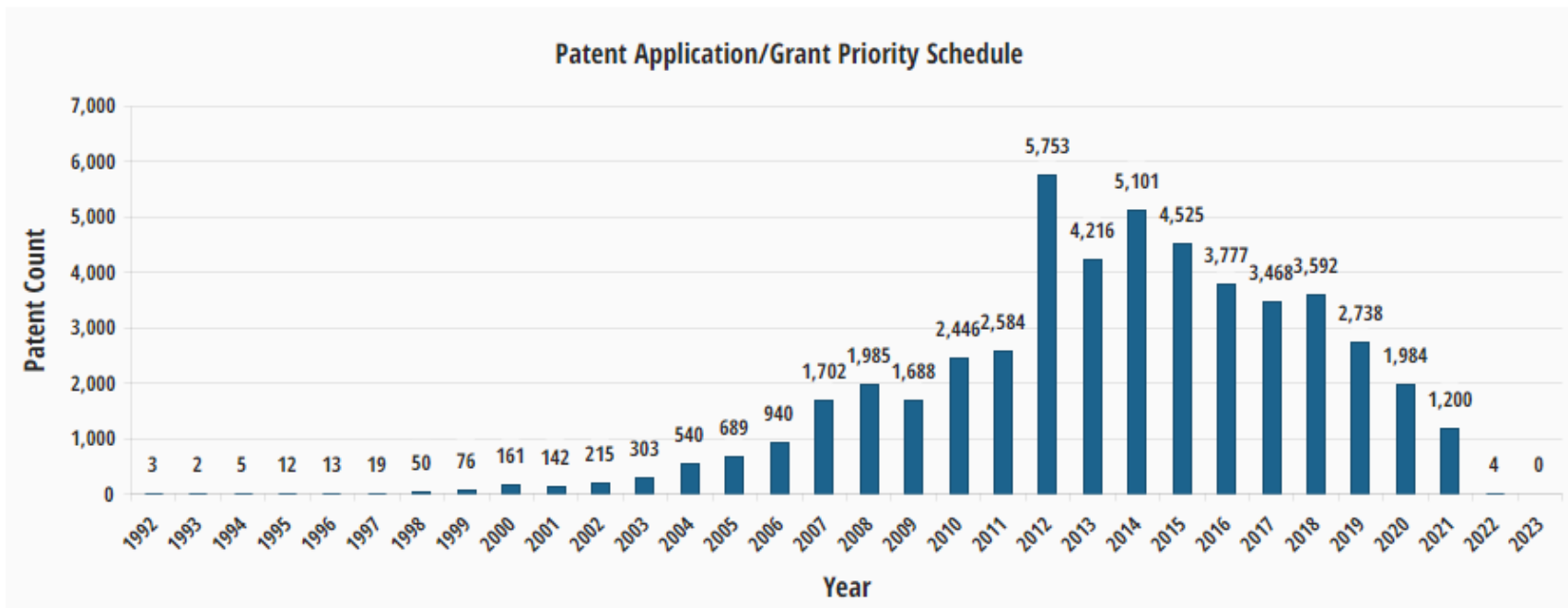


Steve Jobs Didn't Die

- Listed inventor on >250 assets since October 6, 2011
- 5 grants in 2023 so far
 - Most recent is #11,604,559 on March 14, 2023
 - Expires in 2027 (i.e., live just over 4 years)
- Since October 6, 2011
 - Inventor on >1% of Apple's self-developed patents
 - One of the most prolific inventors in U.S. history (top 0.2%)
 - Remarkably impressive given he's deceased
- **Hint:** Important signal about Apple's patenting engine
 - Apple is master of continuation patenting
 - Continues to patent products that it has not sold for years

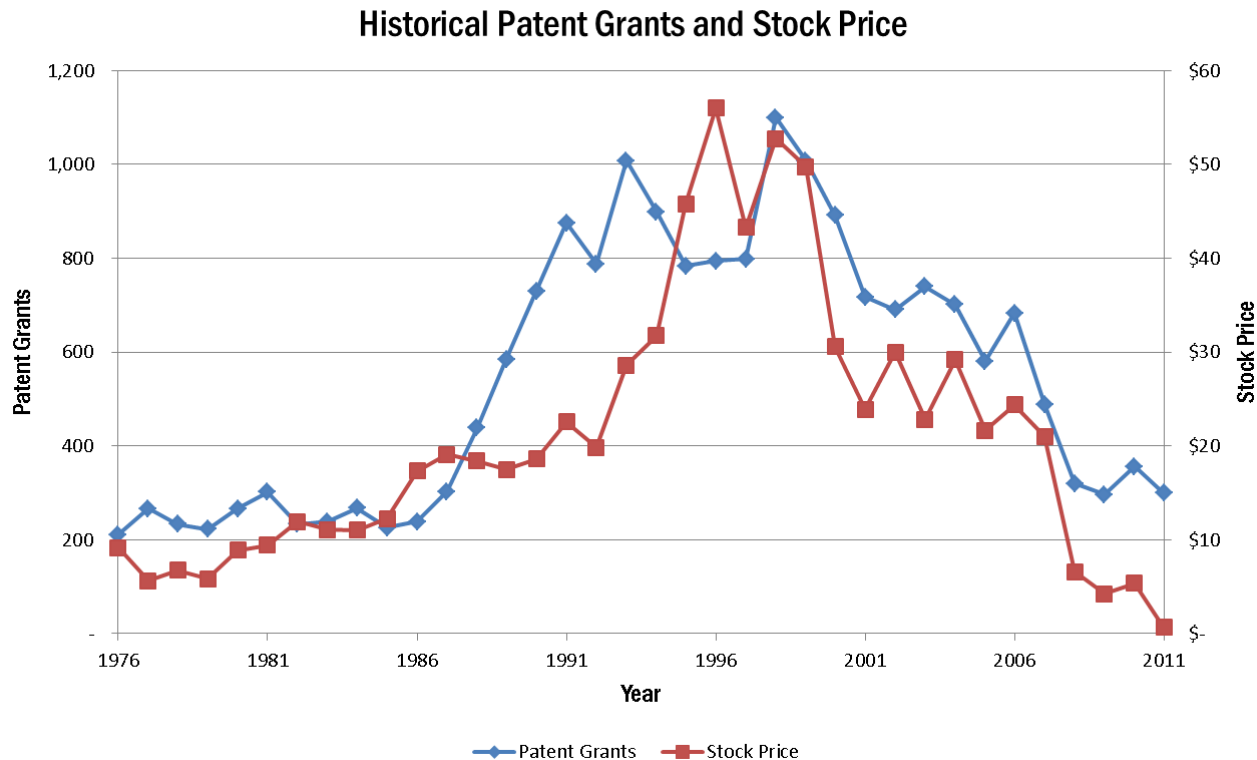
Apple's Invention Priority by Year

- This behavior expresses in data if you know where to look
 - Huge priority spike in 2012
 - Downward trajectory ever since 2012
 - Extends protective windows, delaying competitive obsolescence

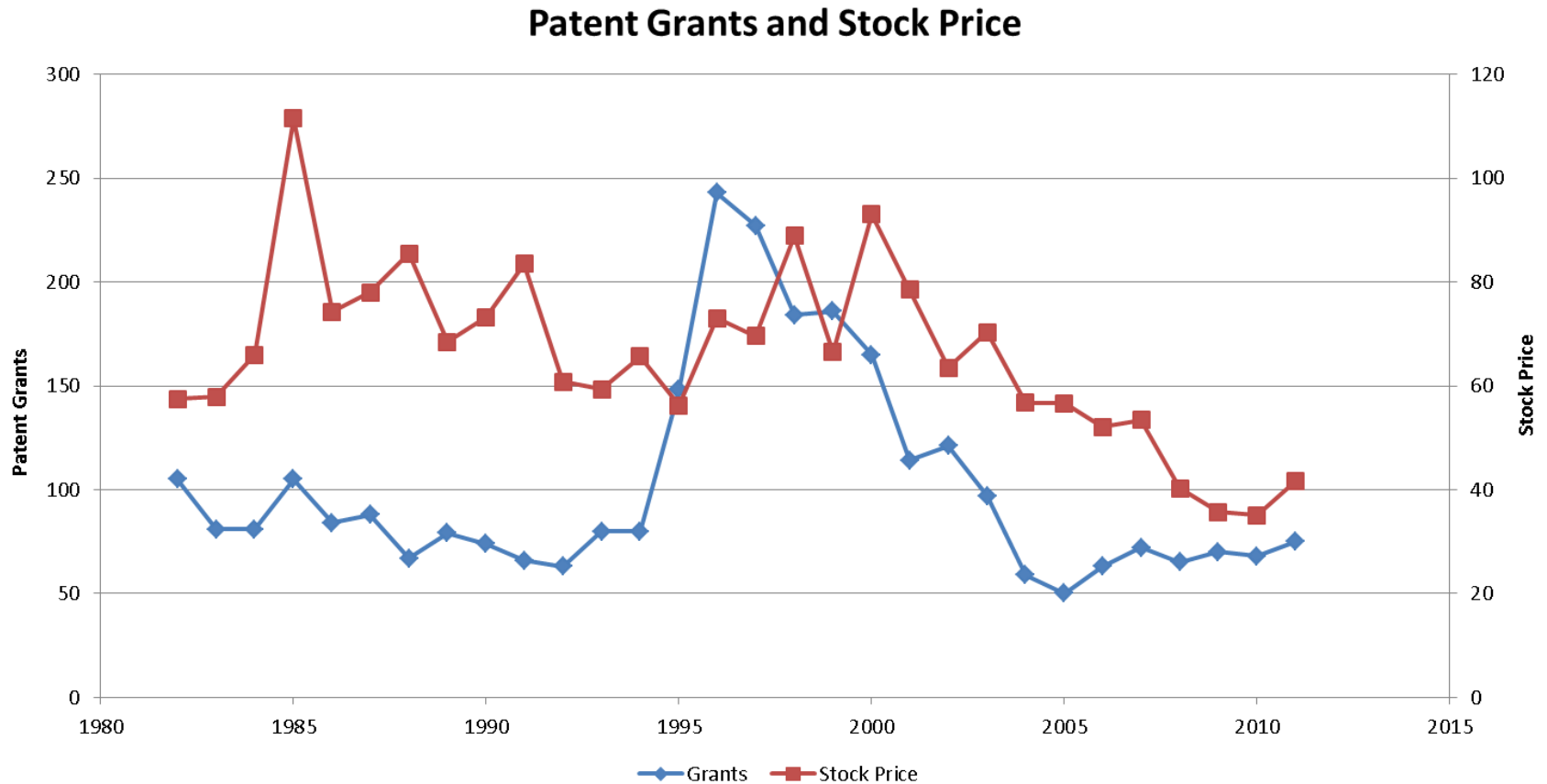


Remember Kodak?

- What happens when a patent-centric consumer-based business stops investing in original innovation:



- This happens in pharmaceuticals too:



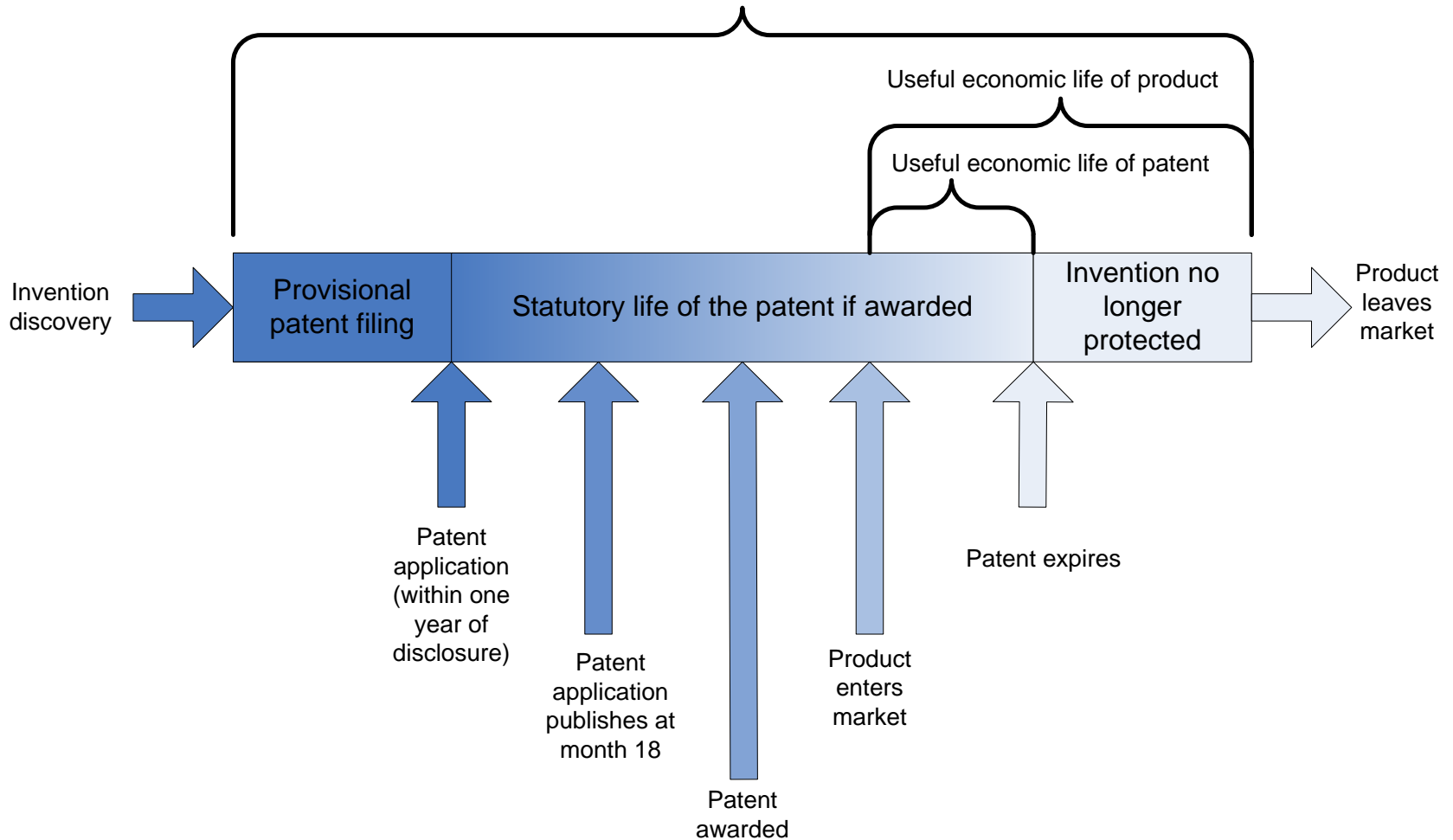
- **Might address a portfolio of IP types**
 - Patent paired with a trademark (e.g., blockbuster drug)
 - Software paired with a brand (e.g., iTunes)
 - Software paired with a patent (e.g., email filter)
- **Economic value customarily defined by the legal protection boundaries**
 - Defines the scope of how one defends IP in court
 - Point of legal protections is to extend IP economic power
- **Scope of legal protections impacts obsolescence**
 - Stronger legal protections = less obsolescence risk

- **Generally defined by 5 dimensions**
 - Patent (Federal court)
 - In statute
 - Copyright (State & Federal court)
 - In statute
 - Trademark (State & Federal court)
 - Common law and statutory
 - Trade Secret (State and Federal Court)
 - Reverse-engineering duration
 - Contractual limitations
 - Dictated by contract terms (e.g., geographic, fields of use, time, etc.)
- **Fact:** Little substance in fair value literature focuses on legal protection boundaries
 - Yet can have huge impact on valuations

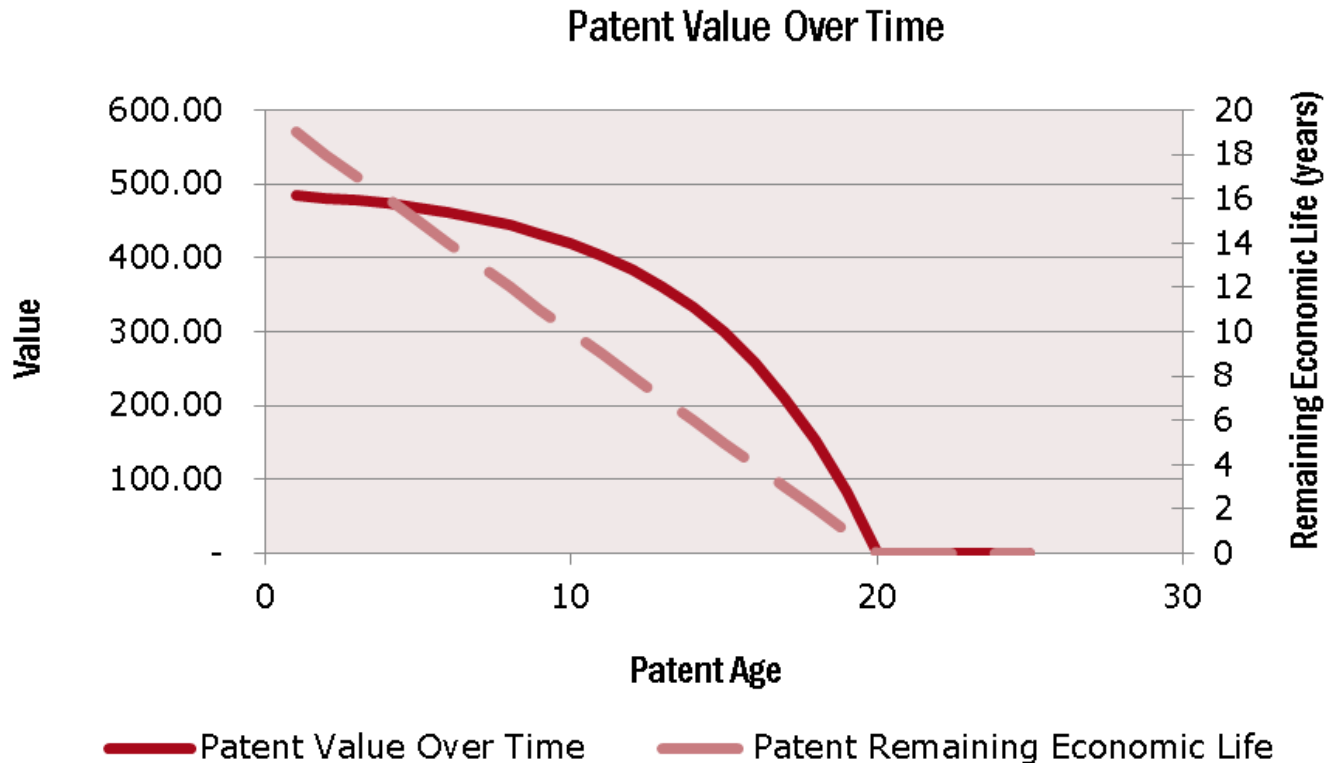
- Typically use an income-based approach
 - Determine economic life of IP
 - I prefer “economic life” to “useful life” used in literature
 - More technically appropriate
 - Foots to what is legally enforceable
 - Forecast future economic income from IP
 - Discount to present value using risk appropriate discount rate
- **Important:** There is generally **NO** residual economic value of IP
 - Some literature sources speak about it
 - Theoretically invalid on its surface
 - Proof: try to collect damages for dates after patent expires

Exemplary Patented Product Cycle

The Simplified Life of a Patented Product in the Market

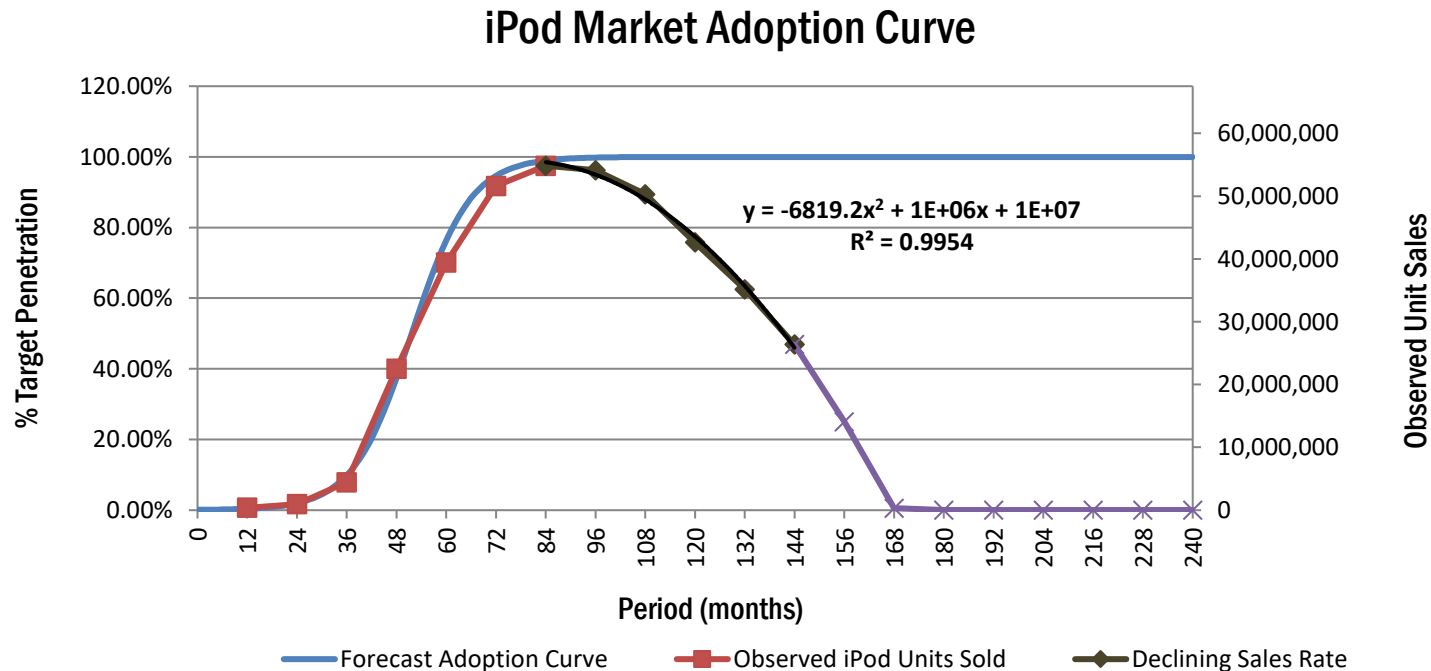


- Time is important, especially for patents
 - Present value of patents reduces every day
 - Notice non-linear, parabolic decay that accelerates at product end?



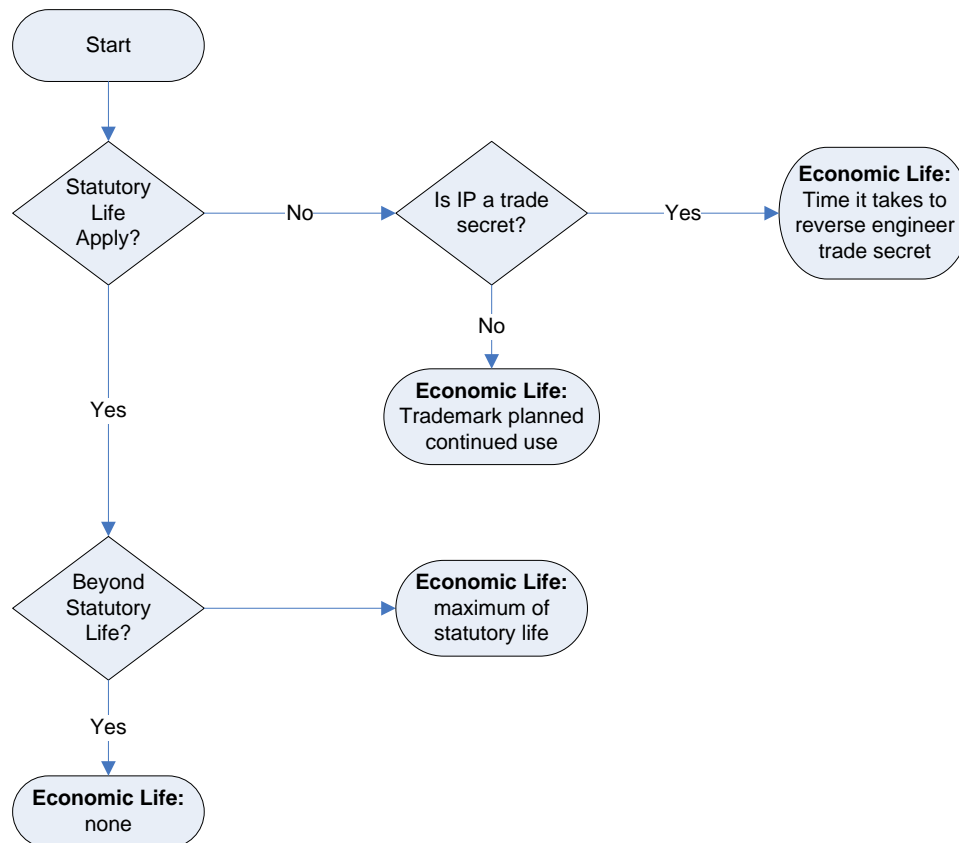
Theory Meets Empirical Data

- Initial iPod market adoption matches 7-year Fisher-Pry curve
- At market peak, sales start to decay exponentially
 - Exceptionally strong time-series forecast
 - Forecast error < 1%, actual error ~2% for following year



- **Literature focuses on several methods**
 - **Random portfolio samples to drive averages**
 - What I call “Flaw of Averages”
 - Apply average life to portfolio of all assets
 - Likely over values half of the assets
 - Likely under values the rest
 - **Survivor curves**
 - **Negotiated endpoints**
 - §197 tax amortization set at 15 years
 - No basis in fact for it at all
- **Darts thrown at a board**
- **Head in the sand (i.e., ignore it altogether)**
 - This is more common that should be
 - Valued IP once > 80% impaired 9 months after buy, no impairment forced

- **Obsolescence is a subset of economic life**
- **If economic life is wrong, obsolescence may also be wrong**



- **There are no shortcuts**
 - Have to get in and undertake significant analysis
 - Forecasts for all major product lines
 - Not stretch for companies using last-best-estimate (LBE) forecasting
- **Obsolescence determinations are fact specific**
 - Nature of the assets valued
 - Monetization strategies
 - Legal boundaries of protection
 - Rate of change in the industry
- **Focus on the assets that matter**
 - Pick appropriate threshold (e.g., 80% of revenue footprint)
 - Balance should not alter outcomes materially

- **Obsolescence depends on asset valued**
 - Patents for drugs generally are valuable until last day of term
 - Copyrights are valuable as long as market has interest
 - Michael Jackson had immense value past his death
 - Prince Harry book copyright has immediate value
 - Likely loses value well before copyright expires
 - Brands are valuable for as long as they are used
 - Legacy brands may have low/no value if not used
 - Trade secrets are valuable as long as secret
 - Potentially perpetually
 - Bounded by time and costs to reverse-engineer

- **Software is valuable until it is replaced**
 - Software use is binary
 - It does not amortize to zero
- **What about customer lists, or other “asset” classes identified in practice guides?**
 - I quote them because they are not independent assets
 - Fiction created by committees in accounting profession
- **Remember:** Asset obsolescence ties in part to legal protections
- **Want proof?**
 - One cannot bring legal claims on customer list or software in court directly
 - One can raise a trade secret misappropriation, copyright infringement, or breach of contract claims relating to a customer list or software

- **Obsolescence impacts depend on monetization strategy**
 - Lower with price setting market power (e.g., Apple)
 - Lower with strategic vendor lock-in (e.g., Microsoft)
 - Lower with consumer resistance to change (e.g., petrol cars)
 - Lower with significant up-front investments for competitors (e.g., build new insulin manufacturing line)
 - **Greater with commoditization**
 - Fewer barriers to entry
 - **Greater with fluid competitive market**
 - More switching alternatives
 - **Greater with weak IP rights**
 - Easier for competitors to encroach

Scope of Legal Protections

- **Legal protections can reduce obsolescence risk**
 - May preserve economic opportunities unavailable to competitors
- **Patents**
 - Later invention may have cost advantage (e.g., cheaper), but infringe earlier patent (e.g., counterfeit Gillette razor blade cartridges)
- **Copyrights**
 - Limits distribution to high-value alternative (e.g., Harry Potter movies)
- **Trademarks**
 - Limit access to counterfeit products, preserving margin
- **Contracts**
 - Create limits/preserve economic opportunities
 - As varied and creative as attorneys that draft them

- **Rate of change in industry can affect asset value**
- **Many factors drive impacts**
 - New products (e.g., better camera module on phone)
 - Changes in consumer tastes
 - Regulatory impacts
- **Practical impacts express in valuation:**
 - Truncated economic life
 - Lower marginal revenues
 - Greater marginal costs
 - Lower marginal profits
 - Greater marginal risks

- Example: Racial tensions erupt in 2020
- **Impact:** Companies evaluate brands in view of what they see happening in their cities
 - Bigelow rebrands Plantation Mint tea to Perfection Mint tea
 - Same product, new name
 - Washington Redskins rebrands to Washington Commanders
 - Uncle Ben's rice brand rebrands to Ben's Original
 - Pepsi retires Aunt Jemima brand, rebranding to Pearl Milling Company
 - Many other examples

Rate of Change in Industry

- Consider Aunt Jemima trademarks
 - Owned by Quaker Oats
- Pepsi bought Quaker Oats in 2001
 - Brand should be sitting on balance sheet
- Indefinite lived asset
 - Theoretically invalid to amortize (understates value when used)
- Trademarks are still live at USPTO as of May 2023



	Serial Number	Reg. Number	Word Mark	Check Status	Live/Dead	Class(es)
1	90005800		AUNT JEMIMA	TSDR	LIVE	
2	90012648		AUNT JEMIMA	TSDR	LIVE	
3	78469434	3184514	AUNT JEMIMA	TSDR	LIVE	
4	73821742	1590084	AUNT JEMIMA	TSDR	LIVE	
5	71569216	0522386	AUNT JEMIMA	TSDR	LIVE	
6	71012280	0051056	AUNT JEMIMA	TSDR	LIVE	

- **Two mentions in 2020 10-K**

Quaker Foods North America

Either independently or in conjunction with third parties, QFNA makes, markets, distributes and sells cereals, rice, pasta and other branded products. QFNA's products include Aunt Jemima mixes and syrups, Cap'n Crunch cereal, Life cereal, Quaker Chewy granola bars, Quaker grits, Quaker oatmeal, Quaker rice cakes, Quaker simply granola and Rice-A-Roni side dishes. QFNA's branded products are sold to independent distributors and retailers.

- **Pepsi admits brand is valuable**

Our Brands and Intellectual Property Rights

We own numerous valuable trademarks which are essential to our worldwide businesses, including Agusha, Amp Energy, Aquafina, Aquafina Flavorsplash, Arto Lifewater, Aunt Jemima, BaiCaoWei, Bare, Bokomo, Bolt24, bubly, Cap'n Crunch, Ceres, Cheetos, Chester's, Chipita, Chipsy, Chokis, Chudo, Cracker Jack, Crunchy, Diet Mountain Dew, Diet Mug, Diet Pepsi, Diet 7UP (outside the United States), Domik v Derevne, Doritos, Driftwell, Duyvis, Elma Chips, Emperador, Evolve, Frito-Lay, Fritos, Fruktovy Sad, G2, Gamesa, Gatorade, Grandma's, H2oh!, Health Warrior, Imunele, Izze, J-7 Tonus, Kas, KeVita, Kurkure, Lay's, Life,

- **Zero mentions in 2021 10-K**

What Pepsi Tells Market in 2021

- No mention at all of Aunt Jemima brand
 - Pepsi knew it mothballed brand at that point
 - No impairment charge for Aunt Jemima brand in annual report

	2021					
	Reported, GAAP Measure ^(b)	Items Affecting Comparability ^(a)				Core, Non-GAAP Measure ^(b)
		Mark-to-market net impact	Restructuring and impairment charges	Acquisition and divestiture-related charges ^(c)		
FLNA	\$ 5,633	\$ —	\$ 28	\$ 2	\$ 5,663	
QFNA	578	—	—	—	578	
PBNA	2,442	—	20	11	2,473	
LatAm	1,369	—	37	—	1,406	
Europe	1,292	—	81	8	1,381	
AMESA	858	—	15	10	883	
APAC	673	—	7	4	684	
Corporate unallocated expenses	(1,683)	19	49	(39)	(1,654)	
Total	\$ 11,162	\$ 19	\$ 237	\$ (4)	\$ 11,414	

- New branding is Pearl Milling Company
- **Reality:** Aunt Jemima brand is clearly obsolete
 - Brand is likely fully impaired
 - Yet no impairments recorded on indefinite lived assets in SEC filings in relevant reporting year
 - Is this misstatement of financial records?
 - Are there any consequences for Pepsi or auditor for possible misstatement?



- Consider 20 year annuity
- Payment is \$100,000 per year
 - Keeps example simple
 - In real world, product sales/value will change over time
- Discount rate is constant 25.00%
- Net present value is: **\$395,388**
- Consider several scenarios:
 - Straight line amortization (7 year, 20 year)
 - Survivor curve amortization (7 year, 20 year)

Value Impacts By Method

- Actual value: **\$395,388**
- Straight line amortization (7 year): \$219,363 (-45%)
- Straight line amortization (20 year): \$320,922 (-19%)
- Survivor curve amortization (7 year): \$187,012 (-53%)
- Survivor curve amortization (20 year): \$325,455 (-18%)
- Every method under-values relative to actual value
 - Some significantly
- Have similar over-valuation risk if presume life is longer than data supports

Why Not More Rigor?

- **Deeper analysis**
 - Harder
 - More cost
- **Provider resistance**
 - Arrogance, laziness
 - Emphasize provider brand versus analysis substance
- **Companies do not want truth**
 - Do not want bad news
 - Reality is that most M&A never achieves financial objectives
 - Would force a significant number and amount of impairments
- **No penalty for failure**
 - Iconix is one of few that comes to mind for brand impairment
- **Reality:** Nothing will change without owner/service provider consequences
 - True story: I was once asked to fudge numbers by Top-10 accounting firm

