

Valuing Trade Secrets

How can you value your firm's trade secrets?

The first step is to define what trade secrets are so that you can isolate the right assets for review. So what are trade secrets? Trade secrets are proprietary information, knowledge, formulas, methods, designs or processes that confer commercial advantage to those who possess them. Trade secrets are not commercially known or readily ascertainable and are the subject of efforts to keep such knowledge secret.

The second step is to crystalize the intended use of the trade secrets. For purposes of this article, let's suppose that a company (which we will call ABC Galvanizing) wishes to ascertain the value of its trade secrets that it is currently using and plans to use indefinitely. These trade secrets accelerate the process of hot-dip galvanizing. ABC Galvanizing does not believe that these trade secrets are being misappropriated.¹ Perhaps, the motivation for valuing its trade secrets is to ensure that ABC Galvanizing is including the value of its trade secrets in its enterprise value. It is particularly important that businesses do not shortchange themselves by neglecting to articulate the value of their trade secrets, particularly, when they are in the process of getting acquired, raising capital, negotiating strategic alliances or securing loans.

Now that we know what a trade secret is and understand the context for the valuation assignment, how do we determine the value of ABC Galvanizing's hot-dip trade secrets?² The first step is to determine the economic value of the trade secret. In this hypothetical, the entire value of ABC's hot-dip galvanizing trade secret is a function of its ability to accelerate the production (and thus reduce the costs) of the galvanizing process. If ABC's trade secreted galvanizing process were to be credited with enabling ABC to raise its prices (because the quality of its hot-dip process led to an advantage such as longer lasting steel) we would have had to apportion the price increases (and possibly some of its volume growth) to trade secrets, trademarks, service marks, brand equity, domain names, ABC's salesforce, economic cycles and the like.

The calculation of the economic value of ABC's trade secrets can be derived by determining the risk-adjusted present value of the future cash flows that are expected to result from practicing the subject trade secret.³ Let us walk through the Income Method of Valuing Trade Secrets by reviewing Figure 1.

Figure 1

¹ Had the premise of this valuation exercise been in the context of pursuing damages resulting from misappropriation of trade secrets, we would have had to take into account the plaintiff's losses; the disgorgement (at least some) of the defendant's profits; reasonable royalties; punitive damages; prejudgment interest; and, attorney's fees. There is another remedy in trade secret law called the head start rule (a.k.a. cost savings and negative know-how) which provides relief to the trade secret owner when a misappropriator derives value by avoiding making expensive mistakes that the owner of the trade secret made in developing the proprietary knowledge.

² At least as referred to in this hypothetical trade secret valuation, hot-dip galvanizing is the process of dipping fabricated steel into a kettle or vat containing molten zinc.

³ While not the subject of this article, other methods of establishing baseline values of trade secrets include the Market Method, the Cost Method, Options Methods and more sophisticated methodologies such as Monte Carlo.

ABC Galvanizing							
Valuation of Hot-Dip Galvanizing Trade Secrets							
The Income Method of Valuation							
Notes		2016	2017	2018	2019	2020	Terminal Value
1	Production - Tons per Year	50,000	53,500	57,245	61,252	65,540	
2	Revenue per Ton	\$100.00	\$103.00	\$106.09	\$109.27	\$112.55	
	Company-Wide Revenues	\$5,000,000	\$5,510,500	\$6,073,122	\$6,693,188	\$7,376,562	
3	Operating Profit Margin / Ton	\$12.00	\$12.36	\$12.73	\$13.11	\$13.51	
	Operating Profit (%)	12.0%	12.0%	12.0%	12.0%	12.0%	
4	Industry Average OPM / Ton	\$10.00	\$10.30	\$10.61	\$10.93	\$11.26	
	Excess OP / Ton Attrib. To Trade Secrets	\$2.00	\$2.06	\$2.12	\$2.19	\$2.25	
5	Implied Royalty Rate	2.0%	2.0%	2.0%	2.0%	2.0%	
3,4	Operating Profit Advantage of ABC vs. Peers	20.0%	20.0%	20.0%	20.0%	20.0%	
6	Excess Profit Due To Trade Secrets	\$100,000	\$110,210	\$121,462	\$133,864	\$147,531	\$1,917,906
7	Weighted Average Cost of Capital	12%					
8	Discount Factor	0.94	0.84	0.75	0.67	0.60	0.54
	Net Present Value	\$94,491	\$92,981	\$91,495	\$90,033	\$88,594	\$1,028,320
	Total Net Present Value	\$1,485,913					
9	Risk in Losing Trade Secret	25%					
	Risk Adjusted NPV of Trade Secret	\$1,114,435					
	Rounded	\$1,100,000					

The notes below briefly explain the assumptions embedded in Figure 1.

Note 1 – ABC’s volumes have been rising 7% annually (on average) for more than ten years. The Company’s firm orders—evidenced by a high incidence of customers remitting deposits—gives me comfort in my assumptions for 7% annual production increases from 2016 to 2020.

Note 2 – This is the average price that ABC Galvanizing charges its customers. Based on trending analysis, we are modeling that ABC and other industry players will achieve a 3% annual pricing improvement from 2016 to 2020 due to the supply and demand dynamics that exist in the industry.

Notes 3-5 – I am modeling in that the annual 3% pricing improvement is offset by similar increases in operating costs for both ABC Galvanizing and its peers. In this hypothetical, I am assuming that the only difference between ABC providing galvanizing services and its peers providing such services is ABC’s trade secreted process. Because of the value conferred by its trade secrets, ABC Galvanizing maintains its 20% operating profit margin advantage over the other industry participants from 2016 to 2020. Similarly, ABC’s excess operating profit remains at 2% of that company’s revenues.

In other situations, there will not be sufficient transparency into peer companies’ operating costs to make a determination about relative operating margin advantages. Even if there was tremendous transparency, there would be too many operating variables to determine how much of the subject company’s higher operating profit margin should be attributable to its trade secrets. In these situations, the analyst can perform an Excess Earnings Valuation, an abbreviation of which is illustrated in Figure 2.

Figure 2

ABC Galvanizing							
Valuation of Hot-Dip Galvanizing Trade Secrets							
Excess Earnings Method							
		2016	2017	2018	2019	2020	Terminal Value
Production - Tons per Year		50,000	53,500	57,245	61,252	65,540	
Revenue per Ton		\$100.00	\$103.00	\$106.09	\$109.27	\$112.55	
Company-Wide Revenues		\$5,000,000	\$5,510,500	\$6,073,122	\$6,693,188	\$7,376,562	
Implied Royalty Rate		2.1%	2.1%	2.1%	2.1%	2.1%	
Implied Royalty Revenues		\$105,000	\$115,721	\$127,536	\$140,557	\$154,908	
Implied Costs of Maintaining Trade Secrets		\$5,000	\$5,150	\$5,305	\$5,464	\$5,628	
Net Contribution of Trade Secrets		\$100,000	\$110,571	\$122,231	\$135,093	\$149,280	\$1,917,906
Weighted Average Cost of Capital	12%						
Discount Factor		0.94	0.84	0.75	0.67	0.60	0.54
Net Present Value		\$94,491	\$93,285	\$92,074	\$90,860	\$89,644	\$1,028,320
Total Net Present Value		\$1,488,674					
Risk in Losing Trade Secret	25%						
Risk Adjusted NPV of Trade Secret		\$1,116,505					
Rounded		\$1,100,000					

As can be seen on Figure 2, much of the work in the Income Method finds its way into Excess Earnings Method. One of the primary differences is that the analyst needs to arrive at an Implied Royalty Rate which is what the owner of the trade secrets would have to pay someone else to use the trade secrets if they owned them. The analyst can arrive at the Implied Royalty Rate by using patents as proxies for trade secrets and performing market comparable analysis; using Black-Scholes analysis; applying the Georgia-Pacific factors; and, other methods. The other line that appears on the Excess Earnings Model, but not on the Income Method, is the Implied Costs for Maintaining Trade Secrets. As you read about the measures that can be taken to protect trade secrets in Note 9 below, the related costs should become evident.

Note 6 – Figure 3 below illustrates the calculation of Terminal Value. The notion of Terminal Value here is that ABC’s trade secrets are expected to yield ABC Galvanizing a competitive advantage long into the future. It would be unfair to ignore the value that ABC Galvanizing’s trade secrets are expected to produce after 2020 just because it is laborious to model out so many years in the future.

Figure 3

ABC Galvanizing	
Calculation of Terminal Value	
Normalized 2021 Excess Earnings Projection:	
2020 Normalized Excess Profits Apportioned to Trade Secrets	\$147,531
Times : Expected Long-Term Growth Rate	4%
Equals: 2021 Normalized Excess Earnings	\$153,432
Terminal Value = E / (K-g)	
E = Normalized Excess Earnings in 2021	\$153,432
K = Discount Rate (WACC)	12%
g = Expected Long-Term Growth Rate	4%
Indicated Terminal Value	\$1,917,906
Present Value Factor	0.54
Present Value of the Terminal Value	\$1,028,320

Note 7 – For purposes of this exercise, we will assume that 12% accurately reflects ABC Galvanizing’s weighted average cost of capital (whereby the costs of its debt and equity are considered in proportion to their contribution to ABC’s capital structure).

Note 8 – These numbers reflect the mid-year convention for applying discount rates.

Note 9 – Efforts must be made to determine the degree of risk that exists in terms of the subject trade secrets being independently reverse engineered or otherwise compromised as a result of inadequate safeguarding. While every valuation professional can make his own determination of such risks, I will discuss some of the factors that may be included in such a determination.

Let’s first discuss the factors that could lead to the independent reverse engineering of trade secrets. Trade secrets that are highly sophisticated, require highly trained professionals with expertise in a variety of disciplines as well as expensive equipment are difficult to reverse engineer. Also, trade secrets that require expensive equipment to ascertain what the trade secrets consist of carry lower reverse engineering risks than trade secrets whose ingredients can be detected with the naked eye.

Now let’s discuss several of the policies that a company can adapt to reduce its risks of trade secret misappropriation. (A company need not take every conceivable measure to adequately protect its trade secrets and the notion of such measures being proportionate to the company’s resources pervades trade secret law.) Companies that wish to protect their trade secrets should undertake practices such as requiring employees to sign employment agreements with confidentiality obligations; screen the speeches and publications of employees; detail security measures governing trade secrets in their employee handbooks; mark relevant documents as “confidential”; and, require the logging in to access labs and sensitive information on computers. Siloing proprietary processes off so that no employee learns the entire trade secret is a sound practice. Companies covetous of trade secrets should conduct employee exit interviews as trade secrets are particularly difficult to enforce when employees leave their companies.

Some highly successful companies have gone to extraordinary measures to protect their trade secrets. During the reign of Steve Jobs, Apple’s secret projects were pursued in buildings with covered windows and a security regimen that required employees to badge in as many as four times. When the Wall Street Journal wanted to develop its app for the iPad, Apple made a few iPad’s available for that purpose.

According to Apple's rules, the iPads were enclosed in a bolted case and chained to a table in a windowless room. In 2006, Apple sued two websites that reported details of an unreleased product code-named "Asteroid." The motivation for these suits was not so much to gag the media but to learn the identity of the person in its ranks who leaked the information and to scare the rest of Apple's employees to refrain from disseminating proprietary Apple secrets.

Back when Netflix's business consisted solely of mailing out DVDs it disguised the provenance of the custom-made sorting machines in its San Jose (CA) warehouse by painting an invented logo. This may seem like an unnecessary step in protecting trade secrets but there is actually a spot-on precedent for the wisdom of doing so. Bain, on behalf of its client, Bausch & Lomb, obtained BBC footage of the United Kingdom's Queen Mother touring a Coopervision plant in the south of England. The consulting firm blew up the nameplates affixed to Coopervision's machines as the Queen Mother walked through the plant. Bain then obtained quotes from the related equipment vendors and, with the help of Bausch & Lomb, reversed-engineered Coopervision's production costs.

The following are among the issues that can be factored into the Risk of Losing Trade Secrets:

- The company's history of abandoning patent applications.
- The company's sponsorship of code jams whereby it indiscriminately provides pieces of its software code to programmers. A similar issue is the extent to which the company embraces Open Innovation.
- The company runs tours through its factories. It would be even worse if it did not collect mobile phones and cameras before so doing. Interestingly, Japanese manufacturers such as Toyota, Honda, Sony, and Panasonic have long welcomed competitors to tour their plants and study their methods.
- The location of the business. Businesses that are located at great distances from competitors are less likely to encounter corporate espionage than businesses that share the same elevator banks and cafeterias with competing firms. (One of the reasons that the Wright Brothers pursued the development of the airplane at Kitty Hawk (NC) was that it was isolated.) Another concern with competitors that are concentrated in a given locality is that many employees' spouses work for adversarial firms. (I can't help but be concerned that the trance of pillow talk may eclipse the perceived risk of violating non-disclosure agreements. Indeed, during World War II, the Americans and British were reticent to disclose classified information to their French allies; but not because the Anglo allies believed there were treasonous intentions on the part of the French. The concern was that the more amorous nature of the French would inevitably lead to more pillow talk and therefore inadvertent leakage of secrets.)
- The architecture of the business's buildings. Businesses located in buildings where mobile phones are rendered useless have less risk of trade secret porousness. This is the case with The *Fédération Internationale de Football Association's* headquarters in Zurich where five of its floors are underground and surrounded by granite. While it might seem obvious that companies produce their products in factories have walls (especially in the age of drones), this was not the case when Tesla Motors partnered with a firm in Thailand to produce its batteries. The Tesla engineers learned that, due to the extreme heat, many factories in Thailand merely consisted of concrete slabs holding up roofs.

- The extent to which the company has current or former disgruntled employees. It is also worth inquiring as to the incidence of executives with exploitable vulnerabilities—such as alcoholism or drug use—that make them susceptible to blackmail.
- The degree to which the company is vertically integrated. Generally, the more vertically integrated a company is, the better its trade secrets can be maintained since outsiders will find it more difficult to understand which inputs are used in creating the end products.
- The rigor with which the company's information technology systems are protected from intrusion. Some issues that can be considered along these lines are whether computers containing confidential information are connected to the Internet, whether their USB ports are jammed, and the enforcement of non-obvious passwords. I would be interested in understanding the extent to which employees' social media activities are monitored. It is also important that these issues are considered with respect to the firm's vendors (such as law firms) that are privy to confidential information.
- The tidiness of desks and offices. Some companies—such as UPS—require their office workers to clean their desks before leaving. This reduces the risk of prying eyes seeing things that they shouldn't.
- The company outsources its manufacturing. This would be especially problematic if its contractors are in countries notorious for trade secret misappropriation. It is also of concern when a company has foreign investors, especially if they are government institutions from countries notorious for usurping trade secrets. The permanent presence of outside auditors in foreign offices would present another trade secret risk.
- The company's travel policies, especially as they relate to foreign destinations. For instance, a sound travel policy would be if a company prohibits its employees from talking about company business with fellow passengers, cleans their computers of proprietary information before travel commences, requires that privacy protectors be used on laptop computers, restricts Internet usage abroad and scans computers for spyware upon return.
- The risks of losing trade secrets should be considered in conjunction with non-compete agreements because so much of the value of trade secrets resides in employees' brains. The more enforceable non-compete agreements are, the longer they are in effect and the easier it is to obtain injunctions, the better. Ideally, past employees should have their contingent compensation (e.g. earn-outs or the vesting of stock) tied to their complying with their non-compete agreements.
- Whether or not the governing law holds that trade secrets are subject to disclosure as public records. Further, what is the likelihood that such disclosure would be of the entire trade secret or be limited to a list of ingredients? Will such disclosure be limited to regulatory authorities or open to the public?
- If the business is involved with processing animals into food, whether or not the state has adopted "ag-gag" laws which allow for the termination of employees who film and document their employers' operating practices.

Call – Out

Trade Secret Valuation and Tournament Theory

One of the benefits of a firm developing trade secrets is that it sparks Tournament Theory.

Tournament Theory holds that a company can boost its performance by causing its employees to compete against one another for promotions, perks and bonuses. Throughout their careers, employees will advance by securing fewer (but more lucrative) appointments in much the same way that tennis players compete against each other throughout their careers. Part of the logic of Tournament Theory is that paying a CEO a huge salary is worthwhile, not because the CEO deserves it but because it inspires so many executives to outperform their colleagues in their attempts to ascend the corporate ladder.

How does this relate to trade secrets? When one employee out of a group of ten is chosen for a coveted, super-secret assignment with the company's top engineers, the nine others that were not chosen will be envious. This is good because it should motivate them to work harder so they might be chosen for the next stealth project. Thus, part of the value of trade secrets is the additional output that is derived from employees excluded from the trade secreted project.

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