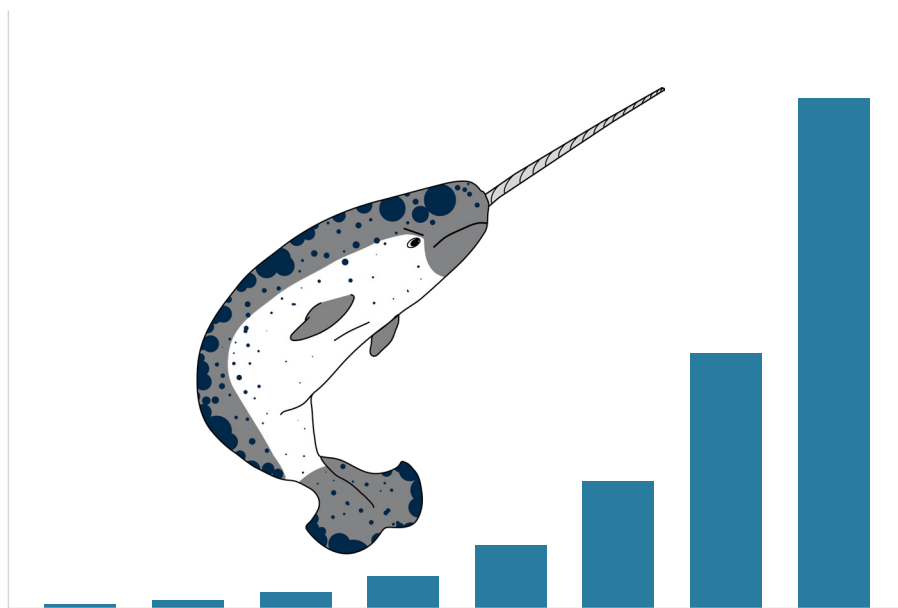


Great Expectations

Phantasmagorical Forecasts and Optimistic Entrepreneurs



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Great Expectations

“It is clear that Canadian entrepreneurs are creating phantasmagorical forecasts that they predict growth rates that experienced practitioners know to be beyond the realm of the believable and achievable.”

Every year entrepreneurs across Canada set out to raise capital, capturing their vision and optimism for their ventures in the form of business plans and financial forecasts that are eventually presented to venture capitalists (VCs). Because you don't get what you don't ask for, we wanted to see whether these forecasts could potentially be contributing to Canada's challenge at scaling companies.

To do this we examined the financial forecasts of 88 companies that were seeking venture capital, strategic capital, or an opportunity to be acquired, selecting 35 companies whose forecasts were accompanied by fully-developed business plans and sufficient data to determine the company's expected level of growth, capital consumption, and profitability.

What we found was a series of forecasts that, on average, expected a 160% compound annual growth rate (CAGR), about double what Unicorns actually achieve.

However, there are two critical flaws behind these forecasts. First, these forecasts anticipate 34% earnings before income tax, depreciation and amortization (EBITDA) in the final year of the forecasts, a rate that is significantly above the rate of profits experienced by the top public companies. Second, they also expect that it will only take an average investment of \$3.5 million to increase revenue from a current average of \$1.4 million to an average of \$20.7 million in three years. Anecdotal evidence suggests that it would be more reasonable to expect an investment of \$20 to \$30 million to secure such revenue levels.

Therefore, it is clear that Canadian entrepreneurs are creating “phantasmagorical” forecasts that they predict growth rates that experienced practitioners know to be beyond the realm of the believable and achievable.

High growth comes at a significant cost in terms of the capital required. If firms consume vast amounts of capital to grow, they should not expect to be profitable while doing so. Entrepreneurs' forecasts, while not realistic in terms of growth, should at least be realistic in terms of how much that growth will cost.

The scaling challenges that Canadian companies face are often ascribed to lack of capital. However, perhaps part of the problem is that firms are not aware of the amount of capital they will actually need. As a result, they may be raising too little money, expecting it to go farther than it actually can.

Equipping entrepreneurs with better knowledge concerning the levers of growth including the relationship between growth, capital and profitability, we may be able to improve outcomes and the ability of Canadian firms to scale successfully.

In the last ten years, we as a nation have focused on the **quantity** of startups, propelled largely by the massive and successful efforts by the provincial and federal governments in creating programs that nurture entrepreneurs. Our next opportunity is to focus on the startup **quality**. It is only through direct improvements in the quality of entrepreneurial efforts will we improve our ability to create world-class companies.

Phantasmagorical Forecasts

Every year entrepreneurs across Canada set out to raise capital, enshrining their dreams in financial forecasts, eventually presenting those to venture capitalists (VCs). VCs in turn take those forecasts and apply some discount to them to more accurately assess the potential of a company.

This is how the system should work. Entrepreneurs should be creating plans that have them conquering the world. Entrepreneurs should be optimistic, and VCs should be skeptical. One venture capitalist we consulted spoke to the disconnect between forecasts and investment decision-making:

“When presenting to investors, founders have this impression that they need to show a “bold” plan, even if that doesn’t reflect their own views of the growth trajectory they envision. As a result, looking at the forecast founders include in the deck would capture a bias towards unrealistic expectations. What ends up happening is that these forecasts are fully viewed as content marketing and not considered as part of the investment decision process. The only value these forecasts have is actually to test the thought process of the entrepreneur and evaluate if they have a good understanding of the [total addressable market]; i.e. how they will attack the market and if market size estimate is based on credible sources and so on.”

Entrepreneurs must realize that high growth comes at a significant cost in terms of the capital required. Generally, the faster you want to grow a company, the more capital will be required to support marketing and sales (M&S) expenditures. These are the crucial functions that are needed to develop the market, inform, engage, and persuade customers, and build a solid sales pipeline.

In addition, if his/her firm is consuming vast amounts of capital to grow, an entrepreneur should not expect to be profitable while doing so. Experienced entrepreneurs should know that high growth comes at the expense of profitability.

Entrepreneurs’ forecasts, while not realistic in terms of growth, should at least be realistic in terms of how much that growth will cost. One can argue that an entrepreneur’s refusal to be realistic shows a lack of understanding of how to create the growth expected, an unwillingness to face the realities of growth, or the desire to make promises that cannot be kept. This refusal may also have more dire consequences: it may be a precursor to firm failure as a result of inadequate allocation of funds to fuel growth.

And VCs, while understanding the natural exuberance of entrepreneurs, should perhaps be wary when one promises to grow their business to \$100 million of revenue in several years based on an investment of \$2 million while earning annual profits of \$50 million. Since there is probably no company that has managed to record results such as these, should these forecasts be written off as natural exuberance or a lack of understanding of how to manage a company?

Phantasmagorical Forecasts in Practice

We took a closer look at the issue of phantasmagorical projections by examining the financial forecasts of 88 companies that had been seeking venture capital, strategic capital, or an opportunity to be acquired.

From our initial group of 88 companies, we eliminated 53 companies whose forecasts could be deemed content marketing. In the end, we selected 35 companies whose forecasts were accompanied by fully developed business plans and sufficient enough data to determine the companies' expected level of growth, capital consumption, and profitability. All of these companies were based in Canada, mostly in the information technology sector, and have sought capital within the last ten years. This is not a statistically valid sample of the community and therefore should only be seen as an indicator of a situation that warrants further discussion and examination.

Our current report puts the financial forecasts of these 35 companies in context by comparing their expectations to the results of over 400 successful public technology companies in a variety of industries as well as to the capital acquisition patterns of nearly 100 US-based Unicorns. (A Unicorn is defined as a private technology company with a valuation of over \$1 billion.) Refer to Table 1 for the profile of the 35 companies that were selected for our study.

Table 1
Revenue and capital profiles of companies examined in our report.
All amounts are in Canadian dollars.

Average current revenue	\$ 1,498,000
Number of firms with no revenue	14
Average current capital raised	\$2,491,000
Number of firms with no capital	10
Average capital required now	\$2,771,000
Average additional capital required in the forecast	\$3,760,000
Number of firms identifying need for additional capital	5

Growth Rate

Although there was a mix in terms of how far out the firms forecasted revenue (refer to Table 2), the average compound growth rate expected from their first forecast year—no matter the term of the projections—was 160%. Certainly, these forecasts may be considered aggressive; and while there is nothing wrong with being aggressive, this level of growth would be significantly in excess of all but the very best Unicorns.

In fact, our report *Failure to Scale* (February 2017) showed that the average growth rate of the top 50 Unicorns (excluding some super-performers) is 99% per annum, and the growth rate of the next 50 is approximately 63% per year. A good Canadian example of super growth is Blackberry which itself grew, according to its former CEO, at a rate of approximately 100% per year for many years.

Table 2
Number of Years Forecasted

Number of Years Forecasted	Number of companies
2	2
3	11
4	8
5	14
Total	35

Revenue Growth Patterns

Table 3 shows the expected revenue trajectory of the 35 firms in our study.

Table 3
Revenue Forecasts

Year	Average Forecast Revenue (\$ million)	Average Growth Rate	Weighted Average Growth Rate
Current Actual	\$1,412		
Forecast Year 1	3,574	225%	153%
Forecast Year 2	9,729	272%	172%
Forecast Year 3	20,757	146%	113%
Forecast Year 4	32,002	85%	54%
Forecast Year 5	56,860	69%	78%

Pre Revenue Firms

The first examination we did was of pre revenue firms. Our objective in this analysis was to determine what firms with little or no revenue history expected to record in their first year of revenue. The average first year revenue anticipated by these firms was \$1.5 million. This is an aggressive forecast as one of the author's past studies on growth in the tech sector (Plant, *Path to Success*, 2005) demonstrated that very few companies were able to exceed

\$1 million of revenue in their first year of actually recording revenue. In fact, this pattern is observed with firms in our current study who were revenue positive in the year they were raising funds. Only the firms with multiple years of revenue history were able to record more than \$1 million of revenue.

First Year of Forecast

We next looked at the forecasts of the 19 firms in this study that had recorded revenue. For the purposes of analysis we removed three abnormally high outliers. The remaining 16 firms that were revenue positive when raising money expected 225% growth in the next year, an amount which is optimistic but potentially achievable. What is most interesting is the range of expected growth rates. Some firms expected no growth in their first year while others expected over 1000% growth.

Second Year of Forecast

In their second year of forecasting revenue, firms expected to grow on a weighted average basis at the rate of 172% and on a non-weighted average basis at a rate of 272%. What can be seen by these growth rates is that the firms that were experiencing more than \$335,000 of revenue in the year they were raising funds expected a growth rate of 117% in their second year of the forecast while the firms with less revenue (or zero income), expected a significantly higher growth rate of 418%.

This shows that actual revenue is a good teacher; firms that manage to figure out how to drive revenue are more realistic in their expectations of revenue growth.

Last Year of Forecast

Another problem with these forecasts is the clear pattern of declining growth in later years of the forecast.

As can be seen in Table 3, growth rates in the fourth year of the forecast (a year for which 22 firms produced projections), the expected weighted average growth rate declined to 54%. If these firms are to become Unicorns, then they need to ensure that growth rates in the fourth and subsequent years exceed this level by a substantial amount.

In fact, if these forecasts were to play out in reality, the declining growth rates in later years would be accompanied by declining revenue multiples in valuation, a lower expected price if the firm were to be sold and lower rate of return for VCs. To an experienced eye, these firms seem to expect a dramatic growth in the first few years but may not be able to support high valuations in subsequent years. To avoid this issue, the last years used in the projections should have minimum optimistic growth rates of 120%.

The patterns of growth seen in these forecasts suggest that firms may not understand the link between growth rates and return for their investors.

Profitability

The 35 firms in the study expected a gross margin of 71% and EBITDA (earnings before interest, taxes, depreciation, and amortization) of 34% in the last year of their forecasts. It is in these forecasts that the economics of growth do not seem to be well understood. While it may be possible to grow a firm at a 160% CAGR for several years, it is virtually impossible to do that with an EBITDA of 34%.

In fact, a comparison with the financial statements of public companies suggests that this is not an achievable forecast. Table 4 summarizes revenue growth rates for over 400 public North American companies in various technology sectors. Although the figures show the net income and not EBITDA, they are comparable in magnitude. (Outlier firms such as Apple were removed from the analysis as they distorted weighted averages.)

Table 4
Public Company Income and Growth

Sector	Weighted Average Net Income (as % of Revenue)	Weighted Average Revenue Growth %
Computer Hardware	2%	1%
Software	14%	8%
Medical Equipment	10%	5%
Pharma	16%	2%
Bio Tech	4%	18%

Table 5 shows the distribution of the expected EBITDA for the 35 firms in our study. The ability to accurately forecast profitability does not appear to be dependent on the ability to earn revenue.

Table 5
EBITDA, Growth, and Revenue

EBITDA (% of Revenue)	Number of Companies	Average Expected Growth Rate	Average Current Revenue (\$ million)
Up to 10%	5	86%	\$1,608
10% to 20%	4	50%	4,154
20% to 30%	4	311%	536
30% to 40%	9	85%	1,638
40% to 50%	4	134%	1,475
Above 50%	9	88%	219

In addition, in the last year of the forecasts presented (regardless of whether it is the second, third, fourth or fifth year forecasted), the average growth rate of the firms was 113%.

Expecting to earn EBITDA of 34% while growing at a rate of 113% is nearly impossible in reality. When a firm is growing at such a rate, it should be consuming vast amounts of cash to fuel its momentum (i.e. losing considerable amounts of money). Based on the expected growth rates of firms in our study, there should be only one or two firms expecting positive EBITDA.

We do not believe that these forecasts show natural exuberance but a lack of knowledge about the economics of growth in young companies. But this is a component that is easily rectified. With better knowledge about the levers of growth, we may be able to generate better outcomes and improve the ability of firms to scale successfully.

Capital Requirements

Of the 35 firms in this study, the average amount of funding requested in the documents we reviewed was \$2.7 million. Five of the firms also indicated the need for follow-on funding, which was, on average, \$3.8 million. The weighted average capital required by this group was \$3.5 million, with the expectation that this would be sufficient capital to increase revenue from a current average of \$1.4 million to an average of \$20.7 million in three years.

We drew on data from public markets to determine how this level of funding compared with the actual amounts raised by successful firms. Table 6 shows the financial composition of over 400 firms and the level of assets required to support revenue as well as the amount of capital required to support revenue levels.

Table 6
Public Company Capitalization
(Source Google Finance)

Sector	Assets as % of Revenue	Cash as % of Assets	Capital as % of Revenue
Computer Hardware	135%	18%	96%
Software	214%	34%	178%
Medical Equipment	166%	13%	140%
Pharma	215%	13%	170%
Bio Tech	230%	31%	225%

These data show that the dollar value of assets required to support revenue ranged from 135% of revenue to 230%. As we were surprised by the asset levels required to support revenue, we also examined the composition of assets to determine whether accumulated cash and short-term investments (which would also show on VC-backed company balance sheets) were excessive. While cash levels were higher in software and biotech companies, these were not deemed a major factor in high asset-to-revenue ratios.

In terms of capital as a percentage of revenue, we did not include positive retained earnings in the calculation of the capital raised. The range of capital required was between 96% of revenue for computer hardware companies and 225% of revenue in the biotech sector. As a specific example of these capital requirements, Shopify's 2016 annual statements show \$495 million of invested capital and \$389 million of revenue, which results in a ratio of 127%.

If the firms in this study were planning to increase revenue from \$1.4 million to \$20.7 million in three years, they should have been trying to raise at least \$20 million and perhaps as much as \$30 million. Interestingly enough, the proof of this assertion is in the amount that they had actually raised to date and the amount of revenue they had actually recorded. On a weighted average basis, these firms had raised \$2.5 million and had recorded weighted average revenue of \$1.4 million, a ratio of 178%, which shows that their collective experience is completely in line with the public market results while their forecasts are not in line.

In several past studies (*Failure to Scale*, February 2017 and *The Rich Get Richer*, September 2017), our research determined that Canadian VCs invest later, less often and in lower amounts than American VCs. Many commentators ascribe Canadian company's challenges in scaling to lack of capital. However, maybe part of the problem is that firms are not aware of the amount of capital they will actually need and as a result are raising too little money, expecting it to go farther than it really can.

The Next Stage – Quality

In April 1967, the Globe and Mail reported that the Government of Canada was launching five new programs to spur research and development (R&D) in industry. As the article stated, “Until now, Canadian industry has lagged far behind its foreign competitors in research and development. The Canadian economy has been based on imitation rather than innovation...” This emphasis continues to this date with governments, higher education and business spending \$30.2 billion in total on R&D:

Table 7
Canadian R&D Expenditures (2013)
Source: Conference Board of Canada

Business	\$15.5 billion
Higher Education	12.2 billion
Government	2.5 billion

About ten years ago, governments at all levels started to focus on the creation of new enterprises, which could commercialize new technologies arising from R&D. This emphasis has been incredibly successful, and one needs only to look at the activity in the startup community in Toronto and Waterloo to see how much the ecosystem has gained from investments made by the federal and Ontario governments in incubators, accelerators and programs that support them.

We have focused on the **quantity** of startups, and our next opportunity is to focus on their **quality**. It is only through direct improvements in the quality of entrepreneurial efforts that we will improve our ability to create world-class companies. Improvements in quality start with a better understanding of the economics and levers of growth. If entrepreneurs understand better how to fund growth, then they are more likely to attain high targets, raise sufficient funds to make them achievable and allocate expenditures in a way that optimizes the acceleration of growth.

This situation is very similar to the recent efforts of the British Cycling Team. Their coach, David Brailsford transformed a team with poor performance into a powerhouse. To do this, he went through every aspect of the team’s lifestyle, training and performance. He collected data and analyzed that data to make various small improvements, each of which could improve performance by perhaps 1%. But this series of small improvements resulted in a number of Tour de France wins and numerous Olympic gold medals.

We in Canada need a similar approach. There is no silver bullet to creating companies that scale to world class. We need an incremental approach that is based on evidence of best practices. We need an approach that starts with firms when they are just kicking off their operations, and not when they are already \$5 million in revenue. By that point, it is probably too late if they are not situated already on a world-class trajectory.

Now is the time to turn our efforts towards improving quality in the system; and if we do, we are likely to see the type of tremendous gains we have experienced in building quantity over the last ten years.

Methodology

This report examined financial forecasts of 35 companies, primarily in the computer software and hardware sectors. These forecasts offered enough data to determine the companies' expected level of growth, capital consumption, and profitability. All of these companies were based in Canada and have sought capital within the last ten years. We recognize that this is not a statistically valid sample of the community and therefore should be seen as an indicator of a situation that warrants further discussion and examination.

This report also compared firm expectations to the results of over 400 successful public technology companies in a variety of industries as well as to the capital acquisition patterns of approximately 100 US-based Unicorns. (A Unicorn is defined as a private technology company with a valuation of over \$1 billion.)

This study was not intended to be academically rigorous, nor was it intended to be all-encompassing about the topic. It was designed only to add to the conversation on innovation and highlight areas worthy of future research by looking at data available from publicly available sources. We plan to complete further research on this subject in the future.

About the Impact Centre

Science to Society

We generate impact through industry projects and partnerships, entrepreneurial companies, training and research.

We bridge the gap between the university and industry to accelerate the development of new or improved products and services based on physical technologies. We work with graduate students and researchers to help them commercialize their discoveries. We provide undergraduate education and training for students at all levels to ease their transition into future careers.

The Impact Centre conducts research on all aspects of innovation, from ideation and commercialization to government policy and broader themes such as the connection between science and international development. We study how companies of all sizes navigate the complex path between a discovery and its market and how their collective innovations add up to create a larger socioeconomic impact.

Our objective is to understand how we can improve our ability to create world-class technology companies, how governments, companies, and academia can identify and adopt best practices in technology commercialization.

Impact Briefs

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