

Pricing vs. Valuing The
Entire Stock Market

The Shiller CAPE Index vs.
Damodaran Implied-ERP

Are Bubbles Serving
a Purpose?

A 2021 Stock Market Bubble?

Capital Market Expectations in the Year Ahead

By Ian Quigley, MBA
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QUBE WHITEPAPER



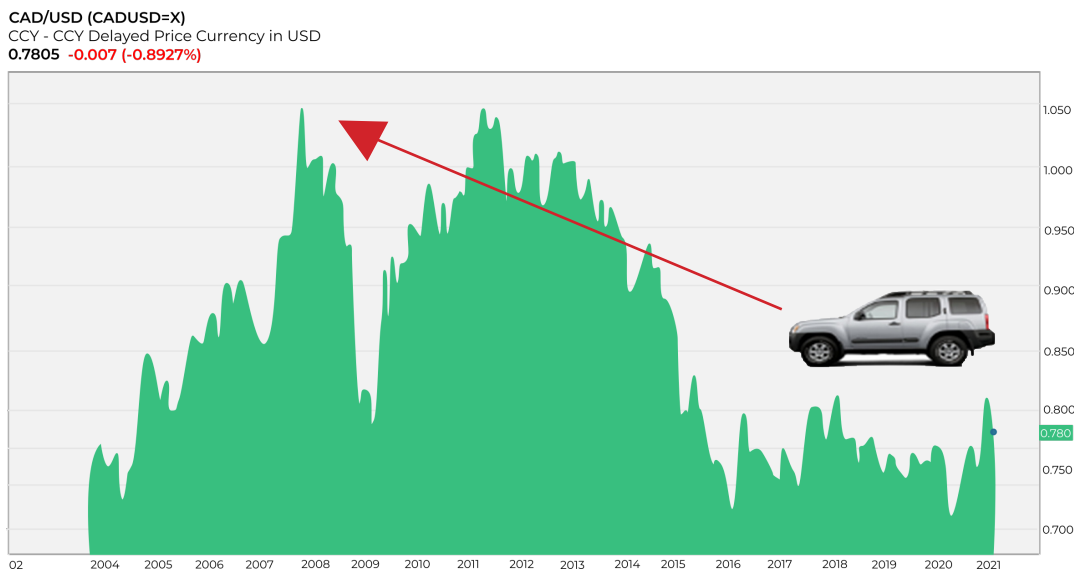
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Introduction – Your First New Car

Many of us remember buying our first car. Mine was a South Korean version of the infamous Datsun 210 that my father-in-law graciously sold me one year before I married his daughter. After many years as a “bike guy,” this was a really exciting transition for me. Equally exciting was when I purchased my first new car. It was early in 2008 and just prior to the infamous market collapse later that year. I decided on a 2008 Nissan Xterra, and my brother-in-law flew with me to Los Angeles on a car shopping adventure. In early 2008, the US/Canadian exchange rate was at par after many years of frustrating exchange rates (similar to today). Cheap American dollars created an opportunity for cross-border shopping, revealing bargains unheard of, especially for less fluid assets; like Nissan Xteras.

Like many Canadians, I quickly learned how to export a vehicle from the USA and import it into Canada. To determine the best deal, I searched dealer inventories across Canada and the USA. After contacting an LA dealer, I was able to push the price a little further, confirming that I had landed the best deal available in Western America.



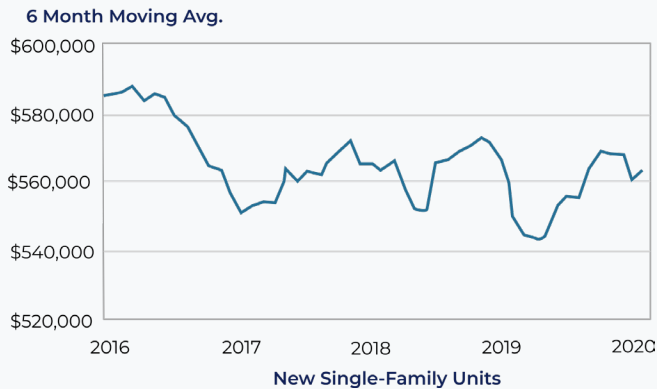
Source: Yahoo Finance

This sequence is not uncommon. It is how we purchase vehicles. We first determine how much we can afford, and then we shop around to find the lowest price and then negotiate a little further. The method works fine, and it is how we have been purchasing cars since the beginning of time.

What about Buying A Home?

A similar scenario exists when buying a home. Canadians first decide how much they can afford, often thanks to a mortgage broker or bank, and then they begin shopping. One finds the neighbourhood where they want to live, and then they seek “market comparables.” Adjustments made for lot and house size, age, proximity to a bus stop and other factors leading to what would be considered a “fair” price. Then you begin to negotiate.

Avg. Absorbed New House Price Edmonton, CMA



Source: CMHC

The Realtors Association of Edmonton reports statistics including the employment rate, average local earnings, inflation, migration patterns, housing inventory and new housing starts. The reason is to assist you in estimating the forces that lead to price (supply-demand metrics). Each report finishes with an update to several price indexes (e.g., average new house prices).

Again, this is how we purchase big things like homes and cars, and it functions fine. But it can change when the purchase is not for a home but an investment property.

Often new factors can enter into the decision—for example, the potential for rental income and the drag of maintenance costs and taxes. Commercial real estate brokers start talking about “Cap Rates,” which convert rents into prices. For example, Edmonton “Cap Rates” have slid to around 5% in recent years. A property that nets \$1,500 rent per month (after maintenance and tax costs) would therefore list around \$360,000 ($\$1,500 * 12 / 5\%$) based on the Cap Rate.

What About the Stock Market?

The stock market is no different. Most investors decide how much they wish to invest, and then they shop for a stock to purchase. Take Apple (AAPL), trading at \$135/share. You could research its recent price momentum (up 56% last 12 months), its price to earnings (P/E) ratio (37), or other widely cited metrics and then compare them to Apple’s nearest competitors. This process is synonymous to shopping for a house or car by looking at what they call “comps” or comparables. Knowing that both Apple and Microsoft trade at P/E multiples of around 37 might make you feel more comfortable purchasing Apple. This is the domain of ratio analysis, price evaluation or “pricing.”

But again, one could also shift the focus, as some do who invest in rental properties, and evaluate Apple based on its ability to generate cash for you (the investor).

Apple (as of Feb 2021)		
Price	\$135/share	Up 56% in 2020
Dividend	\$2.62/share	Grew 17% in 2020
Dividend	\$3.28/share	Up 10.44% in 2020

When you start evaluating the stock’s ability to generate cash (against its price), you have entered the realm of “value investing”. It is also the basis for our market bubble evaluation discussed in this paper.¹

Why Capital Market Expectations?

Capital Market Expectations is a process that evaluates or forecasts an expected return from the investment markets. Taking the effort to value the financial markets is not just stimulating but also integral to value investing. The financial markets reflect and dictate the “required return” needed to value a security. You could also consider the “required return,” the minimum return you would accept when investing. Allow me to explain.

If the stock market has produced a 12% annual return in the past ten years, you could consider 12% as the compensation received for investing (taking risk). With this in mind, you would evaluate a potential stock knowing that the fair compensation for investing is around 12%. For example, if you were to invest \$1,000 in a stock, it would be reasonable to anticipate it growing to \$1,120 a year later (12% growth). If your \$1,000 investment represented 0.01% of the company, it would be worth \$10,000,000 at the beginning of the year and \$11,200,000 at the end (12% growth). Knowing this in advance, you could then review the company’s business plan, sales projections, profit margins, competitive position and other relevant details to determine if it indeed had the potential to grow \$1.12M in the year to come. If you decided it had more significant potential, you would consider it a bargain at \$1,000.

Valuation Factors:
Looking beyond price:

REINVESTMENT REQUIREMENTS

BARRIERS TO ENTRY

TECHNOLOGICAL INNOVATION

RETURN ON CAPITAL

PROFIT MARGIN

ACCESS TO DEBT ASSET EFFICIENCY

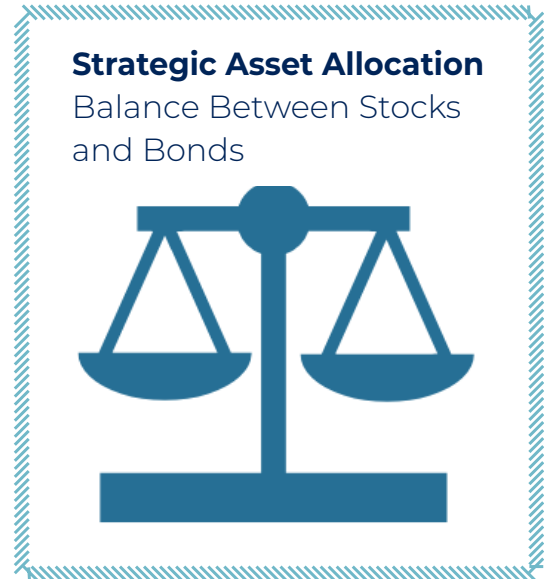
COMPETITIVE POSITION

¹ It is also a philosophical divide between many who work in the investing world. “Pricers” don’t go to the same parties as “value investors” and neither send each other Christmas cards.

The above discussion is looking at history as a guide to the future. This, in itself, can be problematic, and an example can best illustrate:

If one were to project interest rates using the past 60 years of actual interest rate returns, you would use 5.85%². If you were to use the past ten years, you would only use 2.15%, and if you were to use the current rate, it would be around 1%. Interest rates have fallen to historic lows in recent years, and this choice would have a dramatic impact on your valuations as interest rates form the base of discount rates used in doing the valuation. In summary, great care must be taken to build a valuation approach that steers as clear as possible from troubled waters like this. It truly is a combination of science, art and craftsmanship.

Capital market expectations also set our expectations about the relative return between stocks and bonds and within the market’s various sectors and regions. The stock market includes diverse sectors like energy (oil stocks), basic materials (mining stocks), consumer products, technology and financial services (banking stocks). Expectations about potential returns in these industries can assist in setting the benchmark ratio between stocks and bonds (called the strategic asset allocation) as well as more fluid placement of investments between regions and sectors (called the tactical asset allocation).



² US T-Bond average Rate since 1960.

Forecasting Challenges in the Capital Markets

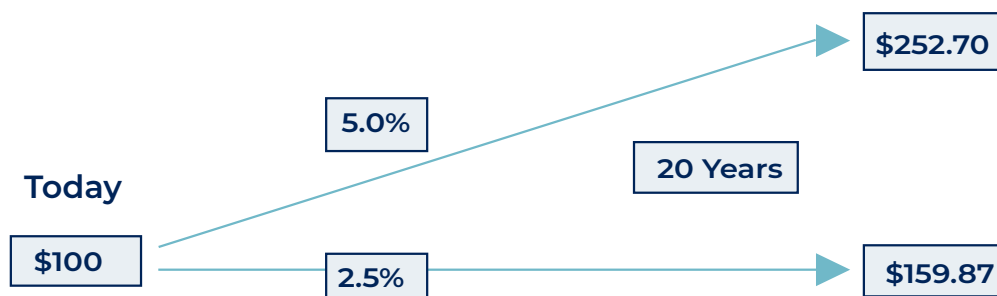
Some view valuation as a science, while others view it as an art. I prefer to think of investment valuation as a craft, a lifelong journey of discovery. Sadly, this function of setting market expectations does seem closer to an art form than most other functions a valuator does as many “disruptors” complicate the work. Some of these include:

- Limitations when using economic data (time lags, revisions, rebased indexes);
- Data measurement errors (transcription errors, survivorship bias, appraisal data);
- Limitations of historical estimates (regime changes, non-stationary data);
- Data Mining Temptations (unreasonable replication assumptions);
- Misinterpretation of correlations (causality or spurious);
- Psychological biases, including anchoring, status quo, confirmation, overconfidence, prudence, and availability bias, affect the conclusions’ validity.

So, in summary, when using historical data, care and attention is required.

Growth is THE Driver of Value

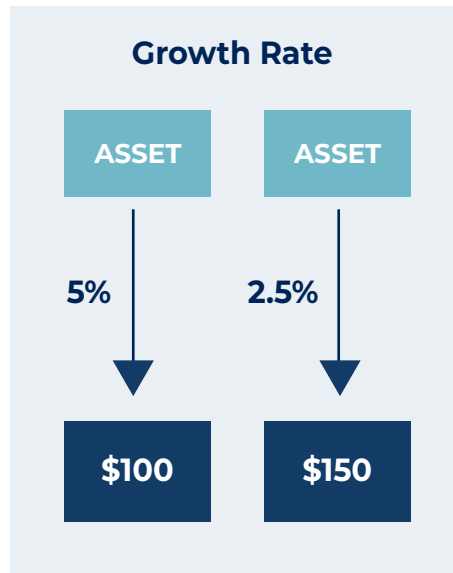
While the ability to generate cash (for shareholders) is why corporations exist, the growth in cash generation is most important. In other words, if valuation were a movie, growth would be the main character. Here again, history and the temptation for data mining can become a real issue. A small misstatement on forecasted growth rates can have severe impacts on valuations. A simple reminder of the importance of time and money can illustrate:



The modestly higher growth rate compounds the investment to almost double in 20 years.

So, growth is essential, and we can further decompose it into two parts: Inflation and Real Growth. Combined, they are referred to as Nominal Growth or just Growth. We will return to inflation forecasting later in this paper, but suffice to say that a good growth forecast includes an accurate inflation forecast. Both are required to evaluate the current state of the investment markets.

We can reverse the time and value illustration above and contemplate the impact of growth, not on future value but on current value. An asset, or entire market, growing at 5% is worth 1.5X today of what another is growing at 2.5%. That's a massive difference, for only a small differential in growth!



Exogenous Shocks

One also has to consider, especially in the short-term, unanticipated events that could disrupt the forecast. The 2020/2021 pandemic is a prime example and one that we have accounted for in every valuation done since March 2020.

Other exogenous shocks to consider include:

- Changes in the gov't policy
- Political events including elections
- Technological progress and breakthroughs
- Natural disasters
- Discovery of natural resources (e.g., fracking)
- Financial crisis(s)

These events could disrupt short-term growth, leading many to forecast growth in two components; a shorter-term / variable period and a long-term/stable state.

Large Scale Models for Growth (Growth Accounting Models)

Growth forecasting is a passion for economists using “Growth Accounting Models.” An early model, developed in 1927, was the Cobb-Douglas Production Function. In 1956 it launched into widespread use as the “Solow-Swan Model,” which won Robert Solow the Nobel Prize in 1987 (Solow continues to work at MIT at 97).

This growth forecasting strategy has proven to be accurate in forecasting large-scale growth and, in its simplest form, looks at three key inputs. Growth is the function of:

- Human Capital - growth in both the labour force and the labour participation rate;
- Physical Capital (Capital per Worker) - which increases labour productivity;
- And, Total Factor Productivity - ideas that reflect technological progress and other influences on economic efficiency.

For example, outside of a COVID year, certain immigration policies could project population growth at 0.5%, with labour force participation increasing by 1.0% (unemployment decreases), new capital inputs could be projected to grow at 2.5%, while total factor productivity increases by 1.0%. The Solow model would then predict the long-term growth rate at 5.0% ($0.5\% + 1.0\% + 2.5\% + 1.0\% = 5.0\%$). Pause here, as this is significant. Solow is telling us that, based on this macro-information, we would expect the economy to grow in coming years at about 5.0%, and the approach has proven itself accurate and worthy.



Capital Investment – Steady State

A key element to the Solow model is its prediction of the “steady-state,” meaning that you can only push growth so fast for so long. As an example, we can make capital investments by giving tractors to our farmers³. The more tractors we build, the higher our economic growth rate. Except, once each farmer has a tractor, there is diminished utility in making more. Further, tractors will also depreciate and require repairs and maintenance, so some of the growth they create will also require reinvestment. The steady-state is when we have the correct number of tractors to work our land, and we are continuing to reinvest enough to keep them all working. In other words, the tractor investment offsets the tractor depreciation.



Human Capital Investment – Steady State

The story of Capital Investment is similar to the story for Human Capital Investment. As we add more humans to the workforce, economic output will grow. Eventually, workers run out of things to do, and a steady-state is established where new entrants to the workforce balance out against the number of people retiring. Similar to Capital Investments, there is a steady-state for Human Capital Investments as both are subject to the law of diminishing marginal returns.



Total Factor Productivity – Cutting Edge Growth

The remaining variable is Total Factor Productivity, also called “Ideas” or technological innovation or even economic efficiency in the Solow model. Like the USA or Canada, a mature market will rely far more on technological advancements than it will on capital or human investments to grow. The impact of new ideas has far more potential for growth, as we have seen from the gains that industrialization brought in the last century. In the century ahead, we anticipate automation and digital transformation to spur future gains. The future, clearly, will be less about labour and tractors and far more about revolutionary ideas.



At Qube, we are not economists. We are investment folk. We focus mostly on the micro (companies) instead of the macro (countries). Nonetheless, it inspires us to see how these macro perspectives, used by economists, can translate to the valuation of a corporation or entire stock market. For example, we also determine a sustainable growth rate for a corporation, which also has boundaries defined by diminishing marginal returns and reinvestment requirements. For growth forecasts on mature companies, we also rely heavily on the innovations and ideas of management (Total Factor Productivity) rather than on plans to build property, plant and equipment (Capital Investment) or hire workers (Human Capital Investment). Of course, these revolutionary ideas will lead to increased needs of human and capital investment to implement and ongoing reinvestment to maintain. Still, it is the new and higher growth state that excites us thanks to new ideas and innovation.

As exciting as the Solow growth model (and other large-scale models) is to forecast potential economic growth, they only work accurately at distant time horizons. While 10-year forecasts are required, they are too remote for our corporate or market valuations. For these, we need 5-year estimates in conjunction with the long-term picture.

Economic Indicators

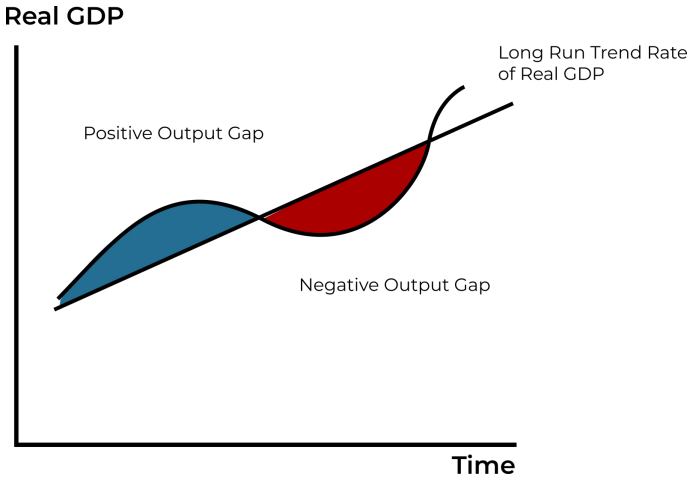
Outside of growth models, there are “economic indicators” used to forecast economic growth, the most common of these being the consumer price index (CPI), the gross domestic product (GDP), unemployment rates or the trending price of oil. You hear these items quoted during the business news because their trend is used as predictions for economic growth in the months ahead.



Tracking and reporting economic indicators is a serious business and a major focus of economists around the world. The OECD publishes statistics monthly and refers to their publication as an “indispensable and unique source of key short-term statistics” that “is a vehicle for analysis for corporate planners, economists, academics, researchers and students.” Unfortunately, practical application of these “economic indicators” stray more into the “art” of valuation and, while helpful in the generation of shorter-term forecasts, plays only a supporting role at best.

The Business Cycle Disrupter

In our journey to forecast economic growth, required to estimate the value of the stock market (and its bubble potential), we are likely to be sidelined by the business cycle. The business cycle is the primary disrupter to stable growth and, sadly, is challenging to identify and adjust accurately. Business cycles vary in duration and intensity and have turning points that are challenging to predict. A basic illustration of the economic cycle is captured in the “output gap.” In an expanding (hot) economy, output increases beyond a sustainable rate and, then in a contracting economy (recession), economic growth falls below trend.



As the economy wobbles back and forth over time, its growth rate oscillates along with it. One can break this cycle into 5 phases, all lasting various lengths that can change from one cycle to the next. Each phase can change the approach to investment valuation and the tactical strategy of the portfolio.

Source: www.economicshelp.org

Business Cycle	Inflation	Economic Policy	Asset Behaviour
Initial Recovery	Initial Declining Inflation	Stimulative	<ul style="list-style-type: none"> Short Term Rates Low/Falling LT Rates Bottom Out Bond Prices Peaking Stock Prices Increasing
Early Expansion	Low Inflation, Good Economic Growth	Less Stimulative	<ul style="list-style-type: none"> Short Term Rates Increasing LT Rates Bottom Bond Prices Decline Stock Prices Increasing
Late Expansion	Inflation Rate Increasing	Restrictive	<ul style="list-style-type: none"> ST and LT Rates Increasing Bond Pricings Falling Stock Prices Peaking/Volatile

Business Cycle	Inflation	Economic Policy	Asset Behaviour
Slowdown	Inflation Accelerates	Less Restrictive	<ul style="list-style-type: none"> • ST and LT Rates Peak then Fall • Bond Prices Start to Increase • Stock Prices Falling
Contraction	Economic Activity Declining Inflation Peaking	Easing	<ul style="list-style-type: none"> • ST and LT Rates Falling • Bond Prices Increasing • Stocks Increase End of the Stage

If only the cycle were as predictable as the table would suggest. Unfortunately, it is far from certain at any point in time, but one cannot forecast growth without acknowledging where one might be within the business cycle. The art of the forecast is to adjust accordingly.

Stock Market Growth Forecasting

When moving from the economy to the stock market, we have to shorten our perspective even further (5-year time horizon) and focus on the factors specific to it. A consensus formed in the early 2000's that there is a defensible connection between a country's forecasted GDP growth (the Growth Accounting Models just discussed) and the ability of companies in the stock market to grow the dividends paid to shareholders. Arnott and Bernstein discussed this in 2002³, showing that growth in US Real GDP (economic growth with inflation removed) per Capita (adjusted for the fact the US population grew over the 110 years) indeed had an undeniable connection to dividend growth over the same period. This greatly assists our ability to forecast market growth.

Average Real Long-Term Growth Rates (Geometric Means), 1900-2009

Period	Real GDP	Real GDP per Capita	Real EPS	Real Dividends per Share
1900-1949	3.2%	1.8%	1.0%	1.0%
1950-2009	3.1%	1.9%	1.5%	1.3%

Source: Arnott and Bernstein (2002); Haver Analytics.

The most common forecasting perspective for stock market growth uses a “supply perspective,” similar to the Growth Accounting Models discussed earlier.

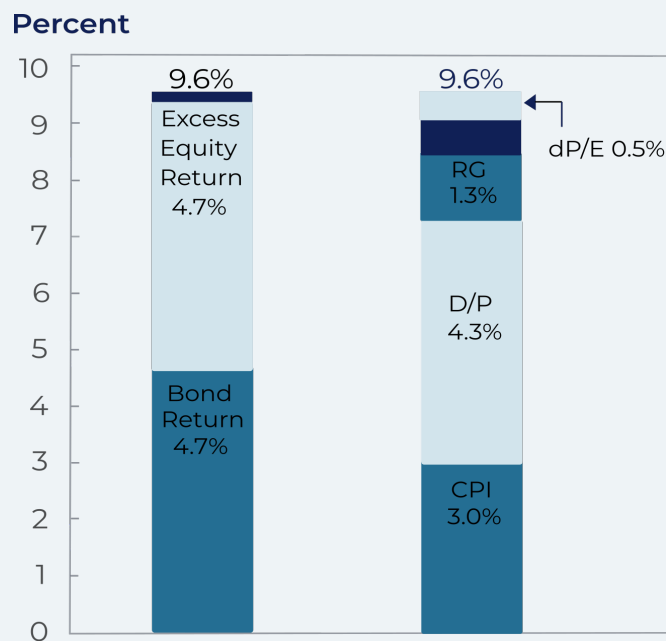
³“What Risk Premium is Normal?”, RD Arnott, PL Bernstein - Financial Analysts Journal, 2002

Here as well, one decomposes growth that the stock market could supply. A popular model, also from 2002 called the Grinold Kroner Model,⁴ forecasts stock market growth by breaking the potential gains into three main components.

- The income return (dividends and share buybacks),
- The growth return (actual market earnings growth plus inflation), and
- The repricing return (changes in the price people are willing to pay for a stock over time).

In the past 100 years, many things have increased the price investors are willing to pay for stocks, including increased transparency of public companies and implementation of portfolio diversification strategies. Nonetheless, this final component of the Grinold Kroner Model is most often assumed to be zero unless one has a credible hypothesis about future shifts in investor perspective about investing (which many do).⁵

According to Arnott & Bernstein,⁶ the US stock market, between 1900 and 2009 (110 years), has delivered a total return of 9.6%, and you can view this from a couple of perspectives. First, the stock market produced a 4.7% return over and above what government bonds delivered (also 4.7%), referred to as the “Equity Risk Premium” or ERP. This approach is also referred to as a “Demand Perspective,” meaning the return that equity investors demanded as compensation for the risk taken (4.7% over and above risk-free government bonds). More on this later.



The other perspective is called the “Supply Perspective,” and it breaks the 9.6% return into inflation (CPI at 3%), dividend income (4.3%), real corporate earnings growth (1.3%) and a repricing return (0.5%). This approach is the Grinold Kroner Model, and it explains what the markets were able to supply to investors. Or at least it tries to; it only explained 9.1% of the 9.6% historical return, which is an enormous gap over 110 years!

⁴Grinold, Richard and Kroner, Kenneth. 2002. “The Equity Risk Premium: Analyzing the Long-Run Prospects for the Stock Market.” Investment Insights, vol. 5, no. 3.

⁵A classic example is a book published in 1999, “Dow 40,000” by David Elias (McGraw-Hill).

⁶Arnott, Robert and Bernstein, Peter. 2002. “What Risk Premium is Normal?”. Financial Analysts Journal, vol. 58, no.2.

Grinold-Kroner Model for 2021

Here we have presented these models using ex-post (“after the fact”) evidence. The Grinold-Kroner Model (and its many similar counterparts) works well from this convenient perspective, but how can it perform as a forecasting tool? Can it help us determine if we are riding on the edge of a stock market bubble (or not)? For this, we need what is called ex-ante (“before the fact”) returns, and they need to be accurate.

Looking at 2021, and using the Grinold-Kroner Model, the expected stock market return in the coming years would therefore be⁷:

Model Variable	Historical Average	2021 - Range of Estimates
Income Return	2.7%	2%-3%
Growth Return (Inflation + Real Growth)	1.8% Inflation + 1.7% Real Growth = 3.5%	0.65%-2%
Risk-Free Rate	4.38%	1.12%
Repricing Return	0%	0%
Expected Return	10.58%	3.77%-6.12%

Returning to the title of this paper, “A 2021 Stock Market Bubble?”, the Grinold-Kroner model indeed suggests that the US stock market has the capacity to supply a positive return in 2021 and beyond (not a bubble). Can we, therefore, comfortably forecast equity returns in 2021 between 3.77 and 6.12%?



The Equity Risk Premium Puzzle

Forecasted returns from such models have consistently predicted lower returns than actually received over time.⁸ This frustrating gap is referred to as the “Equity Risk Puzzle.”

⁷ Forecasted Returns are from a survey of economists for illustration purposes.

⁸ Hammond, Brett, Leibowitz, Martin and Siegel, Laurence (Editors). 2011. “Rethinking the Equity Risk Premium – A Collection of Papers”. The Research Foundation of the CFA Institute. 148 pages.

Challenges with Supply-Side Methods

Like the macro models discussed earlier, the Grinold-Kroner model functions better with ten-year time horizons and has high standard errors even within this context. Meaning the forecast is done with low confidence, potentially lower than what we would be willing to accept as “commercially viable.” Further, they are generally using history to predict the future when we are reasonably confident that “historical returns cannot be relied upon to predict future returns.” A standard disclaimer of most investment firms today when presenting performance data. Historical-based projections can bring widely different results depending on the period chosen, the frequency of sampling and the choice of a geometric or arithmetic average. In short, historical-based forecasts are noisy and greatly reduce the efficacy of these methods.

Survey Approaches for Stock Market Growth

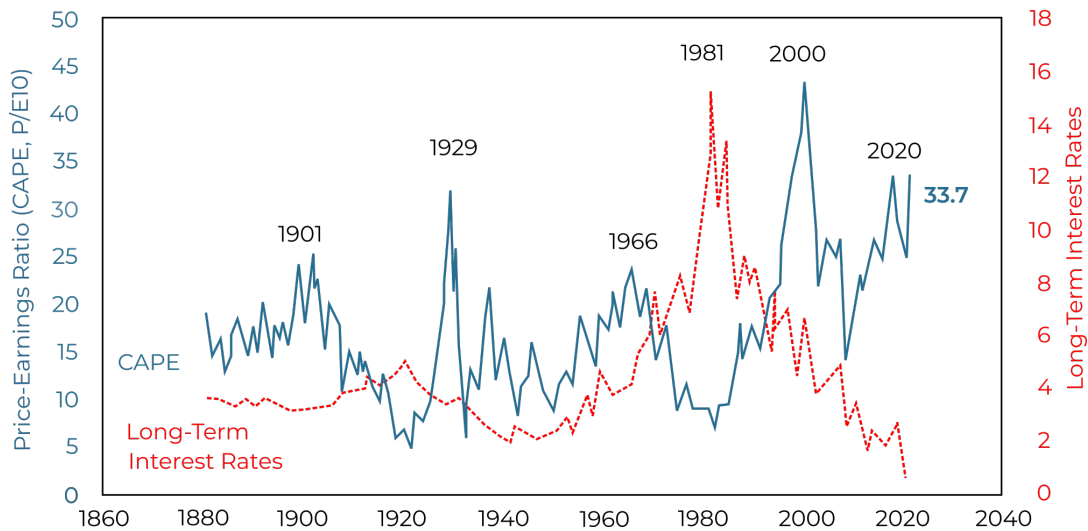
A more traditional (and popular) approach to forecasting market expectations is surveys of investors, academics, economists or corporate managers. These forecasts document opinions and expectations about future returns. Maybe those in the know have unique abilities to forecast returns? Sadly, various studies on these survey approaches also lead to the same conclusions of “low efficacy.”

Robert Shiller – the CAPE Ratio

Robert Shiller is formidable. He is a professor at Yale, won the Nobel Prize in 2013,⁹ mentored under Franco Modigliani and had a best-selling book called “Irrational Exuberance.” You don’t often find Shiller celebrated by other academics because he participated in a behavioural finance challenge to mainstream market theories back in the 1980s. He also has a long history of warning humanity about investment and housing bubbles and has done so with his “Shiller PE Ratio”, also called the CAPE Ratio. The CAPE ratio is a market valuation measure that smooths corporate earnings per share (EPS) over ten years to normalize the business cycle (cyclically adjusted price-to-earnings ratio). It measures a stock’s price relative to the company’s earnings per share and therefore assesses whether the market is undervalued or overvalued. It’s simple, and it’s sexy.

Shiller became really famous when he and his then-student John Campbell presented to the US Federal reserve in 1996 an assessment that the US stock market had become “as overvalued as just before the famous crash of 1929”. He then went on to write his book, “Irrational Exuberance.”

⁹ Coincidentally winning the prize in the same year as Eugene Fama (a mainstream finance academic promoting opposing perspectives to Shiller’s). Shiller took the opportunity in his acceptance speech to renounce Fama and Fama’s work.



Source: Robert Shiller at <http://www.econ.yale.edu/~shiller/data.htm>

While worth looking at, the CAPE Index cannot aid us today in finding the turning point of a potentially hot market. High CAPE ratios can also be misleading. A changing environment can cause CAPE distortions, as can changing earnings growth rates, debt financing, accounting rule changes, market volatility or interest rate changes. Even with its 10-year historical smooth, it produces remote assistance. Allow me to explain.

An investor in 1960 could have used the CAPE to exit the markets before the inflation cycle and the damage inflation caused in the following years. The CAPE had hit nearly 25, not seen since 1929. This same investor could have re-entered the market 15-20 years later when the CAPE had finally returned to “historical” levels. That is a terribly long time to be in cash, but it doesn’t end there. A re-entry in 1980 would then progress to 1990 with an exit again at 20-25. That would be fortunate, as the market crashed in 2000/2001, but when would this investor have returned? Never. The CAPE has never returned to “historical” levels and hence the struggle of using history to guide our future. Regimes change, and science is lost again to art.

Philosophically, Qube struggles with the CAPE, and, as with all of our valuation work, we prefer to value an asset rather than price it. The CAPE is simply a historical pricing perspective that envelopes all of the mystery and irrationality of pricing behaviour.

Machine Learning & Crash Prediction

The simplicity of the CAPE tempts one to consider expanding the depth and complexity of analysis in an attempt to increase accuracy and predictability. That is precisely what numerous quantitative scientists (quants) have done with machine learning algorithms. As technology has solved incredible challenges (e.g., vaccines), certainly it could help with market forecasting and predicting future market bubbles and crashes. Machine learning is also super exciting and super sexy.

In great summary, the first challenge is to define what a “market crash” is. The market is in constant oscillation, so what differentiates a regular “drawdown” from a crash?¹⁰ Many quants working in this field can agree to something like 50-75 market crashes seen across all global equity markets overall in recorded history. Sadly, after using intense and adaptive statistical methods, we still await word of a successful algorithm that can reliably predict a crash in the months leading up to it. Most quants today spend their time finding minuscule imperfections in market pricing over sometimes micro-seconds and, with large sums of institutional funds, attempt to profit from the arbitrage. This is far less exciting and far less sexy.

“Demand Perspective” Alternatives (Damodaran)

I have come to the conclusion that the most efficient method to evaluate a stock, or the entire stock market, is to begin by capturing the “common consensus.” What does the market currently demand of the asset or market? This is the perspective of the “Implied ERP” promoted by Aswath Damodaran,¹¹ a finance professor at NYU. The advantage of the implied ERP is that it captures a more practical, shorter perspective (potentially relevant in a 3-5 year forecast period).

It first utilizes the things that we are confident about in the years ahead (dividends, share buybacks, corporate earnings and risk-free rates). Then, by comparing them to the current trading price, backs-out mathematically the “market implied” equity risk-return. Simply put, it captures the return currently being demanded by investors. A “demand perspective” forecast. Looking at the S&P500 Index today (Mar 1, 2021), when it closed at 3901 and produced, in 2020, dividends and buybacks totalling \$130.14 per unit¹², we could then project the future five years of investor payouts to be:

Year	Total Market Dividends	Dividends + Share Buybacks
Today	58.28	\$130.14
2021	72.85 ¹³	\$148.75
2022	78.33	\$161.50
2023	82.24	\$169.58
2024	86.36	\$178.05
2025	90.67	\$186.96

¹⁰ Generally, a crash is defined as a drawdown that is severe enough to be classified as a statistical outlier (e.g. in the 99.5% percentile or greater).

¹¹ Damodaran, Aswath. “Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2020 Edition”. March 2020. Self-Published.

¹² A combination of dividends paid on all S&P500 companies with Q1-Q3 buybacks as reported and Q4 estimated.

Using a simple, two-stage dividend valuation equation (on the entire market) we can then back-out the expected equity return (the cost of equity) as follows:

$$3915 = \frac{148.75}{(1+r)} + \frac{161.50}{(1+r)^2} + \frac{169.58}{(1+r)^3} + \frac{178.05}{(1+r)^4} + \frac{186.96}{(1+r)^5} + \frac{190.70}{(r-0.02)(1+r)^5}$$

Therefore, at the index value of 3901, the market projects an equity return (cost of equity) of 6.36%. Or an Equity Risk Premium (ERP) of 5.21% (6.36%-1.15%).

To gain context, the implied ERP wanders from year to year, based on a combination of changing economic fundamentals and investor’s interpretations. In the following chart, you can see that ERP’s have indeed been increasing over the past 60 years and average between 5 and 5.5%. It is the meanderings from the trend that require attention.



For example, in the high-interest rate/inflationary period leading into the 1980s, investors became risk-averse and demanded higher equity returns to offset the inflation risk.



Then, as life returned to normal and markets proved highly productive, leading to the tech bubble of 2000/2001, investors successively demanded less and less risk premium.



Implied ERPs hit record lows just before the 2001 bubble bursting, then swinging back to higher risk premiums not required since the late 1970s.

Since ERPs have returned to a more “normal” range but have sustained themselves even with a prolonged bull market (higher than average price gains) leading into COVID¹⁶.

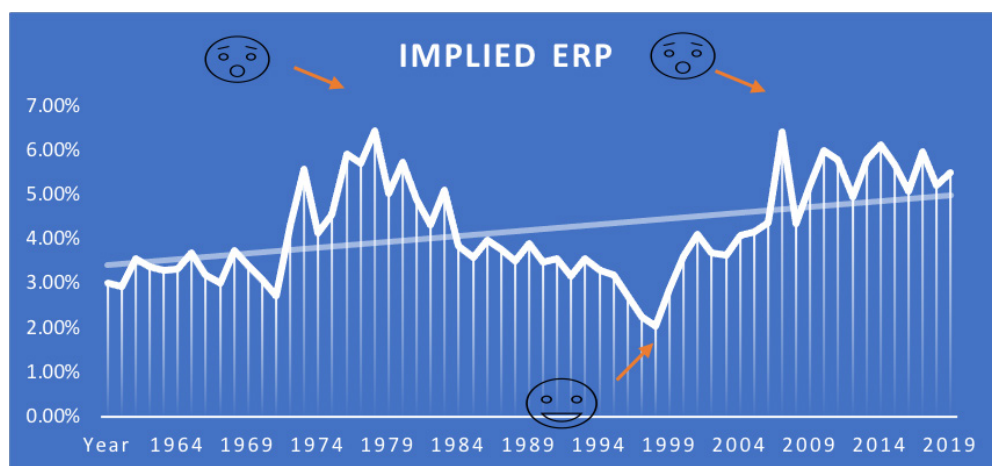
So, the market-implied equity returns foretell a more rational story. When investors become overly optimistic against fundamentals (low ERPs), we can take heed and consider defensive measures. When they become excessively needy (high ERPs), we could consider moving more assertively.

¹³ As reported.

¹⁴ As reported Q1-Q3 and Q4 estimated.

¹⁵ Projected based on a 41% Dividend Payout Ratio on an Earnings Projection for the COVID recovery from Yardeni Research. Yardeni, a renowned economist, is also in alignment with other forecasts and could be considered a consensus estimate. It is more important to have a consensus estimate here, as we are solving for the market implied equity premium (equity forecast).

¹⁶ During Covid, ERPs have acting in rational patterns with ERPs jumping early on in the pandemic and then returning to normal as the pandemic sorted itself out and expectations of growth became clear again.



As with the prior predictive models, we must also check the prediction success of this approach. Here again, we discover another troubling gap. In the past ten years alone, the returns predicted by the implied ERP (cumulatively) produced a differential of almost 2:1. Real performance has nearly doubled the predicted performance. Is this an Equity Risk Premium Puzzle: Part 2?¹⁷

The Equity Risk Premium Puzzle: Part 2

Damodaran defends his demand perspective ERP by extending the evaluation period. The ten or 15-year predictions are relatively accurate (with far lower standard errors than seen with other models). Further, the 2008 crisis had unprecedented impacts on the ERP, with increases in required returns changing faster than ever recorded and remaining more volatile ever since. Damodaran does correlation analysis covering the 1960-2020 period and argues that his approach provides the best predictive capabilities compared to other methods like Earnings Yield, Dividend Yield or Historical Premiums.¹⁸ He believes that the distraction of recent years shouldn't derail confidence in his approach. One should note that Dr. Damodaran does not peer review this research or publish it in an academic journal, citing "disruption of the status quo" as his motive.¹⁹

Why use Dynamic ERPs?

The idea of the implied ERP is to find a current market-neutral discount rate, which is far more important than it may sound at first. The market-neutral discount rate allows us to discover an undervalued stock in both an undervalued and overvalued market. Otherwise, all stocks in an undervalued market would look cheap, and all stocks in an overvalued market would look expensive.

¹⁷ See the "Equity Risk Premium Puzzle" earlier in this paper.

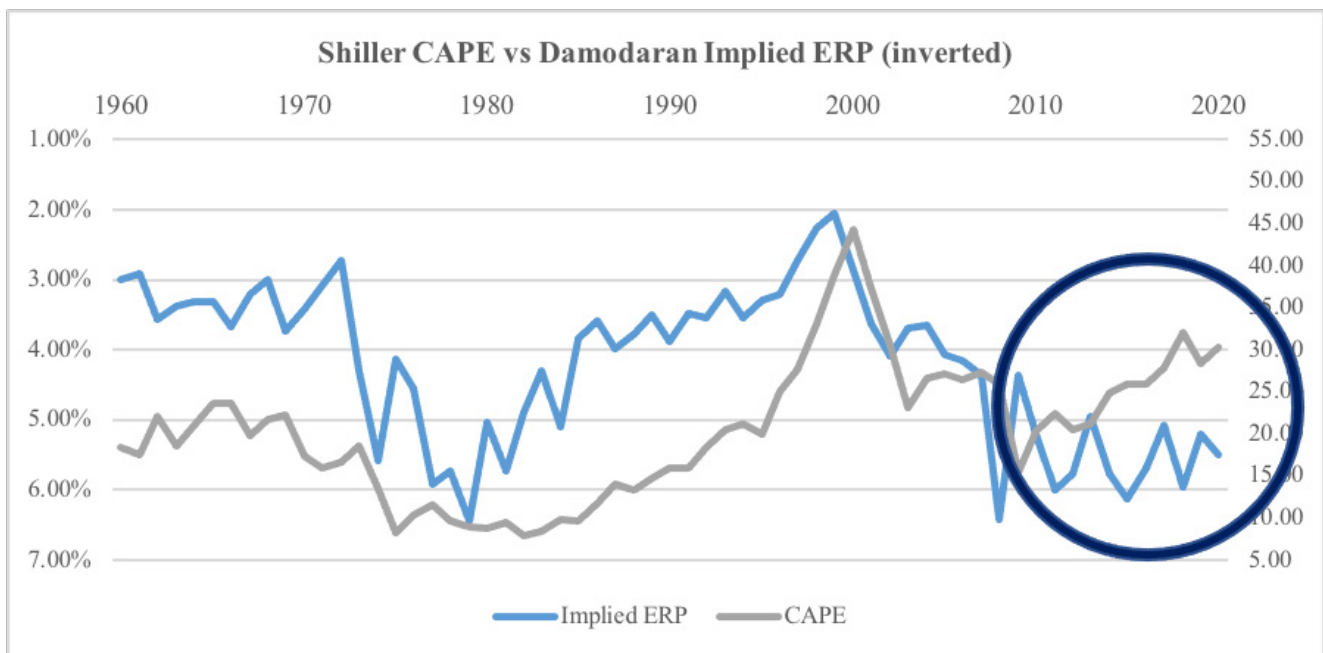
¹⁸ The correlations for predicting the following year were 0.768 and the following 10 years 0.552 (not bad).

¹⁹ Damodaran's youtube lectures have 165,000+ subscribers and his blog page has over 17 million views. One could safely state that he is disrupting the status quo.

It also allows us to consider the possibility that the markets could be in a state of under or over-value and implement “soft” tactical allocations accordingly.

The market-neutral discount rate allows us to discover an undervalued stock in both an undervalued and overvalued market.

When the implied ERP rises, the driving force can be a combination of things; investors ask for a higher risk premium (they are scared), or valuation fundamentals have deteriorated²⁰. We can demonstrate this when comparing the Shiller CAPE (from earlier in this paper) to Damodaran’s implied ERP (but inverted) over the same period of 1960 -2020.



The two predictive models produce similar results overall except for the past ten years. Since 2010, the Implied ERP has sustained around its trend of 5.5% when the Shiller CAPE has captured constantly increasing multiples. I would contest that the Damodaran model is more accurate because it integrates the currently favourable underlying fundamentals.

Escalating P/E multiples might create press and attention, but the fact is they are justified, and investors have (for the moment) remained comfortable with that reality.

²⁰ Market fundamentals could include interest/inflation rates, changes in corporate earnings and/or dividend and share buyback potential.

Returning to the Beginning

Pricing vs. Valuation

At the beginning of this paper, we talked about the two perspectives when looking at an asset. One can “price” the investment, or one can “value” it. Indeed, those who “price” stocks using forecasting tools like the Shiller CAPE will have periods of error when the price is falsely predicted (too low or too high). Investing is faith and, if you believe that value is the ultimate predictor or price (as we do), approaches like the Damodaran implied ERP should assist us in vetting out those errors. Today, in the business media, there is more divergence about the market forecast than ever before. If you seek the opinion source, a price-based or valuation-based perspective, the gap can most assuredly be explained.

A Stock Market Bubble?

Edmonton hosts a finance legend, Dr. Randall Morck who recently presented his perspective on market bubbles. That they result from a chronic issue in the developed economies of under investment. He reminds us that, while firms might only get a 10% return on R&D investments, society gains many times more on these same innovations (Solow taught us that innovation, ideas and investment are what drive mature economies forward). So, when the free market offers an opportunity, private investment sometimes will respond. For example, railroad investors lost big in the bubble of 1848, but the world got railways as a result. 1929 brought suffering to many investors, but the world gained from radio and electricity thanks to that cycle. In 2000, we remember the technology bubble, but thanks to it the world got the internet. Randall believes that these stumbles had purpose in that they fixed, for a time, chronic underinvestment.

Is the market today riding on a bubble? No. Valuations clearly support today’s market prices within a reasonable standard of error. In other words, healthy stock prices today are supported by healthy economic fundamentals. The journey to this conclusion has also demonstrated how weak our tools are at predicting a turning point and should remind us of the fallacy of timing the market. Other than smaller tactical moves, we continue to promote a perspective of buy and hold investing with all of our clients. Certainly, staying the course and riding the waves (big and small) is the prudent strategy to preserve and promote wealth.

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