

# THE VIEW

Economic Research

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## ARE LOW INTEREST RATES NECESSARILY GOOD FOR EQUITIES?

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## EXECUTIVE SUMMARY



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- The conventional wisdom among investors suggests that low interest rates are favorable for equities. The assumption holds true with regards to profits and leverage. However, theory tells a different story, as do the performance of two key metrics: earnings yields (how much a company earns per share) and dividend yields (ratio of annual dividend to share price).
- In the early 20th century, higher earnings yield was accompanied by pessimistic growth expectations and higher risk premiums. Today, constant and low earnings yield and darkening growth expectations affect equity valuations.
- In the U.S. and Japan, earnings and dividend yields were decreasing simultaneously with interest rates. Nevertheless, they climbed up when interest rates reached a historically low territory. This behavior hints at gloomy growth expectations, suggesting investors need to adapt to the challenging environment.

# 3%

## RECORD LOW AVERAGE LONG-TERM NOMINAL INTEREST RATE IN THE U.S.

# INTRODUCTION

Following the 2008 Great Recession, central banks around the world have been decreasing interest rates, a sign of concerns about the growth outlook. In the U.S., for instance, long-term nominal rates hit a record low of an average 3%, a level unseen since the end of World War Two. This situation puts investors in a bind as the fixed income asset class increasingly fails to provide their target returns.

However, the conventional wisdom has it that low interest rates can only be good for equities: not only can they increase corporate profits, but they can also decrease the discount rates used

to compute the present value of these profits. The fair value of an investment equals the present value of its expected cash flows. So the lower the discount rate the higher the present value of expected cash flows.

However, the theory (see page 4) tells a different story, and so does the performance of two key metrics used by investors.

First, we look at **Earnings Yields** - also known as an inverted Price-Earnings (PE) ratio - which show how much a company earns per share. For "return hungry" investors, this is a prominent valuation metric associated with mar-

ket value gains. In contrast, "income hungry" investors prefer stocks paying high **Dividend Yields** (ratio of annual dividend to share price) over low-yield bonds.

How have earnings or dividend yields behaved when interest rates have been very low? Two examples from history provide us with interesting field experiments: the U.S. markets during the Great Depression and the Japanese markets in the last thirty years.

# WHAT DOES THE THEORY SAY?



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- The income expected at the end of year 1:  $Y_1$
- The constant growth rate of income  $g$  expected from the end of year 1 to infinity
- The constant discount rate  $i$  (which is itself the sum of the risk-free long-term rate of interest and an ex-ante equity risk premium  $\rho$ )

If income is expected to grow at least as fast as it is discounted, i.e. if  $1+g \geq 1+i$ , then the present value of the successive expected income flows is continuously increasing and the price becomes infinite. For the price of an equity to be finite, the discount rate  $i$  must, therefore, be strictly greater than the expected growth rate  $g$ , i.e. the sum of the risk-free rate and the risk premium must be larger than the expected growth rate.

If the discount rate is higher than the growth rate, the discount model can be simplified to yield the Gordon-Shapiro model<sup>2</sup>. After rearranging terms, the earnings yield (i.e., the in-

verse of the PE) or the dividend yield is shown to be the sum of three variables: the risk-free rate, the ex-ante equity risk premium  $\rho$ , and the expected rate of growth  $g$ <sup>3</sup>. By assumption, this yield can only be greater than zero. The condition  $r+\rho > g$  clearly shows that if the risk-free rate falls, then either the expected growth rate must also fall, or the risk premium must rise. Accordingly, the earnings or dividend yields should not necessarily decrease when interest rates fall. They may as well rise. Yet, conventional wisdom has it that the earnings or dividend yield has only one way to go, namely down when interest rates fall. Having cast some doubt on this assumption from a theoretical point of view, let us now see what historical experience has to say on this topic. Is the relationship between earnings yield and risk-free interest rates really monotonic<sup>4</sup>?

The Gordon-Shapiro model (GS)<sup>1</sup> helps to sharpen this analysis. In this reference model, a stock is assumed to generate an infinite stream of income (cash flows, earnings or dividends) and its price is a function of three variables:

$$^1 P = \frac{Y_1}{(1+i)^1} + \frac{Y_1(1+g)}{(1+i)^2} + \frac{Y_1(1+g)^2}{(1+i)^3} + \dots + \frac{Y_1(1+g)^{t-1}}{(1+i)^t} + \dots$$

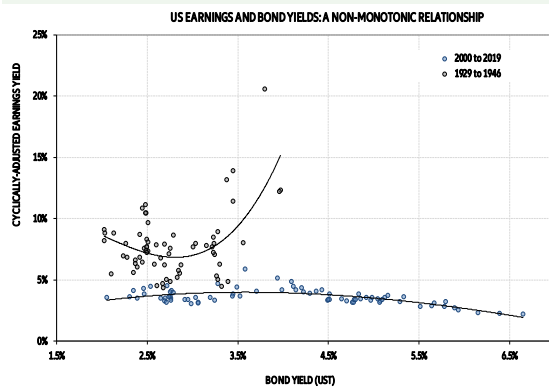
$$^2 P = \frac{Y_1}{i-g}$$

$$^3 DY, EY = r + \rho - g$$

<sup>4</sup> A monotonic function is a function which is either entirely increasing or decreasing.

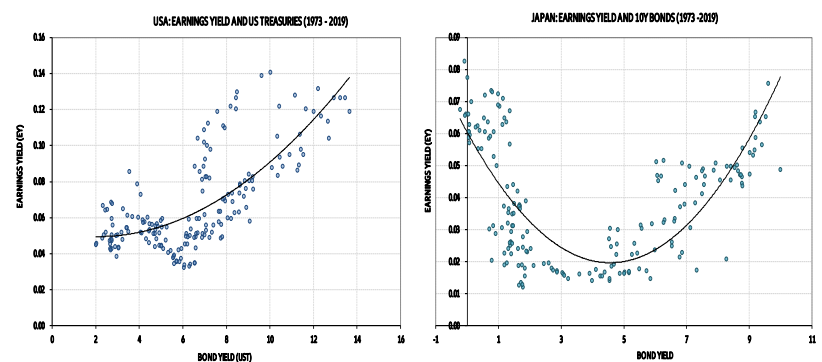
# EARNINGS YIELD AS A GAUGE OF VALUE

**Figure 1:** A structural change in the relationship between earnings yields and 10-year bonds in the US



Sources: Allianz Research, Euler Hermes

**Figure 2:** Earnings yield has a non-monotonic relationship with 10-year bonds



Sources: Allianz Research, Euler Hermes

The earnings yield is often used to assess whether a stock is cheap or expensive relative to its own history, to other stocks or other financial assets. The more investors expect earnings to grow, the more they are willing to pay for current earnings, and the more they are content with a low earnings yield. Thus, a low earnings yield suggests that the market is optimistic about growth expectations. However, the relationship between earnings yields and interest rates has changed over time, as shown in Figure 1.

The figure above shows the relationship between the S&P 500 cyclically-adjusted earnings yield and the yield on 10-year U.S. treasuries in two periods: first, from 1929 to 1946, second, from 2000 to 2019. Clearly, these two periods exhibit different patterns. The first was one of the most turbulent in the 20th century, but the earnings yield during this time was much higher than it is in the second period, which

covers rather prosperous times. For the 2000-2019 period, the earnings yield has been almost independent of the level of interest rates. A magnifying glass would show a slightly concave pattern between earnings yield and interest rates, in contrast to the almost convex pattern observed from 1929 to 1946.

This contrast can be explained in terms of growth expectations and risk premiums.

“Once bitten, twice shy”: During the 1930s and ‘40s, growth expectations were depressed. Therefore, earnings growth expectations were subdued and/or risk premiums were high. In contrast, in the 2000s and ‘10s, the earnings yield has remained almost constant, even though the interest rate has fallen from 6.5% to 2%. Consequently, we can assume that with a decreasing interest rate the growth expectations are also declining and vice versa. A more comprehensive set of data ana-

lyzing U.S. and Japanese long-term interest rates confirms the U-shaped (or convex) relationship between the earnings yield and the long-term risk-free rate of interest rates. Figure 2 shows the link between earnings yields and interest rates in both the U.S. and Japan. Falling interest rates have been accompanied by falling earnings yields but only to a certain point. They have parted way when interest rates have reached around 5% in the U.S. and about 3% in Japan. The lower interest rates have been falling, as in Japan, the more distinct the break.

Extremely low interest rates link to pessimistic (real as well as nominal) growth expectations. Trend nominal GDP growth and long-term nominal interest rates are closely linked together. Furthermore, central banks cut rates when the economy is slowing down. And companies are less likely to seek new investment opportunities during economic downturns.

# IS THE MARKET OVERVALUED?

**Figure 3:** Further reduction in long-term interest rates leads to increasing earnings yields

US		Japan	
EY	UST	EY	JGB
6.10%	1.84%	7.70%	-0.20%
6.60%	1.50%	8.00%	-0.30%
7.40%	1.00%	8.40%	-0.40%

Sources: Allianz Research, Euler Hermes

In this context, an equity investor should carefully assess whether the earnings yield is appropriate, given the level of the long-term nominal risk-free rate of interest. A polynomial regression analysis conducted on the period from 1973 to 2019 allows us to estimate the “fair” value of the earnings yield, given the long-term nominal rate of interest. Today, the U.S. treasury rate stands at 1.84%. A polynomial regression<sup>5</sup> applied to the U.S. data suggests that the earnings yield should be 6.10%. As its current value is 4.5%, the U.S. market appears to be overvalued relative to

interest rates. Assuming interest rates maintain the previously observed tendency to decline and reach 1%, the earnings yield could increase to 7.4%. The yield on 10-year Japanese Government Bonds (JGBs) is negative: -0.15%. A polynomial regression analysis<sup>6</sup> shows that the earnings yield for the Japanese market should be 7.7%, above the current 7.1%. So, the Japanese equity market would be overvalued, too. If long-term interest rates continue to decline further, the earnings yield would continue climbing up (see Figure 3).

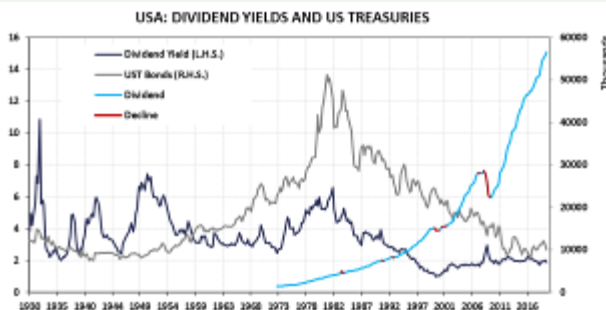
The R<sup>2</sup> of these regressions are between 57% and 66%, which suggests that further investigation is needed to get to a more robust estimation. That being said, they give a good signal on what an investor should expect if rates are to remain low for longer.

<sup>5</sup> US:  $y = -0,0002x^3 + 0,0042x^2 - 0,0259x + 0,0957$ ,  $R^2 = 0,5689$

<sup>6</sup> Japan:  $y = -0,0003x^3 + 0,006x^2 - 0,0327x + 0,0701$ ,  $R^2 = 0,6567$

# EQUITIES AS “BOND PROXIES”

**Figure 4:** Dividend yield and U.S. treasuries are relatively close



Sources: Allianz Research, Euler Hermes

A low-rate regime prompts investors to seek reliable sources of stable and recurrent cash income: not quite a bond, but as close to it as possible. Stocks paying high dividends are among the options available. In the U.S., the dividend yield has widely fluctuated over the long run.

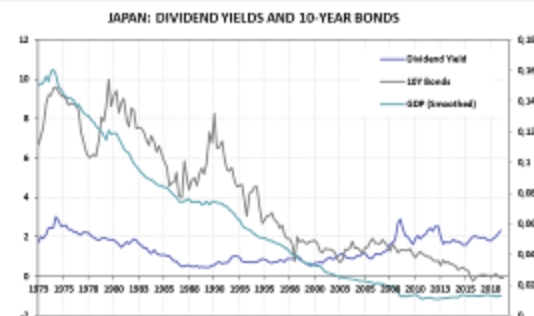
In the last 60 years, in contrast to what happened during the Great Depression and until the mid-1950s, the dividend yield of the S&P 500 has been lower than the yield on long-term U.S. treasuries. A market in which the dividend yield is lower than the risk-free rate is one that implicitly and confidently expects dividend growth to close the negative gap between the dividend yield and the risk-free rate (almost -8% around 1980, -4.5% in 2000). This follows from the fact that the expected return from an equity investment is the sum of the dividend yield and the expected growth rate of the dividend. For a short period in June 2016, the dividend yield surpassed the U.S. treasury rate. Since then, the dividend yield has fallen back below the U.S. treasuries yield. These two yields are unusually close to each other, a pattern which reveals very much diminished growth expectations (see Figure 4). While this is comforting, it also means

there is little room to accommodate dividend cuts.

Admittedly, the history of dividends in the U.S. equity market shows that dividend cuts have been rare events. Over the last four and a half decades, dividends were chopped only eight times and only once significantly in 2008. Barring an economic contraction as severe as the one experienced in 2008, it seems reasonable to assume that dividends are unlikely to be cut across the board. Under this assumption, it is reasonable to consider stocks with high dividend yields as an alternative to fixed income investments.

Investors might wonder what happens if interest rates drop below the dividend yield. This happened in Japan in the last decade: In September 1998, the dividend yield of the Japanese market fell below 10-year bonds for the first time in recent history, but very briefly. During the following nine years, the two yields remained very close to one another. Since 2007, the dividend yield has increasingly exceeded the interest rate. The yield on 10-year JGBs and trend nominal GDP growth have both been falling for more than four decades (see Figure 5). This pattern matches the Gordon-Shapiro model: falling interest rates are con-

**Figure 5:** There is a link between growth and 10-year bonds



Sources: Allianz Research, Euler Hermes

sistent with slower and slower growth, which call for a higher risk premium. The Japanese example provides investors with two important takeaways. First, interest rates do not decrease by accident; they do so because growth is slowing down, which in turn diminishes growth expectations. Second, when interest rates are approaching zero, the equity risk premium rises, which in turn pushes the dividend yield up.

**When making investment decisions, it is easy and tantalizing to only refer to the recent past or to geographically limited experience.** However; the history of interest rates and dividend (or earnings) yields in countries having experienced a diversity of economic conditions (deflation, disinflation, stagnation...) encourages us to learn qualified lessons, and to adjust our expectations accordingly. If low or even negative interest rates are here to stay beyond the typical cyclical horizon, investors should adapt to this challenging environment. The equity market offers an alternative with earnings and dividend payments. However, investors should remember that low interest rates come along with diminished growth expectations and rising risk premiums.

<sup>7</sup> Share buybacks are not considered due to their cyclicity and a high payout ratio. The nature of share buybacks does not guarantee sustainability in the future.

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