# Dimensions of Popularity

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We believe that most of the best-known market premiums and anomalies can be explained by an intuitive and naturally occurring (social or behavioral) phenomenon observed in countless settings: popularity. Popularity is often defined as a social phenomenon associated with being admired, sought after, well known, and/or accepted. Within a wide range of possible categories—people, food, fashion, music, places to live, types of pets, vacation destinations, television shows, and the like—there is an implicit popularity spectrum or rank. Within each of these categories, there are different criteria for estimating popularity. For our purposes, the quality of these ranking criteria is not important; what is important is that within any given category there is a natural ordering in which some constituents are more popular and others are less popular. Some aspects of popularity are systematic, or more or less permanent (for example, modern society seems to prefer thin to fat or tall to short). Other aspects of popularity may be transitory or exist only as fads (for example, mullets, or Mohawk hairstyles). Whether due to systematic trends or idiosyncratic evolution, there is a natural movement as some popular items become relatively less popular and some portion of the unpopular items become relatively more popular, e.g., necktie width. Society places a greater relative value (monetary or otherwise) on the more popular items.

How can we apply popularity to the relative performance of different asset classes and different securities? Asset pricing theories have long recognized that expected returns should not be the same for the various instruments in the marketplace. The primary explanation for these differences has been differences in risk. Of course, risk is unpopular—investors do not like risk and want to be compensated for it.

Across the asset classes, Ibbotson and Sinquefield [1976a] measured various types of risk and risk premiums. These included the equity risk premium and later the small stock premium for stocks, and the horizon risk premium and the default premium for bonds. When added to the base of expected inflation and real interest rates, the stock and bond markets and their components can be forecasted, as did Ibbotson and Sinquefield [1976b], by extrapolating premiums on top of the term structure of inflation and real interest rates extracted from the Treasury bond market.

The higher returns of stocks over bonds are explained by the fact that stocks are much riskier than bonds. Furthermore, small stocks are riskier than large stocks, and longer-term bonds with default risk are much riskier than shorter-term bonds with less default risk. Across asset classes, the risk and return para-

digm appears to work reasonably well. Although risk can be thought of as one of the dimensions of popularity (or in this case unpopularity), there are numerous other measures or dimensions of popularity that are at work in the capital markets.

At the security level, the Sharpe [1964] and Lintner [1965] capital asset pricing model (CAPM) split risk into two separate parts: the beta (or systematic risk) and the residual (or diversifiable risk). According to the CAPM, only the beta risk should be compensated with higher expected returns because the residual risk can easily be eliminated by diversification, whereas someone has to hold the systematic risk in the market. Other theories, for example, the Ross [1976] arbitrage pricing model, added extra betas to the model. After Fama and French [1992], size and value became the generally accepted betas in the stock market. These were both characterized as risk premiums, even though there is little evidence that value is associated with risk as measured by traditional volatility. If one were forced to attempt to explain the value premium as a risk premium, one might focus on the expectation of an increased risk of bankruptcy or having financial distress risk that manifests itstelf when investors are most vulnerable.

Other characteristics were also recognized as impacting returns. For some time it has been well known that liquidity affects bond yields, and it is also clearly understood that investors demand the expectation of a premium to lock up their capital in real estate or private equity. Amihud and Mendelson [1986], among others, showed that liquidity premiums also impacted stocks. Ibbotson et al. [2013] demonstrated that liquidity premiums could be the missing style, since liquidity premiums appear to be at least comparable to size or value premiums. Building on stock level liquidity premiums, Idzorek et al. [2012] found that after controlling for other characteristics, mutual funds that on average held less liquid stocks, outperformed—net of fees. Liquidity can be cast as the risk of not being able to turn your investment into cash extremely quickly without a price concession. Jagadeesh and Titman [1993] suggested that momentum impacts stocks, since stocks that have performed well in the previous twelve months, appear to do better that those that performed relatively poorly. The momentum premium has been more erratic over more recent periods, with much of the research attempting to understand how and why it seems to have worked. Xiong and Ibbotson [2014] show that stocks that have accelerating prices are more likely to crash and have very poor returns.

Although risk may be the main driver of return differences *across* asset classes, there is increasing evidence that risk is not the primary driver *within* asset classes. Frazzini and Pedersen [2014] and others have demonstrated that low-beta and low-volatility portfolios seem to do better than high-beta or high-volatility portfolios, which Asness et al. [2012] attribute to the theory of leverage aversion. Ibbotson and Kim [2014] show that the risk and return dimension is surprisingly reversed across most of the dimensions that impact stock returns, for example, beta, volatility, size of companies measured by accounting data, value measures, momentum, various factor loadings, and so on. That is, recent studies show the perverse result that within the stock market, the lower-risk characteristics are associated with higher returns.

## THE POPULARITY CONCEPT

If risk is not the single driver of returns, what is? Risk has become a catch-all for all of the attributes that investors do not like. We do not like risk, and therefore investors need to be compensated for taking on risk, especially for the betas or systematic risks that they cannot collectively avoid. The compensation for risk is a great idea, but compensation should also apply to other characteristics that investors do not like. It also needs to reflect the characteristics that investors like "too much."

Stated simply and broadly, if an asset has characteristics that investors really like, its price will be higher. If the asset has characteristics that investors do not like, its price will be lower, all other things being equal. Thus the asset with more desirable characteristics should have lower expected relative returns, whereas the asset with less desirable characteristics should have higher expected relative returns. Although risk is clearly unpopular, it is only one dimension of popularity. Popularity can include all sorts of other characteristics that do not fit well into the risk and return paradigm.

Although risk has been the primary popularity characteristic that investors have focused on, the next most obvious characteristic that investors want is liquidity. For a given expected return, investors prefer

low risk and high liquidity. But just as avoiding risk is not free, neither is high liquidity; both come at the expense of lower expected returns. Assets with high liquidity are more expensive than assets with less liquidity, even though the differences in transaction costs might appear minor. Liquidity cannot easily be squeezed into a traditional risk and return paradigm since less liquid assets are not necessarily more volatile, nor do they necessarily have higher betas. Although liquidity may involve early redemption risk, it seems to have a very high price relative to whatever risk might be involved. Investors clearly do not like to give up liquidity; thus, liquidity is very popular.

Strategies that involve buying stocks that are too popular should have lower returns, whereas buying less popular stocks should have higher returns. By its nature, a strategy that focuses on buying the less popular stocks will be contrarian. Investors will have to go against the crowd, buying the lower priced securities to achieve the higher returns.

## APPLYING THE POPULARITY CONCEPT TO STOCKS

Once we go beyond the risk and return paradigm, we can begin to better understand the various anomalies and premiums found in the marketplace. We can have many reasons to dislike an asset other than that its being too risky. We can also have many reasons to like an asset other that its having low risk. We associate *liking* with popularity, and *disliking* with unpopularity.

Let us now consider the generally accepted premiums in asset prices, in turn. Each of the premiums is considered systematic, that is, they are more or less permanent in nature. Each of the premiums is associated with something we do not like, and *still* once the market discovers the phenomenon, the market *still* might not like it. Thus these premiums remain in equilibrium and are generally thought to be consistent with efficient market theory.

The equity premium is very clear cut, since it is primarily a risk premium. Stocks are riskier than bonds or bills (the risk free asset) and therefore investors have to be compensated to take on the risk they do not like. Thus we usually refer to this as the equity *risk* premium. There is a long literature discussing this premium, and it is applied to expected returns of the stock market, as well as the discount rates used in valuation, and as the equity component in a corporation's cost of capital. In a CAPM framework, a risk-free rate and a beta are applied to specific securities, assets, or portfolios.

The liquidity premium is also clear cut, since investors want more liquidity and are willing to pay for it. They have to be compensated to take on less liquidity, even if the asset is not more risky—perhaps the most visible example is the interest earned on a checking account versus that on a bank certificate of deposit. Much of the literature refers to this liquidity premium as a risk premium, even though there are many instances when less liquid securities are not more risky. Less liquid securities will have lower valuations than more liquid securities. Much of the purpose of securitization is to make assets more liquid, and hence more valuable (or popular). Securities that are less liquid will have the lower valuations and the higher returns. The more an investor needs or wants to trade, the more the unpopular the less liquid securities will be. However, the patient investor can achieve these higher returns without incurring excessive transaction costs. Thus the liquidity premium is achievable for many investors.

The size premium is partly a risk premium, since small cap stocks are more risky than large cap stocks. But it is also a liquidity premium since small cap stocks are also less liquid. There may be other reasons not to like small-cap stocks. For example, an institutional manager might have to do the same amount of work to identify an undervalued small cap as a large cap, but the manager will not be able to make as big an investment. Investors prefer to get "more bang for the buck," and would prefer to find an undervalued large-cap stock. Market capitalization itself is one measure of a stock's current popularity. If one assumes a dollar is a vote, large stocks are more popular than small stocks. Thus by their very nature, small stocks may deserve a premium.

Value premiums are an interesting example because stocks with low market-to-book ratios, or low price-earnings ratios are not necessarily more risky or less liquid. But value stocks are often companies with something wrong with them. They may be in mature industries with very little obvious growth potential. The key here is to recognize that good stocks may not be good companies, and vice versa. Good companies may be distressed or need new management. However, returns are caused not by a company's prospects but by

the change in its prospects. It is far easier to improve a bad company with poor management than a good company that already earns high profits. Nevertheless, investors seem to like good companies too much (see Lakonishok et al. [1994]), bidding up the prices so that growth stocks underperform value stocks.

There is mounting evidence that low beta and low volatility stocks do not have lower returns, and may have even higher returns than high-beta or high-volatility stocks. We are seeing various theories developed for why the risk and return paradigm breaks down, but each theory leans on popularity. For example, it has been argued that fund managers have a cash drag and reach for beta to try to match or outperform their benchmarks. More generally, managers and investors are averse to leverage because it may be expensive or difficult to implement. Thus fund managers and investors may systematically on average desire high-beta and high-volatility stocks even though they are more risky. If investors like risk too much it can result in high-beta or high-volatility stocks having lower returns.

The extra return associated with momentum is probably not a premium but a slow market reaction to a transition state, such as a stock changing its characteristics or fundamentals over time. Thus if a stock gradually becomes more popular over time, instead of instantaneously moving, the price might trend upward or downward, that is, not immediately reacting to the stock's changing characteristics, e.g., Fama and French [2007]. If this were so, high-momentum stocks might outperform low-momentum stocks. Of all the major anomalies, momentum is not easily explained by a long-term, semipermanent shift along one of the identified dimensions of popularity, but rather it appears to be a result of a shorter-term, self-enforcing popularity wave. Momentum seems to be more related to mispricing than a long-term premium in the marketplace.

Except for the momentum and low beta/volatility anomalies, most of the above premiums are thought to be consistent with efficient markets, probably because they have been traditionally considered risk premiums. However, it is becoming increasingly clear from empirical results that many of the premiums are not associated with extra risk, and in some cases they are actually associated with a risk reduction. Thus we need a new theory of popularity to explain not only the premiums but also many of the anomalies and mispricing that we observe in capital markets.

## TOWARD A THEORY OF POPULARITY

We can start to develop a theory of popularity from either an equilibrium-efficient market perspective or from a behavioral finance perspective, or both. In some sense, the beauty of the theory of popularity is that it can independently explain many of the well-recognized anomalies yet simultaneously provide the link that connects the dots and reconciles the two approaches to analyzing markets: the equilibrium-efficient markets perspective and the behavioral finance perspective. In many ways, the joint awarding of the 2013 Nobel Prize in Economic Sciences to Eugene Fama (an efficient markets advocate) and to Robert Shiller (a behavioral economist) endorses the merit of both approaches. The merit of both approaches and the link to popularity (voting) was recognized more than 80 years ago in *Security Analysis*, when Ben Graham and David Dodd [1934] wrote, "…the market is not a weighing machine, in which the value of each issue is registered by an exact and impersonal mechanism, in accordance with its specific qualities. Rather we should say that the market is a voting machine, whereon countless individuals register choices which are partly the product of reason and partly the product of emotion."

From an equilibrium or *reason* perspective, we can say that there is nothing unusual going on, that markets are reasonably efficient after all. The payoff is not just for risk but also for anything investors find to be intrinsically unattractive, for example, less liquid, high taxability, difficult to diversify, high search costs, bad management, distress, and so on. This is similar to the arguments made in Ibbotson et al. [1984]. Thus various assets and individual securities will have differing returns in equilibrium. There might also be natural clientele investors more willing to take on securities with some of these undesirable characteristics, because these bad characteristics may not be that onerous to everyone. For example, a nontaxable investor might not feel so bad about a highly taxed asset, a long-term investor may not value liquidity very highly, and a less emotional investor may not mind investing in value companies, even though they may have poor growth prospects.

Popularity can also be a broad category to those interested in behavioral finance. Investors who are overly confident may go after the most popular stocks and end up driving the price too high. We seemed to see this in the Internet bubble. Investors may favor stocks that are in

the news or when information is most readily available, ignoring the stocks where information takes more work to dig out. Herding is also a behavioral theory, and of course popularity and herding are similar concepts.

Whether one takes an equilibrium or a behavioral approach, popularity is a concept that can apply to asset pricing. The equilibrium approach would claim no mispricing, so that each of the differing returns is just a combination of premiums with long-run payoffs. Thus even after their discovery in the marketplace, the premiums still exist. Investors seem to systematically prefer less risk, more liquidity, bigger companies, more transparent information, and so on. In the popularity context, all of the above premiums could be considered behavioral, because they are payoffs to what we permanently dislike. The behavioral approach could allow for mispricing, so that investors may get caught up in fads such as the tech bubble, mortgage debt, and hot brands. The popularity of certain securities that the market likes too little or too much may be very temporary. Thus, we might use the speed of the payoff to try to decipher whether the security is mispriced or appropriately priced. Mispricing payoffs are shorter-term in nature, since once the market recognizes its biases, they tend to get corrected.

## MEASURES OF POPULARITY

Some characteristics are inherently unpopular, so that their measures are more direct. If a security is subject to ordinary income tax (for example, corporate bond income), it is less desirable and deserves a higher yield than say a tax-free municipal bond of the same maturity or quality. Another example is that the lack of popularity for a less liquid bond can be observed directly by examining its yield spread. For example, we can see this spread in *off the run* bonds compared to *on the run* bonds of similar quality and maturity. It is not as easy to see which stocks are less popular. Whereas bond yields provide observable forward estimates of bond returns, we have to infer forward stock returns by analyzing past returns. We may also have to rely on our intuition to determine which stocks the market would regard as too popular or which stocks the market would tend to overlook.

The most popular stocks are likely to be the brand name stocks that are in the news. These are the stocks that have more analyst coverage, with higher trading volumes. Share turnover is a good way to measure popularity, because it adjusts for the number of shares outstanding, thus separating itself from pure liquidity measures. A large company with low share turnover might be very liquid, but relatively unpopular. The results from the Ibbotson and Kim [2014] quartiles of the largest 3,000 stocks in the U.S. market ranked by previous year's turnover rates for the period 1972–2013 are shown in Exhibit 1.

From Exhibit 1, less popular (lower turnover) stocks appear to be less risky than more popular stocks. Are we just seeing another manifestation of the low volatility anomaly? There is some correlation between popularity and risk, but we can examine more carefully which seems to have the bigger impact. In the Exhibits 2 and 3, we look at the cross comparisons.

Exhibit 2 shows the relationship between beta and popularity. Note that after independently sorting the universe of stocks into popularity quartiles, and into beta based quartiles, the low-beta quartile did not always outperform the corresponding high-beta quartile (compare row 1 with row 4). Additionally, within each of the popularity quartile columns, as one moves from the low-beta quartile to the high-beta quartile, the results are quite sporadic. In contrast, the low-popularity quartile

**EXHIBIT 1**
**Quartiles of Popularity in U.S. Equity Markets 1972–2013**

| | Less Popular | | More Popular | |
|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 |
| Annualized Return | 15.51% | 14.42% | 12.80% | 8.27% |
| Standard Deviation | 20.18 | 20.66 | 22.74 | 28.35 |

*Source: "Risk and Return within the Stock Market," Roger Ibbotson and Daniel Kim [2014] Working paper.*

**EXHIBIT 2**
**U.S. Stock Market Beta Quartiles 1972–2013**

| | | | Less Popular | | More Popular | |
|---|---|---|---|---|---|---|
| | | | Q1 | Q2 | Q3 | Q4 |
| Beta | Low | Q1 | 15.3% | 14.4% | 11.9% | 3.4% |
| | | Q2 | 16.3 | 15.0 | 13.8 | 10.5 |
| | | Q3 | 13.7 | 14.7 | 13.3 | 9.9 |
| | High | Q4 | 11.4 | 12.0 | 10.5 | 6.4 |

*Source: "Liquidity as an Investment Style: 2014 Update," Roger Ibbotson and Daniel Kim [2014] Working paper.*

## EXHIBIT 3

**U.S. Stock Market Volatility Quartiles 1972–2013**

| | | | Less Popular | | More Popular | |
|---|---|---|---|---|---|---|
| | | | Q1 | Q2 | Q3 | Q4 |
| Volatility | Low | Q1 | 14.1% | 14.0% | 12.7% | 10.9% |
| | | Q2 | 15.6 | 14.4 | 13.9 | 12.1 |
| | | Q3 | 16.1 | 15.4 | 13.5 | 10.4 |
| | High | Q4 | 14.9 | 14.1 | 8.7 | 2.6 |

*Source: "Liquidity as an Investment Style: 2014 Update," Roger Ibbotson and Daniel Kim [2014] Working paper.*

(column 1) always outperformed the corresponding high-popularity quartile (column 4). Additionally, with only two exceptions, within each of the beta quartile rows, as one moves from the high-popularity quartile to the low-popularity quartile, the results show monotonically increasing returns.

In Exhibit 3 we examine volatility relative to popularity. Once again, popularity has the stronger and more consistent impact. The low-volatility payoffs seem to be confined to the high-popularity columns 3 and 4, and even in these columns the results are not monotonic. In contrast, the low-popularity payoffs in column 1 are consistent across all levels of volatility. In fact, the popularity column payoffs are monotonic across all of the rows.

Exhibits 2 and 3 tell a similar story—popularity seems more compelling than beta and volatility. For brevity, we have omitted equivalent analyses for size and valuation; however, the story is similar. Measured by turnover, the more popular a stock, the less its return; the less popular a stock, the higher its return.

There may be many ways to distinguish less popular securities from more popular securities. We believe this will be the key to generating excess security returns. Once popularity is discovered, it will not likely disappear, but what is popular today might not be popular tomorrow. And furthermore some securities will always be unpopular. The measures might also change as well, but we will always be able to search for the unpopular and attempt to avoid stocks that are too popular. If we hold the unpopular stocks, and they become popular, this would be in fact the best case scenario. As a stock's popularity increases, its price rises, and the investor not only gets the premium but also the return from the increase in popularity.

## CONCLUSIONS

For many years, academics have sought to explain and understand asset prices, with a strong emphasis on market premiums and market anomalies. Generally, these academics end up falling into one of two camps: the equilibrium efficient market camp or the behavioral economics camp. Popularity offers an explanation that is consistent with both approaches. The premiums that are considered permanent (for example, for risk, liquidity, taxability, and so on.) are expected to provide excess returns, even after their discovery. These premiums are consistent with efficient markets and might include risk (for example, volatility and beta), size, valuation (growth versus value), and liquidity. The more transitory popularity characteristics, for example, the stocks that are highly traded, in the news, or there is much excitement about, may be associated with mispricing. In all cases, the movement from the unpopular dimension to the popular dimension corresponds to relative price increases. Mispricing impacts shorter term returns but not necessarily long-term returns. Popularity is a key concept that helps to explain valuation as well as long- and short-run returns.

## ENDNOTE

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