The Impact of Inflation and Interest Rates on Venture Capital

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Abstract

This report examines how changes in inflation and interest rates impact investor demand for certain types of investments, particularly in regard to venture capital (VC) funding.

Contents

1 Introduction to Inflation

Inflation is defined as a sustained rise in overall price levels represented by the decline of purchasing power of a given currency over time. As an economy grows, businesses and consumers spend more money on goods and services. In the growth stage of an economic cycle, demand typically outstrips the supply of goods, and producers can raise their prices. As a result, the rate of inflation increases. Moderate inflation is associated with economic growth, while high inflation can signal an overheated economy. (PIMCO, 2021)

There are several regularly reported measures of inflation that investors can use to track inflation. In the U.S., the most widely followed is the Consumer Price Index (CPI), which reflects retail prices of goods and services including housing costs, transportation, and healthcare. The Federal Reserve prefers to emphasize the Personal Consumption Expenditures Price Index (PCE) because the PCE covers a wider range of expenditures than the CPI. The official measure of inflation of consumer prices in the UK is the Consumer Price Index (CPI), or the Harmonized Index of Consumer Prices (HICP). In the eurozone, the main measure used is also called the HICP.

On July 15, 2021, the Federal Reserve announced that The Consumer Price Index for All Urban Consumers increased 5.4%, not seasonally adjusted, from June 2020 to June 2021. This the largest 12-month advance since the year ended August 2008. On a month to month basis, this figure grew 0.9%, the largest jump since 2008 and higher than expected. Since the COVID-19 pandemic began in February 2020, consumer prices increased 4.7% from February 2020 to June 2021. (Bureau of Labor Statistics , 2021)

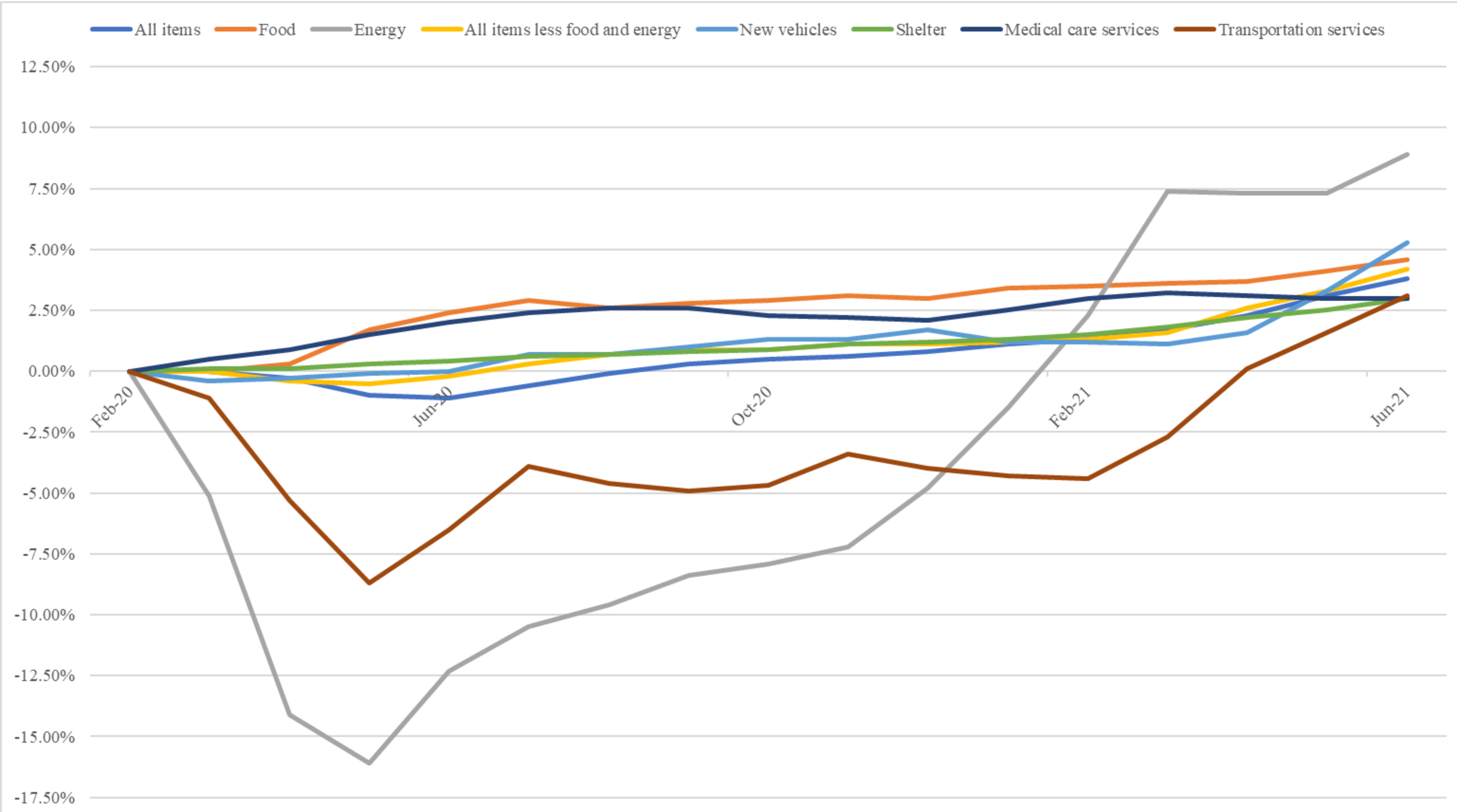
Amongst investors, the major question is whether this inflation is transitory as the economy emerges from stay at home orders or whether recent inflation levels are due to something structural. Transitory inflation refers to inflation that should be brief or temporary as price increases gradually subside as supply catches up with demand. Structural inflation refers to inflation that occurs because of an excessively loose monetary policy wherein interest rates are too low for too long or the central bank prints too much money.

Despite using the term transitory for the 5% inflation rate announced in July 2021, the Fed hasn’t precisely defined the term. The Fed generally expects elevated inflation for the remainder of 2021, meaning that transitory may mean about 6-9 months and that elevated inflation may exist for another several months. However, some Fed policy-makers believe that inflation may linger into 2022, meaning that inflation may be structural and not transitory. The major impact of the

Fed's opinion of whether inflation is transitory or structural is that if inflation sticks around, the Fed will most likely need to increase interest rates, which threatens to destabilize returns from the stock market and increase mortgage rates for consumers.

Despite recent increases in inflation, the Fed decided to stick to their policy of cutting interest rates and buying bonds, which was enacted when the pandemic first struck. If the Fed were to raise rates to decrease inflation, it could also slow economic growth and hurt the recovering labor market. By keeping rates steady, though, it's risking even greater inflation. In the June 2021 meeting, the FOMC decided, once again, that the jobs market remains the bigger concern, which is why it will keep short-term borrowing costs at near-zero levels and continue buying $120 billion a month in long-term bonds. Despite the Fed's decision to keep interest rates low, many investors have started to question how increasing inflation rates will impact their investment opportunities and returns. (Investopedia, 2021)

Exhibit A: Chart: Percentage change in Consumer Price Index from February 2020, selected categories



Source: U.S. Bureau of Labor Statistics

Exhibit B: Table: Percentage change in Consumer Price Index from February 2020, selected categories

Month	All items	Food	Food at home	Food away from home	Energy	Energy commodities	Energy services	All items less food and energy	New vehicles	Used cars and trucks	Car and truck rental	Shelter	Medical care services	Transportation services
Feb-20	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mar-20	-0.3	0.3	0.4	0.2	-5.1	-9.4	-0.2	0	-0.4	0.5	-5	0.1	0.5	-1.1
Apr-20	-1	1.7	2.9	0.3	-14.1	-26.2	-0.1	-0.4	-0.3	0	-20.5	0.1	0.9	-5.3
May-20	-1.1	2.4	3.8	0.7	-16.1	-29.8	-0.2	-0.5	-0.1	0	-22.6	0.3	1.5	-8.7
Jun-20	-0.6	2.9	4.4	1.2	-12.3	-22.9	-0.1	-0.2	0	-1.3	-9	0.4	2	-6.5
Jul-20	-0.1	2.6	3.4	1.7	-10.5	-19.4	-0.2	0.3	0.7	1.4	-6.1	0.6	2.4	-3.9
Aug-20	0.3	2.8	3.4	2	-9.6	-17.7	-0.3	0.7	0.7	7.2	-2.3	0.7	2.6	-4.6
Sep-20	0.5	2.9	3.1	2.5	-8.4	-16.5	0.9	0.9	1	12.9	1.3	0.8	2.6	-4.9
Oct-20	0.6	3.1	3.3	2.8	-7.9	-15.9	1.5	0.9	1.3	13.9	7.2	0.9	2.3	-4.7
Nov-20	0.8	3	3.1	2.9	-7.2	-15.5	2.4	1.1	1.3	12.3	9.9	1.1	2.2	-3.4
Dec-20	1.1	3.4	3.4	3.3	-4.8	-11.2	2.6	1.1	1.7	11.3	5	1.2	2.1	-4
Jan-21	1.3	3.5	3.3	3.7	-1.5	-4.7	2.3	1.2	1.2	10.3	3.9	1.3	2.5	-4.3
Feb-21	1.7	3.6	3.6	3.7	2.3	1.5	3.2	1.3	1.2	9.3	11.5	1.5	3	-4.4
Mar-21	2.3	3.7	3.7	3.8	7.4	10.6	3.8	1.6	1.1	9.9	24.6	1.8	3.2	-2.7
Apr-21	3.1	4.1	4.1	4.2	7.3	9.1	5.4	2.6	1.6	20.9	44.8	2.2	3.1	0.1
May-21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6	3.3	3.3	29.7	62.3	2.5	3	1.6
Jun-21	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.2	4.2	5.3	43.3	70.8	3	3	3.1

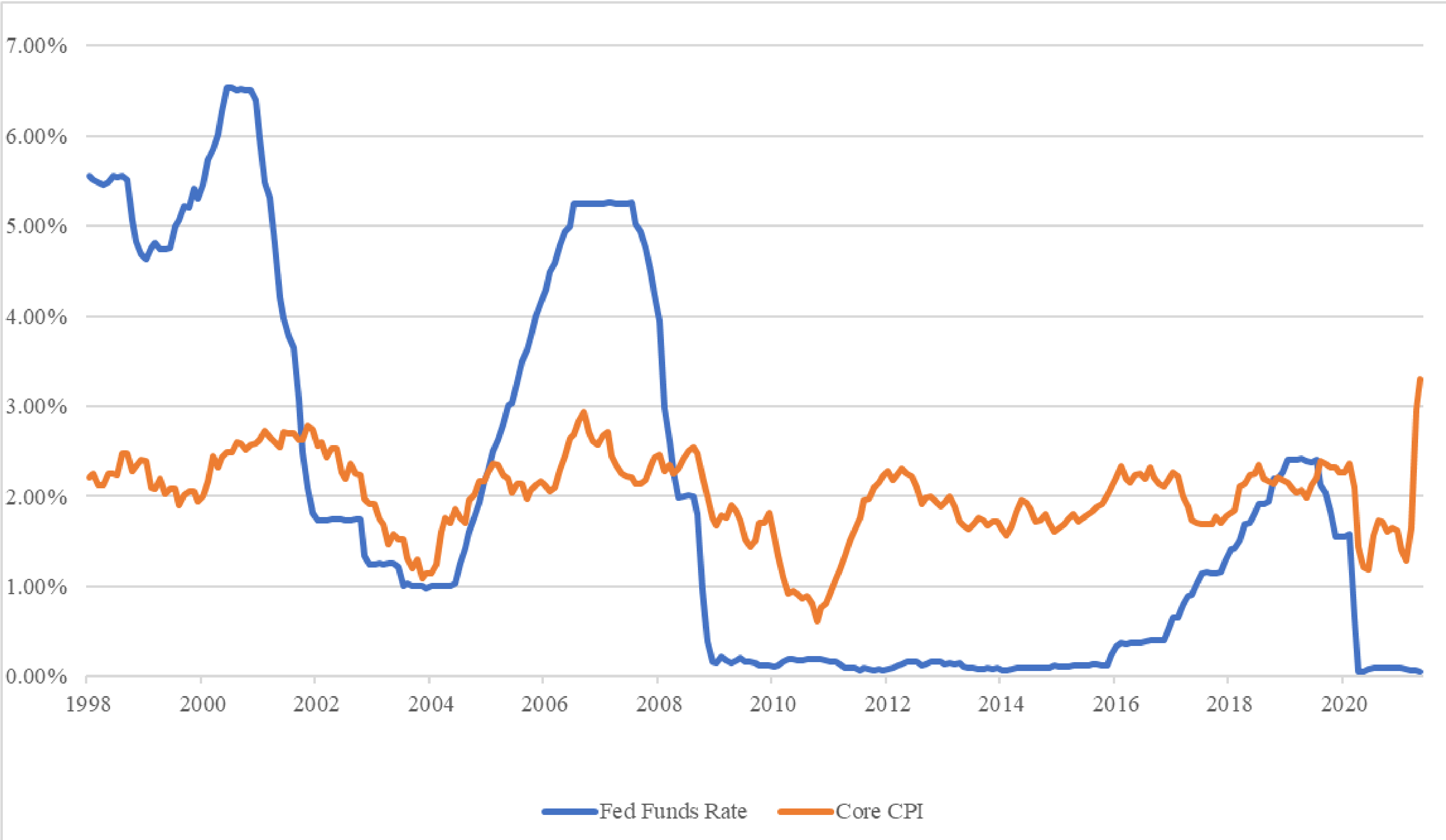
Source: U.S. Bureau of Labor Statistics

2 Inflation and Interest Rates

In the United States, the interest rate, or the amount charged by a lender to a borrower, is based on the federal funds rate determined by the Federal Reserve. In times of high or low inflation, the Fed can adjust the target for the federal funds rate to expand or contract the monetary supply as needed, which subsequently increases or decreases inflation. This relationship forms one of the central tenets of contemporary monetary policy: Central banks manipulate short-term interest rates to affect the rate of inflation in the economy. There is a general tendency for interest rates and the rate of inflation to have an inverse relationship.

This is relevant today is because if inflation sticks around, the Fed might increase interest rates, which will impact the attractiveness of various investments, including venture capital.

Exhibit C: Inflation and the Federal Funds Rate



Source: U.S. Bureau of Labor Statistics

3 How Inflation Impacts Investments

The goal of investors is to increase the long-term purchasing power of their capital. Investors in financial assets like stocks and bonds are always worried about inflation, because it erodes the buying power of whatever money they make on those investments. In order to increase real purchasing power, investor returns must first keep up with the rate of inflation. For example, an investment that returns 2% before inflation in an environment of 3% inflation will actually produce a negative return (−1%) when adjusted for inflation. If investors do not protect their portfolios, inflation can be harmful to returns.

2.1 Fixed Income Investments

Many investors buy fixed income securities, including bonds, treasuries, and CDs because they want a stable income stream, which comes in the form of interest, or coupon, payments. However, because the rate of interest, or coupon, on most fixed income securities remains the same until maturity, the purchasing power of the interest payments declines as inflation rises. As a result, bond prices tend to fall when inflation is increasing.

2.2 Stock Investments

According to analysis performed by the U.S. Bank Asset Management Group, stocks have held up well against inflation over the last 30 years. In theory, a company's revenues and earnings should increase at a similar pace as inflation. This means the price of your stock should rise along with the general prices of consumer and producer goods. However, in the past 30 years, U.S. stocks have tended to rise in price somewhat when inflation is accelerating, though the relationship is not particularly strong. (U.S. Bank, 2020)

Larger companies tend to have a stronger relationship with inflation than mid-sized companies, and mid-sized companies have had a stronger relationship than smaller companies. Foreign stocks in developed markets tended to fall in price when inflation was rising, and emerging market stocks displayed an even stronger negative relationship.

Growth stocks also tend to underperform when inflation is higher because growth stocks have much of their earnings expectations in the future, and when rates rise, it hurts those expectations.

2.3 Real Assets

Real assets, such as commodities and real estate, tend to have a positive relationship with inflation, according to analysis performed by the U.S. Bank Asset Management Group. (U.S. Bank, 2020) Real estate performs well because landlords and property owners see the values of their properties increase and landlords can somewhat easily pass-through rent increases to their tenants.

Commodities have historically been a reliable way to position for rising inflation. Inflation is measured by tracking the price of goods and services which often contain commodities directly, as well as products closely related to commodities. Energy-related commodities like oil have a particularly strong relationship with inflation. Industrial and precious metals also tend to rise when inflation is accelerating. Investors also buy gold when inflation increases because the value of gold is not damaged by the eroding value of cash.

2.4 Cryptocurrency

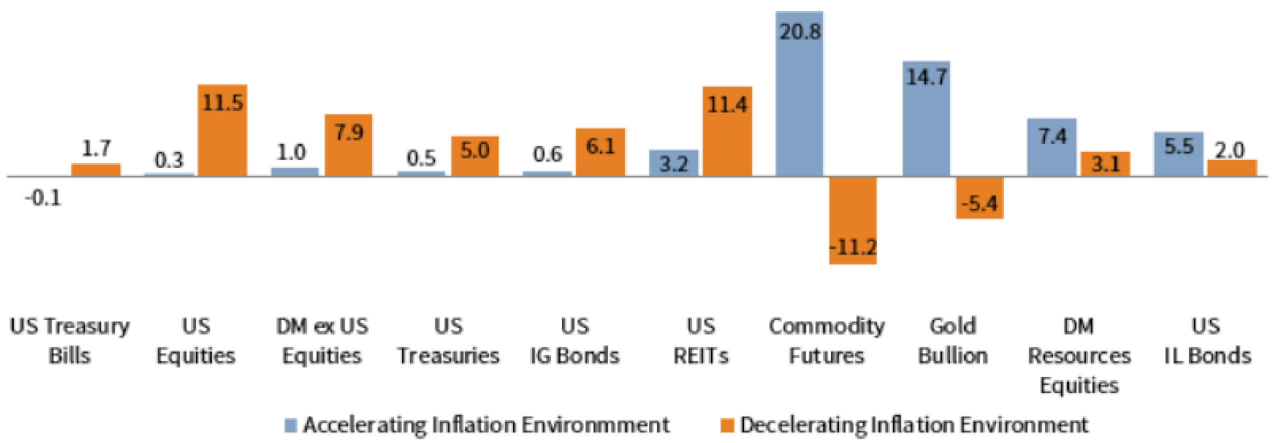
One of the reasons for increased inflation is that the Fed has recently been implementing an expansionary monetary policy, whereby central banks increase the amount of money available to people to keep the economy moving. However, printing more money decreases the value of money over time, therefore increasing inflation. During times of inflation, assets with limited supply, including cryptocurrencies like Bitcoin, theoretically should increase in value. Since Bitcoin has a fixed limit of 21 million coins that can ever be created, investors speculate that Bitcoin could be used as a hedge against inflation.

Exhibit D: Inflation's Influence on Select Asset Classes: 1920-2020

	Asset Class	**Relationship**	**Index**
Stocks	U.S. large-cap stocks	Positive	S&P 500 Index
	Developed foreign stocks	Strong Negative	MSCI EAFE GR USD
	Emerging market stocks	Strong Negative	MSCI EM GR USD
Bonds	Investment grade bond	Strong Negative	Bloomberg Barclays Aggregate Bond Index
	Treasury inflation-protected	Positive	Bloomberg Barclays Global Inflation-Linked: U.S. TIPS
Real Assets	Real estate stocks	Strong Positive	Dow Jones US Select REIT Total Return
	Commodities	Strong Positive	S&P GSCI Commodity Index

Source: U.S. Bank Wealth Management, Morninstar, Bloomberg

Exhibit E: Real Asset Returns Across Different Inflationary Environments, 1973-2019 (%)



Source: Cambridge Associates

4 How Interest Rates Impact Investments

Interest rates can be conceptualized as the cost of money, or the price you pay to borrow money for a specified period of time. Typically, higher interest rates reduce investment, because higher rates increase the cost of borrowing and require investment to have a higher rate of return to be profitable. Higher interest rates also mean that saving money generates a higher rate of return, so using savings to finance investment has a higher opportunity cost and may be less attractive. In order to properly evaluate the cost of borrowing money, many investors will consider their real interest rate, which equals the nominal interest rate less inflation.

4.1 Fixed Income Investments

Interest rates and bonds have an inverse relationship: When interest rates rise, bond prices fall, and vice versa. Newly issued bonds will have higher coupons after rates rise, making bonds with low coupons issued in the lower-rate environment worth less.

4.2 Stock Investments

In contrast to bonds, interest rate changes do not directly affect the stock market. However, Fed actions can have trickle-down effects that have the ability to impact stock prices

When the Fed raises interest rates, banks increase their rates for consumer loans. In theory, this means there's less money available for consumer spending. Also, increased rates for business loans can sometimes cause companies to halt expansions and hires. Reduced consumer and business spending can both lower the value of a company's stock.

Still, there's no guarantee that a rate hike will negatively impact stocks. Typically, rising interest rates occur during periods of economic strength. In this scenario, increased rates often coincide with a bull market. With a balance of stocks and bonds, investors may be better positioned to maintain more stability despite an interest rate increase.

4.3 Real Assets

Commodity prices may fall when interest rates rise, suggesting that an interest rate hike sometimes creates an unfavorable climate for these investments and vice versa.

If you have holdings in real estate, an interest rate hike can be detrimental, while a cut can be beneficial. Real estate prices are closely linked to interest rate markets, in part due to the cost of mortgage rates and in part due to some bond-like characteristics such as regular income payments. Like bonds, the relatively steady stream of income generated by real estate becomes less attractive as interest rates and coupons on newly issued bonds rise.

5 Inflation and Venture Capital Funding

5.1 Impact on Investors

In order for investors to increase long-term purchasing power, investor returns must first keep up with the rate of inflation. Therefore, in times of higher inflation, investors flow into the equity market to seek higher inflation-adjusted returns. However, as investors flock into equity markets, stock prices are bid up to the point at which expected returns for stocks also become unattractive. At this point, the logical next move for global, institutional investors is to move to more risky investment options such as private equity and venture capital.

Starting in 2009 and continuing to the present, the stock market has rallied over 170% as a result of the Fed’s low interest rate policies and quantitative easing. Subsequently, private equity fundraising picked up a few years into the rally, ticking up sharply in 2013. Venture capital fundraising followed suit shortly thereafter in 2014, leading to soaring valuations in Silicon Valley and the entrance of nontraditional investors such as university endowments and mutual funds in venture investing. (Han, 2017)

Just as with any supply and demand relationship, if demand outweighs supply, the price of a good will increase. As the demand for higher returns continues to increase, investors will be willing to pay a higher price, leading to crowded rounds and increased valuations in venture capital.

5.2 Impact on Entrepreneurs

In theory, a company’s revenues and profits should grow at the same rate as inflation, after a period of adjustment. However, startups with low or no revenue may struggle during periods of inflation because their input costs will soar without revenue to offset increasing costs. Some examples include general expenses such as electricity and real estate, to more industry specific inputs such as meat and vegetables or the price of metals. Companies may also see an increase in taxes, which further erode profit margins.

The second spike in costs that many startups will experience is salaries. During times of inflation, some governments mandate businesses to raise the salaries of their employees along with inflation, generally measured by the CPI. Even if the law does not oblige you to do so, your employees will ask for a raise their input costs will rise too.

5.3 Conclusion

Within the private markets, investments' relationship with inflation should be somewhat similar to their equivalent public market. For example, private property's relationship with inflation should be most similar to REITs. It can therefore be assumed that investments in privately held companies should behave most similarly to publicly held companies in similar industries or verticals.

During periods of high inflation, it is expected to see more institutional investors directing capital into PE and VC in the pursuit of higher returns. Just as with the stock market, as more and more investors flock to venture capital, it is inevitable for the price of participation to increase. Based on this behavior pattern, it is very likely that inflation is partly responsible for the soaring valuations in venture capital and private equity.

When evaluating startups during periods of high inflation, the businesses who fare well are often the ones with low operating costs, as they are less affected by input price increases. The fewer expenses a company has, the less of a threat inflation represents. As for businesses with a higher rate of cash burn, being able to command pricing power makes it easier to stay afloat. Pricing power allows a business to raise prices whilst maintaining or increasing demand. Businesses with a lot of pricing power often do very well out of inflation.

6 Interest Rates and Venture Capital Funding

6.1 Impact on Investors

From a supply perspective, VC firms raise funds largely from pension funds, banks, and insurance companies. As explained earlier in this report, when determining where to deploy capital, investors evaluate the expected rate of return relative to other investments. As interest rates rise, the possible returns from investments outside of VC increase, decreasing the willingness of investors to invest in VC funds, which are amongst the riskiest of all investments.

Alfred Lin, the former COO and CFO of Zappos and a partner at Sequoia Capital, framed it as follows: "With interest rates close to zero, you can't make money in the bond market, so the bond people now invest in stocks, and people who invest in stocks invest in private growth rounds. [Once interest rates rise] there will be less money chasing companies all the way down the spectrum." (Techcrunch, 2015)

6.2 Impact on Entrepreneurs

From a demand perspective, changes in interest rates may also impact the demand for VC funding from early-stage ventures. From a company's point of view, increasing interest rates are expected to have a negative impact on the demand for debt capital due to increasing cost of capital. During periods of high interest rates, entrepreneurs might find traditional bank loans to be relatively more expensive than equity capital. Therefore, as interest rates increase, venture capital will appear relatively cheaper compared to debt, consequently boosting demand for VC funding.

6.3 Conclusion

Using a comprehensive dataset of 273,067 VC investments spanning 35 years in the 20 major VC markets worldwide, Bellaivis and Matanova found that low interest rates boost VC fundraising even after controlling for various macroeconomic variables. Their study found that a 1% increase in interest rates reduces VC fundraising by $647 million in the following year and that a 1% increase in interest rates increases VC demand by 2.53% in the following year. (Cristiano Bellavitis, 2017)

7 Venture Capital Performance Insights

7.1 PE and VC Index Returns

Cambridge Associate's US VC index returned 50.1% in 2020, marking its second-best calendar year ever, and significantly outperforming the public markets. Despite the pandemic, VC fundraising hit a record high, investment pace (in terms of dollars invested) surpassed 2019, cash flows in and out of venture managers were strong, and exits (via M&A, IPOs, and SPACs) were plentiful. In order to properly evaluate these returns, they should be properly adjusted for inflation in the respective time period. (Cambridge Associates, 2021)

Exhibit F: US Private Equity and Venture Capital Index Returns

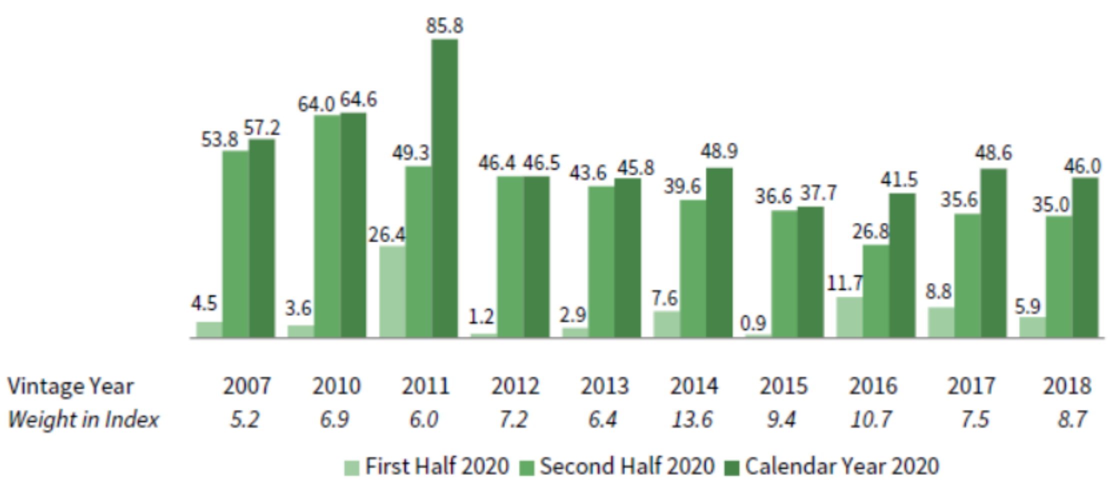
Index	6 mo	1 year	3 year	5 year	10 year	15 year	20 year	25 year
Cambridge Associates Private Equity	25.6	27.8	19.3	17.8	15.8	13.2	12.3	18.8
Cambridge Associates US Venture Capital	41.9	50.1	28.2	18.3	17.2	13.1	7.2	32.4

Source: Cambridge Associates

7.2 VC Returns by Vintage

As of December 31, 2020, ten meaningfully sized vintages represented about 82% of Cambridge Associate's venture index's value. For the year, returns among them ranged from 37.7% in 2015 to 85.8% in 2011. Without exception, second half performance was much stronger than that of the first half and performance for the more mature vintages exceeded that of the more recent ones. (Cambridge Associates, 2021)

Exhibit G: US VC Index Vintage Year Returns: Net Fund-Level Performance (%)

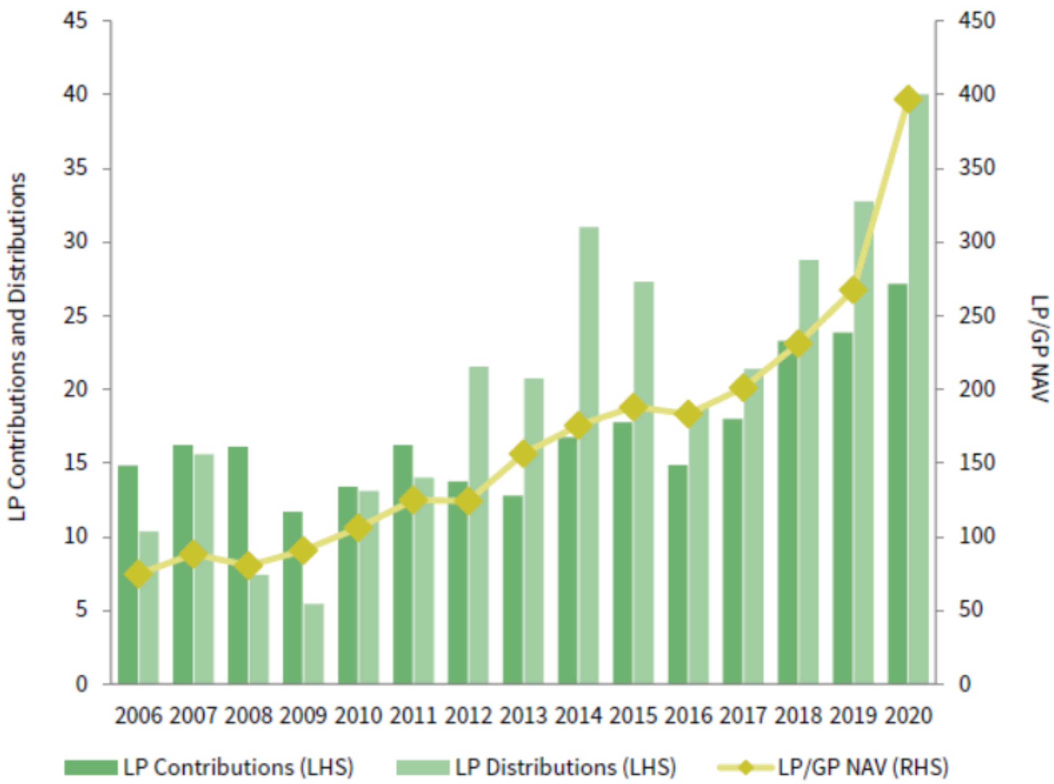


Source: Cambridge Associates as of December 31, 2020

7.3 LP Contributions and Distributions

Despite expectations that LP capital calls and distributions would slow during the pandemic, 2020 ended as the most active year ever for LP contributions and the second- most active year for distributions. Given the low interest rate and high inflation environment, the increase in LP contributions to VC funds is expected. At $27.2 billion, contributions in 2020 were 14% higher than 2019 levels, and distributions increased 22% to $40.0 billion. It was the ninth straight year that more capital was distributed than called. (Cambridge Associates, 2021)

Exhibit H: US VC Contributions, Distributions, and NAV



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