A HISTORY OF DRAWDOWNS

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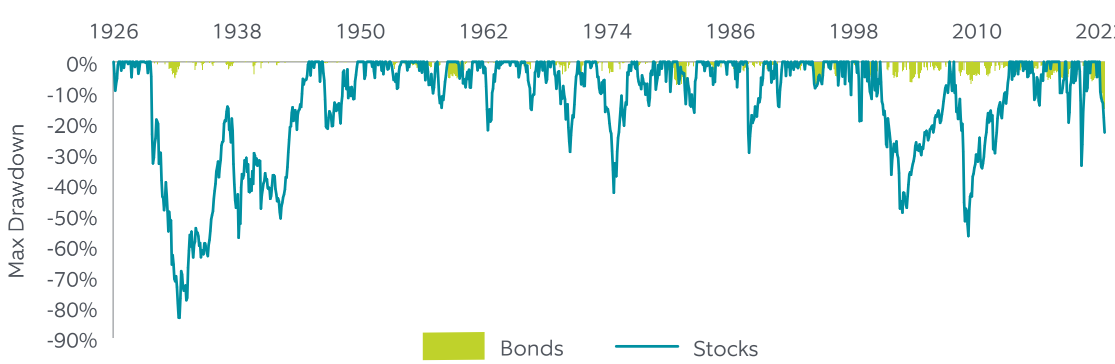
The annualized return was 9.6% for U.S. equities and 4.9% for intermediate-term U.S. government bonds from January 1926 to June 2022. These returns compare to an inflation rate of 2.9% over that history. The higher return of stocks came with higher risk – a standard deviation of 18.6% versus just 4.4% for bonds. In addition to lower risk, bond returns were uncorrelated to stock returns (0.05), providing a diversification benefit.

Standard deviation is a good summary risk measure for statisticians, but it is not intuitive to many investors. It manifests through time as stock-market and bond-market drawdowns, which are more intuitive (and painful) representations of risk. We survey a history of market drawdowns, first reviewing nominal stock and intermediate-term government bond drawdowns, then real (inflation-adjusted) stock and bond drawdowns from 1926 to June 2022.[1]

Exhibit 1 is a drawdown or "underwater" graph, where each new stock or bond peak value is reset to 0% to focus the eye on drawdowns. The graph shows that equity drawdowns have been far more severe and prevalent than bond drawdowns. In fact, the vast majority of the U.S. stock market's life (about 94% of the time) has been spent in a drawdown from the prior peak, suggesting that drawdowns are a normal part of the return-seeking process.

EXHIBIT 1: STOCKS AND BONDS UNDERWATER



1 We use monthly total returns of the Ibbotson US Large Cap Stock and US Intermediate-Term Government Bond indexes to March 1994, then daily total returns on the S&P 500 and Bloomberg US Treasury indexes thereafter to capture more granular drawdowns when this higher-frequency data became available in Bloomberg.

In Exhibit 2 we identify seven major equity drawdown events (top panel) and six major bond drawdown events (bottom panel) in reverse chronological order. Each drawdown event begins from its unique prior peak value for either stocks or bonds. The average equity drawdown across the equity drawdown events is -45%, with the largest (-83%) and longest drawdown occurring during the Great Depression. The current Post-COVID Inflation drawdown is the least severe equity drawdown of the group, but it may not be over as of the writing of this article. Importantly, bond returns during these equity drawdowns were almost always positive and uncorrelated (or negatively correlated) with stocks, providing diversification when it mattered most.

The average bond drawdown across the bond drawdown events is -8%, with the largest (-15%) occurring during the current Post-COVID Inflation, which as noted may not be over. Stock returns during these discrete bond drawdowns were usually positive and uncorrelated with bonds, providing diversification.

EXHIBIT 2: STOCK AND BOND DRAWDOWN EVENTS

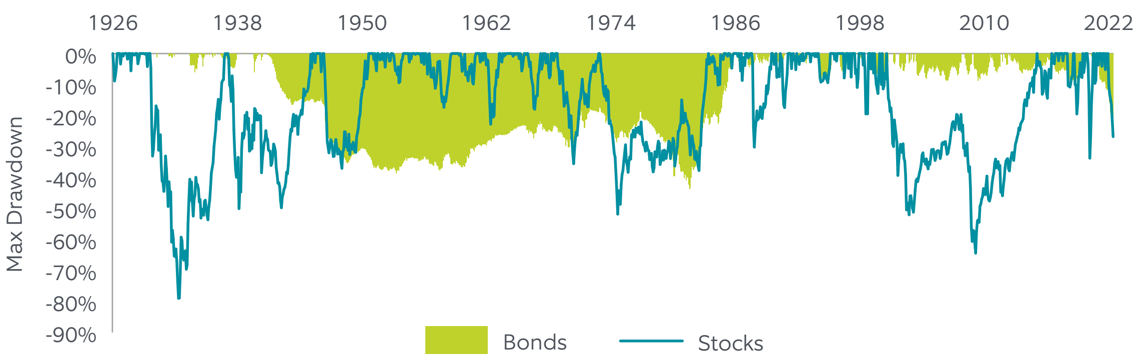
						Peak to Max Drawdown	
Equity Drawdown Event	**Begin**	**End**	**Maximum Drawdown**	**Months to Drawdown**	**Months to Recovery**	**Cumulative Bond Return**	**Bond Correlation**
Post-COVID Inflation	Jan-22	Current	-23.0%	6	N/A	-9.5%	0.01
COVID-19	Feb-20	Aug-20	-33.8%	1	6	5.4%	-0.45
Global Financial Crisis	Oct-07	Mar-13	-56.8%	17	49	15.4%	-0.44
Tech Bubble	Mar-00	May-07	-49.2%	30	56	31.3%	-0.29
'87Crash	Sep-87	May-89	-29.5%	3	18	2.4%	-0.98
70s Bear Market	Jan-73	Jun-76	-42.6%	21	21	4.9%	-0.27
Great Depression	Sep-29	Jan-45	-83.4%	34	151	12.4%	-0.15

						Peak to Max Drawdown	
Bond Drawdown Event	**Begin**	**End**	**Maximum Drawdown**	**Months to Drawdown**	**Months to Recovery**	**Cumulative Stock Return**	**Stock Correlation**
Post-COVID Inflation	Aug-20	Current	-15.2%	22	N/A	16.2%	-0.06
Greenspan Tightening	Feb-94	Apr-95	-7.1%	2	11	-7.9%	0.81
1980	Jun-80	Nov-81	-8.5%	15	3	17.5%	0.08
1979	Jul-79	Apr-80	-8.9%	8	2	14.5%	0.57
1958	Jun-58	Mar-60	-5.7%	15	7	40.9%	0.04
Great Depression	Jun-31	Aug-32	-5.3%	8	7	-36.4%	-0.14

Investors perceive nominal drawdowns in real time. However, real drawdowns capture the effect of inflation on the purchasing power of stocks and bonds. Given the current inflationary environment, we also review real stock and bond drawdowns.

Exhibit 3 shows that equity drawdowns are just as severe and prevalent when adjusted for inflation. However, strikingly, real bond drawdowns can also be severe and they can persist for decades. The real bond drawdown that began with World War II Inflation and was extended and exacerbated by the 1970s Great Inflation ultimately reached a maximum drawdown of -44%. This event does not even register in the nominal returns of Exhibit 1, but it is more severe than the -25% real bond drawdown for the current Post-COVID Inflation, which may not be over.

EXHIBIT 3: STOCKS AND BONDS UNDERWATER (INFLATION-ADJUSTED)



The drawdown history shows that inflation is an outsized risk to the purchasing power of bonds in particular. This history supports a meaningful allocation to Treasury inflation-protected securities (TIPS), even for taxable investors who may otherwise have a bias for the tax-exempt income of municipal bonds. The small cost of giving up some after-tax yield may be worthwhile when viewing Exhibit 3.