Drawdown Risk and the 2024 Presidential Election

Leslie Boni
California State University, Monterey Bay

Mary Anne Majadillas
California State University, Monterey Bay

Drawdown risk measures show how the value of an investment changes from a peak to a trough and are widely used by practitioners[1]. This paper provides instructions for analyzing drawdown risk around Presidential elections, with methods extendable to other events and horizons. The approach can be applied by analysts at financial planning firms or students in finance, investment, or business analytics courses. Exercises can be performed using SAS, VBA, STATA, R, or Python. In a classroom setting, students analyze risk in preparation for a hypothetical financial planning meeting with clients concerned about the 2024 Presidential Election. Check numbers are provided for the 2020 U.S. Presidential Election, showing that investors who bought the S&P 500 index one-, three-, or six-months prior experienced maximum drawdown risk of 7.5%, 9.6%, or 9.6%, with recovery periods of 7, 50, or 50 days. Instructions allow analysis for the most recent seven elections, supporting both applied teaching and practitioner-oriented risk evaluation.

Keywords: investments, risk, drawdown, Presidential Elections

INTRODUCTION

Among the variety of investment risk measures developed by researchers and practitioners over the years is a family of measures referred to as drawdown risk measures. Geboers et al. (2023) provides an extensive review of these and in-depth discussion of their implications for managing investment risk. In this paper, we focus on the drawdown measure called *maximum drawdown*. Hayes (2024) provides the following definition for maximum drawdown (MDD) as "the maximum observed loss from a peak to a trough of a portfolio, before a new peak is attained":

MDD = (Trough Value – Peak Value) / Peak Value   (1)

Geboers et al. (2023) highlight that an additional statistic of interest to investors is the recovery time, which is a measure of how long it would take for the investor to recover from the maximum loss. Recovery time can be measured as the time (e.g., number of days) between the trough value occurrence and subsequent occurrence of the investment regaining (if ever) its peak value. For additional discussion of maximum drawdown risk and its appeal for investors, see Tidmore (2021) and Chen et al. (2015).

Class Exercise Instructions for Students

Linda Garcia works as an analyst for JD Planners. Her boss, JD, asks her for help to prepare for a client meeting next week with the Smith family. JD has advised Mr. and Mrs. Smith for several years. They have requested a meeting because they are extremely nervous about the upcoming U.S. 2024 Presidential Election and its potential risk for their investments. Mr. and Mrs. Smith are tenured professors at a local college and plan to retire in a few years.

In particular, the Smiths recently read an academic paper (Geboers et al., 2023) that discusses drawdown risk. They emailed the paper to JD earlier today. They would like to see a drawdown risk analysis for their investment portfolio's stock allocation, which can be modeled using the S&P 500 index. Depending on the analysis, they may want to discuss options for reducing risk prior to the election. Based on JD's experience with the Smiths, he believes an analysis that includes graphical as well as tabular representations would be helpful.

JD's instructions to Linda are:
1) Read at least the first 10 pages of the Geboers et al. (2023) paper.[2]
2) Obtain S&P 500 index (ticker: ^GSPC) from finance.yahoo.com or other source for the period January 1, 1984, to June 30, 2024 (or later if available).
3) Write a program (e.g., using SAS, VBA, STATA, R, or Python) to determine all underwater periods. Note that each underwater period is defined as the period that begins with the peak value, includes the maximum drawdown date, and culminates with the end of the recovery period when the investment regains its peak value. For example, see Geboers et al. (2023) Table 2 for a list of the 5 underwater periods between 1984 and 2020 that experience the deepest maximum drawdown (i.e., largest negative percentage). There are many more underwater periods between 1984 and 2020 than reported in Table 5, which lists just the 5 that have the largest MDD.

Save the set of underwater periods for use in the next step. As a check, the program should produce for the earliest three underwater periods between 1984 and 2020 the underwater period summary statistics as shown in Table 1 below. Note that Geboers et al. report maximum drawdown (dd) using logarithmic returns. Clients may be more likely to be interested in linear returns. We recommend including drawdown (dd) on a linear return basis as well as the log version, where *dd (linear return)* equals minimum price minus maximum price)/maximum price. We assume *hwm* in Geboers et al. refers to the S&P Index highwater mark price (i.e., the maximum price for the underwater period.

TABLE 1
FIRST 3 UNDERWATER PERIODS JANUARY 29, 1993, THROUGH JUNE 30, 2024

start	end	d_dpdd	hwm	dd (log version)	dd (linear version)	duration	dtoMax	rec
8/25/1987	7/25/1989	12/4/1987	337	-40.8%	-33.5%	700	101	599
7/31/1989	8/4/1989	8/1/1989	346	-0.7%	-0.7%	4	1	3
8/7/1989	8/23/1989	8/21/1989	349	-2.5%	-2.5%	16	14	2

4) Extend the program to search the set of underwater periods to determine the 5 that have the largest MDD. This provides a check of the program. The program should produce the same information as shown in Geboers et al. (2023) Table 2.
5) Having checked the program in the above steps, proceed to analyze drawdown risk around Presidential elections. We obtain the dates of U.S. Presidential elections from Britannica online at https://www.britannica.com/topic/list-of-United-States-presidential-elections-2080835

The dates of U.S. Presidential elections (during January 29, 1993, through June 30, 2024) are:
1. November 5, 1996: Bill Clinton defeats Bob Dole.
2. November 7, 2000: George W. Bush defeats Al Gore.

3. November 2, 2004: George W. Bush defeats John Kerry.
4. November 4, 2008: Barack Obama defeats John McCain.
5. November 6, 2012: Barack Obama defeats Mitt Romney.
6. November 8, 2016: Donald Trump defeats Hillary Clinton.
7. November 3, 2020: Joe Biden defeats Donald Trump.

Visually examining Geboers et al. Table 2, it is quickly clear that four of the elections (2000, 2004, 2008, and 2012) occurred during the two largest underwater periods. Once the dataset of all underwater periods has been generated (i.e., Step 3 above), it is easy to check whether the other three elections occur within an underwater period. If so, we can complete a table with the same columns as in Geboers et al. Table 2 to report the results of interest for the underwater period.

We can also use the program code to analyze alternative questions. For example, clients might ask whether it would make sense to lighten up their risk (i.e., sell some of the risky assets) one month, three months, or six months prior to the election. An alternative framing of the question is: Are there underwater periods for investors who buy the S&P 500 index one-, three-, and six-months prior to the election? To allow for uncertainty following the election, we include the possibility that the underwater period starts within the month *following* the election date.

A simple approach for performing this analysis is to set up a macro with a loop defined as one of the Presidential election dates and a one-, three-, or six-month case. The S&P 500 index data used for the loop should exclude dates prior to the date equal to one-, three-, or six-months prior to the Presidential election date of interest.

Results for the one-, three-, and six-month cases for the 1996 election are provided in Table 2 below. The underwater period with the largest drawdown is reported if there are multiple underwater periods. Note that in the cases analyzed for windows beginning 3 months prior (8/5/1996) and one month prior (10/5/1996), the underwater period with the largest drawdown started within the month following the election (11/25/1996).

TABLE 2
DRAWDOWN ANALYSIS FOR ONE-, THREE-, AND SIX-MONTH CASES FOR THE 1996 PRESIDENTIAL ELECTION

Election	Analyze from	start	end	d_dpdd	hwm	dd (linear version)	duration	dtoMax	rec
11/5/1996	5/5/1996	5/24/1996	9/12/1996	7/24/1996	679	-7.6%	111	61	50
11/5/1996	8/5/1996	11/25/1996	1/9/1997	12/16/1996	757	-4.8%	45	21	24
11/5/1996	10/5/1996	11/25/1996	1/9/1997	12/16/1996	757	-4.8%	45	21	24

Once Table 2 has been completed for all seven elections, the results can be analyzed to provide summary statistics for how many elections had underwater periods for the various lead times and the maximum drawdown (linear version), duration, days to maximum drawdown, and recovery length of the underwater period with the maximum drawdown. We provide results for the 2020 election below in Table 3.

TABLE 3
DRAWDOWN ANALYSIS FOR ONE-, THREE-, AND SIX-MONTH CASES FOR THE 2020 PRESIDENTIAL ELECTION

Election	Analyze from	start	end	d_dpdd	hwm	dd (linear version)	duration	dtoMax	rec
11/3/2020	5/3/2020	9/2/2020	11/12/2020	9/23/2020	3,581	-9.6%	71	21	50
11/3/2020	8/3/2020	9/2/2020	11/12/2020	9/23/2020	3,581	-9.6%	71	21	50
11/3/2020	10/3/2020	10/12/2020	11/6/2020	10/30/2020	3,534	-7.5%	25	18	7

CONCLUDING REMARKS

This paper has provided instructions for an approach for analyzing drawdown risk around Presidential elections. This approach can be easily extended to other events of interest and other investment horizons. Check numbers provided for the 2020 U.S. Presidential Election indicate that investors who bought the S&P 500 index one-month, three-months, or six-months prior to the election experienced maximum drawdown risk of 7.5%, 9.6%, or 9.6%, and recovery periods of 7, 50, or 50 days, respectively.

ENDNOTES

[1.] Geboers et al. (2023).
[2.] Some students may find Hayes (2024) helpful for interpreting the mathematical notation used in Geboers et al. (2023).

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