

RESEARCH

Government Debt and Stock Returns

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As of the end of 2020, the US debt held by the public amounted to \$22 trillion, an increase of approximately \$5 trillion from the year before and well over double the level from a decade ago.¹ This trend may be worrisome for investors expecting an adverse impact on stock returns once the bill for all this spending comes due. However, the relation between country debt and stock markets is complex, in part because sovereign solvency is dependent upon many factors other than just debt level.

In addition, debt is generally a slow-moving variable whose expected value should be incorporated in market prices. Consistent with this belief, the evidence suggests there has not been a strong relation between country debt and equity market returns.

BALLOONING DEBT

The US has hardly been alone in its recent escalation of debt. **Exhibit 1** shows that roughly half the Organization of Economic Co-operation and Development (OECD) member countries have general government debt-to-gross domestic product² (debt/GDP) ratios above 70%, with 10 countries—including the US, Japan, and the United Kingdom (UK)—exceeding 100%.

Exhibit 1**Due Process**

General government debt as a percent of GDP in OECD countries as of 2020



Debt/GDP data from OECD (2021). General government debt as a percent of GDP, 2020 or latest available. General government includes central, state, and local governments and the social security funds they control. Debt is the sum of currency and deposits; debt securities; loans; insurance, pensions, and standardized guarantee schemes; and other accounts payable.

The intent behind much of recent government spending was to mitigate the economic impact of the COVID-19 pandemic. But, while government spending may provide a short-term stimulatory effect on the economy, the prospect of higher future taxes and long-run impacts on spending and investment introduces many channels through which spending and debt levels might affect expected stock returns.

Academic arguments supporting a theoretical relation between government debt and stock returns include one described by Blanchard (1991) whereby debt-financed government spending may raise interest rates and/or crowd out private spending. Higher borrowing costs and/or lower private spending could compromise the ability of corporations to generate future cash flows. Becker and Ivashina (2018) argue that government debt instruments could compete with those of corporations in the financial markets, crowding out lending that would otherwise go toward corporations. Gomes and Michaelides (2008) suggest the greater supply of riskless assets, such as government debt securities, could lead to households investing less of their net worth in risky assets, lowering their consumption volatility and, in turn, the equity premium.

These theoretical arguments can be distilled down to impacts felt through company cash flows—in the case of the higher borrowing cost or lower private spending arguments—or through discount rate effects, such as the consumption volatility story. An important point for investors is the uncertainty regarding which component should dominate and the time horizon over which these effects appear.

Moreover, economic theory does not offer a debt threshold beyond which a country is in economic peril. The history of sovereign defaults suggests ballooning country debt is an ingredient, but one of many variables contributing to the cause. Japan, for example, has experienced over a decade of debt/GDP levels above 200% without a default.³ Conversely, we have seen instances of countries defaulting on their debt at debt/GDP ratios lower than where many countries stand today. Argentina provided a recent example: Debt/GDP of only 90%⁴ in 2019 was followed by a default in the first half of

2020. Ivory Coast defaulted in January 2011,⁵ when its 2010 debt/GDP was just 46%.⁶

Finally, country debt is generally a slow-moving variable. Market participants can have well-formed expectations about future debt levels and effects on publicly traded securities, expectations that should be reflected in current market prices. Therefore, it is ultimately an empirical question whether market returns are strongly correlated with country debt.

TURNING TO THE DATA

One way to assess whether government debt levels contain meaningful information about equity market performance is to compare average returns of countries sorted into high- and low-debt groups. **Exhibit 2** displays results for these groups, formed annually within developed and emerging markets, with average annual returns computed for equity premiums as well as the size, value, and profitability premiums.

The table shows little evidence that debt levels are useful for predicting equity market performance. While average equity premiums have been higher for the high-debt group, the average differences have not been statistically reliable, as evidenced by *t*-statistics well below 2. The size, value, and profitability premiums are also similar for high- and low-debt countries. The difference of 6.95% between the size premium of high- and low-debt emerging markets countries remains statistically indistinguishable from zero. The takeaway is that a relatively high debt/GDP ratio should not alone deter investors from holding that country's equities.

Exhibit 2

Much Ado About Little

Premium returns in high- and low-debt countries

	Market–Risk-Free		Small–Large		Value–Growth		Hi Prof–Lo Prof	
	Developed Markets (1975–2018)	Emerging Markets (1995–2018)	Developed Markets (1994–2018)	Emerging Markets (1995–2018)	Developed Markets (1994–2018)	Emerging Markets (1995–2018)	Developed Markets (1994–2018)	Emerging Markets (1995–2018)
Same Year Debt/GDP								
High-Debt Countries	7.94%	8.28%	1.59%	8.25%	0.71%	6.75%	4.13%	–4.62%
Low-Debt Countries	7.06%	9.22%	3.95%	1.30%	1.98%	6.18%	2.18%	2.17%
Difference	0.88%	–0.94%	–2.36%	6.95%	–1.27%	0.57%	1.95%	–6.79%
t-statistic	0.41	–0.25	–1.41	1.35	–0.68	0.17	0.63	–1.22

Past performance, including hypothetical performance, is no guarantee of future results. Actual returns may be lower.

Each year, countries are classified as either high- or low-debt depending on whether their debt/GDP was above or below that year's median debt/GDP, defined separately for developed and emerging markets. The premium return for each group of countries is the average premium return of all countries in the group weighted by countries' market capitalization weights over the contemporaneous year. Debt is general government debt (central government debt is used where general government debt is not available) provided by International Monetary Fund (2021). Shorter time periods are shown for some countries due to data availability. If a country does not have data extending for the full sample period, we use the longest data series available. Filters were applied to data retroactively and with the benefit of hindsight. Groups of stocks and their returns are hypothetical and are not representative of indices or actual strategies and do not reflect costs and fees associated with an actual investment. Please see the Data Appendix for more information.

While, by definition, the high-debt group of countries includes those with relatively high debt/GDP in any given year, the absolute level of debt for this group has varied through time. Indeed, the high-debt developed markets time series had an average debt/GDP ratio of 87% from 1975 to 2018—well below that of today's highest debt countries. Some might suggest that a more relevant exercise for informing our expectations of the near future is to define instances of high debt based on a threshold rather than the cross-sectional median.

There are drawbacks to this approach. Country-year observations above a given threshold could be largely composed of those from a consecutive stretch of years from the same country. For example, from 1975 to 2018, 102 out of 787 developed markets country-year observations with both market premium and debt/GDP data had debt/GDP levels above 100%.⁷ A single stretch from Japan accounted for 23 alone, from 1996 to 2018. Belgium (1983–2003) and Italy (1992–2018) chipped in 21- and 27-year runs, respectively. The 102 observations comprise only 10 such “unique” stretches in total. These especially high debt/GDP observations are, therefore, limited in usefulness for informing expectations.

With that caveat aside, debt/GDP over 100% hasn't necessarily been deleterious to equity markets. Sixty-five of these 102 observations were associated with positive contemporaneous equity premiums. Even Japan, with debt/GDP levels above 200% from 2009 to 2018, returned a positive equity premium in seven of those 10 years.

In addition to examining debt levels, we can also assess whether annual changes in debt/GDP contain information about differences in premium returns across countries. **Exhibit 3** shows the results of repeating the analysis described above using a country's change in debt/GDP compared to the previous year. In both developed and emerging markets, the results suggest that changes in debt/GDP contain little information about contemporaneous premium returns. On average, even large increases in debt/GDP have not impaired equity markets.

Exhibit 3

Déjà Vu

Premium returns in high- and low-debt countries based on debt/GDP growth

	Market-Risk-Free		Small-Large		Value-Growth		Hi Prof-Low Prof	
	Developed Markets (1975-2018)	Emerging Markets (1995-2018)	Developed Markets (1994-2018)	Emerging Markets (1995-2018)	Developed Markets (1994-2018)	Emerging Markets (1995-2018)	Developed Markets (1994-2018)	Emerging Markets (1995-2018)
Same Year Debt/GDP Growth								
High-Debt Countries	7.07%	7.45%	3.70%	3.11%	2.23%	4.70%	4.03%	-0.75%
Low-Debt Countries	8.30%	11.65%	2.11%	3.50%	1.80%	6.89%	2.71%	-2.09%
Difference	-1.23%	-4.20%	1.60%	-0.39%	0.44%	-2.19%	1.33%	1.34%
t-statistic	-0.53	-1.31	1.03	-0.19	0.22	-0.42	0.52	0.42

Past performance, including hypothetical performance, is no guarantee of future results.

Actual returns may be lower.

Each year, countries are classified as either high- or low-debt growth depending on whether their growth in debt/GDP was above or below that year's median growth in debt/GDP, defined separately for developed and emerging markets. The premium return for each group of countries is the average premium return of all countries in the group weighted by countries' market capitalization weights over the contemporaneous year. Debt is general government debt (central government debt is used where general government debt is not available) provided by International Monetary Fund (2021). Shorter time periods are shown for some countries due to data availability. If a country does not have data extending for the full sample period, we use the longest data series available. Filters were applied to data retroactively and with the benefit of hindsight. Groups of stocks and their returns are hypothetical and are not representative of indices or actual strategies and do not reflect costs and fees associated with an actual investment. Please see the Data Appendix for more information.

POWER OF MARKET PRICES

The lack of relation between country debt and stock market returns could signify that debt affects drivers of stock returns in ways that ultimately offset one another. It should also be interpreted as further evidence of the forward-looking nature of markets. Whether it be debt, economic growth, inflation, or interest rates, we believe market prices quickly incorporate information and expectations. Regardless of the economic environment, the range of outcomes for the premiums—equity, size, value, and profitability—can be large. The challenge of trying to outguess the markets based on macroeconomic indicators can come at the substantial opportunity cost of missing out on the premiums when they arise.

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1. US Department of the Treasury (2021).
 2. General government debt tends to be a larger number than central government debt held by the public, as the former includes intragovernmental holdings and state and local government debt. For example, using the \$22 trillion figure for federal debt held by the public and OECD's 2020 figures for debt/GDP and GDP yields an estimate of 66% for the proportion of US general government debt that consists of federal debt held by the public. Likewise, an estimate of 54% for the UK can be attained by subtracting out Bank of England and local government holdings from central government liabilities (data provided by the UK Debt Management Office), similarly calculating general government debt using OECD's 2020 figures for debt/GDP and GDP, and applying a GBP/USD currency conversion from Bloomberg as of the end of 2020.
 3. General government debt from OECD (2021).
 4. Central government debt from International Monetary Fund (2021).
 5. Reuters (2011).
 6. Central government debt from International Monetary Fund (2021).
 7. Using data from International Monetary Fund (2021).

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GLOSSARY

Debt-to-gross domestic product (Debt/GDP): The ratio of a country's debt to its gross domestic product.

Discount rate: The rate of return that determines the present value of a company's expected future cash flows.

Equity (or market) premium: The return difference between stocks and short-term bills.

Market capitalization: The total market value of a company's outstanding shares, computed as price times shares outstanding.

Price-to-book: The ratio of a firm's market value to its book value, where market value is computed as price multiplied by shares outstanding and book value is the value of stockholder equity as reported on a company's balance sheet.

Profitability: Measured as operating income before depreciation and amortization minus interest expense scaled by book.

Profitability premium: The return difference between stocks of companies with high profitability over those with low profitability.

Size premium: The return difference between small capitalization stocks and large capitalization stocks.

t-statistic: A statistical quantity commonly used to test whether a sample average is reliably different from a specified value (e.g., zero). Researchers often cite an absolute t-statistic value of at least 2.0 as the threshold for statistical reliability.

Value premium: The return difference between stocks with low relative prices (value) and stocks with high relative prices (growth).

DATA APPENDIX

Developed markets since 1975 (unless stated differently): MSCI Australia Index (net div.)(from 1989), MSCI Austria Index (net div.), MSCI Belgium Index (net div.), MSCI Canada Index (net div.), MSCI Denmark Index (net div.), MSCI Finland Index (net div.) (1988), MSCI France Index (net div.)(1978), MSCI Germany Index (net div.), MSCI Ireland Index (net div.) (1988), MSCI Israel Index (net div.) (1999), MSCI Italy Index (net div.), MSCI Japan Index (net div.), MSCI Netherlands Index (net div.), MSCI Norway Index (net div.), MSCI Portugal Index (net div.) (1988), MSCI Spain Index (net div.)(1980), MSCI Sweden Index (net div.), MSCI Switzerland Index (net div.)(1983), MSCI United Kingdom Index (net div.), and the MSCI USA Index (net div.).

Emerging Markets since 1995 (unless stated differently): MSCI Brazil Index (gross div.)(From 2001), MSCI Chile Index (gross div.), MSCI China Index (gross div.), MSCI Colombia Index (gross div.)(1996), MSCI Egypt Index (gross div.)(Market-RF only), MSCI Greece Index (gross div.), MSCI Hungary Index (gross div.)(1996, Value, Size, Prof), MSCI India Index (gross div.), MSCI Indonesia Index (gross div.)(2000), MSCI Korea Index (gross div.), MSCI Malaysia Index (gross div.), MSCI Peru Index (gross div.)(1999), MSCI Philippines Index (gross div.), MSCI Poland Index (gross div.), MSCI Russia Index (gross div.)(1998), MSCI Thailand Index (gross div.)(2005), MSCI Turkey Index (gross div.)(2000), MSCI Mexico Index (gross div.), MSCI South Africa (gross div.).

All returns in USD. Debt is General Government Debt and Central Government Debt. Source: International Monetary Fund (2021). Market-Risk-Free is calculated as the return difference between MSCI Country Indices and the One-Month US Treasury Bill rate. One-Month US Treasury Bill is the IA SBBI US 30 Day T-Bill TR USD, provided by Morningstar. Indices are not available for direct investment. Index returns are not representative of actual portfolios and do not reflect costs and fees associated with an actual investment. Small-Large is calculated as the return difference between annually rebalanced groups of stocks comprising the bottom 12.5% and top 87.5% of market capitalization in developed markets and the bottom 15% and top 85% of market capitalization in emerging markets, sorted on firm size. Value-Growth is calculated as the return difference between annually rebalanced groups of stocks comprising the top and bottom 30% of market capitalization, sorted on price-to-book. Hi Prof-Lo Prof is calculated as the return difference of annually rebalanced groups of stocks comprising the top and bottom 30% of market capitalization, sorted on profitability. The market is the eligible universe for each country. REITs, tracking stocks, and investment companies are excluded from the universe. In addition, stocks need to meet certain minimum market capitalization and liquidity requirements. Groups of stocks and their returns are hypothetical and are not representative of indices or actual strategies and do not reflect costs and fees associated with an actual investment. Dimensional calculations using MSCI and Bloomberg data.

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