

SACAD: John Heinrichs Scholarly and Creative Activity Days

Volume 2023

Article 34

4-17-2023

The Relationship Between Debt to GDP and the Wealth Gap

Braxten Eilert

Fort Hays State University, bheilert@mail.fhsu.edu

Zachary Parde

Fort Hays State University, zjparde@mail.fhsu.edu

Follow this and additional works at: <https://scholars.fhsu.edu/sacad>

Recommended Citation

Eilert, Braxten and Parde, Zachary (2023) "The Relationship Between Debt to GDP and the Wealth Gap," *SACAD: John Heinrichs Scholarly and Creative Activity Days*: Vol. 2023, Article 34.

DOI: 10.58809/NMCW7591

Available at: <https://scholars.fhsu.edu/sacad/vol2023/iss2023/34>

This Submission is brought to you for free and open access by FHSU Scholars Repository. It has been accepted for inclusion in SACAD: John Heinrichs Scholarly and Creative Activity Days by an authorized editor of FHSU Scholars Repository. For more information, please contact ScholarsRepository@fhsu.edu.

Objective

The primary objective of our research was to analyze the correlation between the Debt to GDP ratio and the wealth gap in the United States

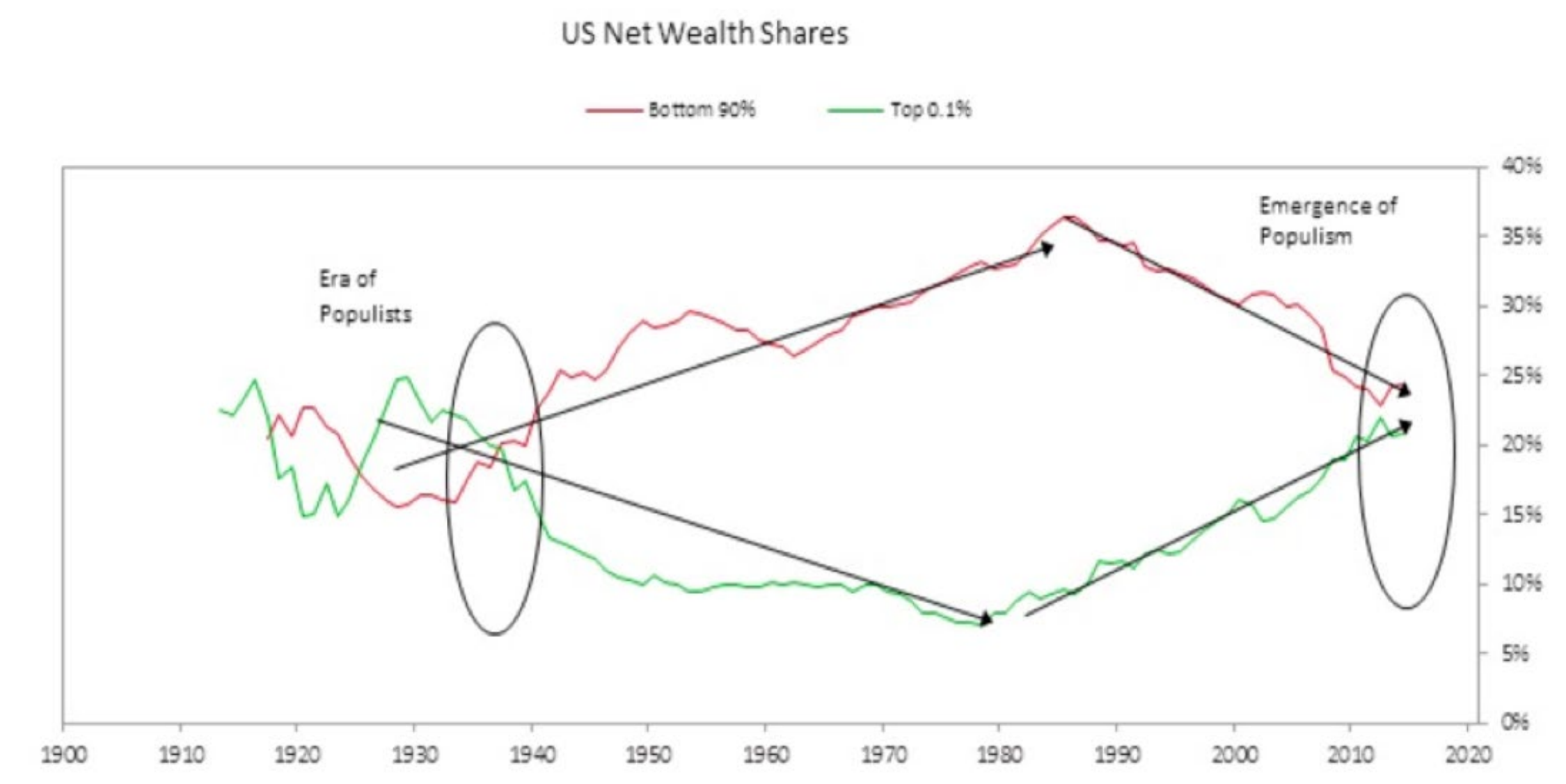
Relevance

The fiscal and monetary policy that many politicians seek to bring to office is usually to reduce the wealth gap or maintain the wealth gap. This is obviously a very highly debated topic, and we do not mean to debate the answer to this question. We are simply trying to find key economic indicators that can help explain why the wealth gap exists.

Hypothesis

Our initial hypothesis states that as the Debt to GDP ratio increases domestically, we expect the wealth gap to widen the top 1% to accumulate a larger share of total net worth held.

Figure 1



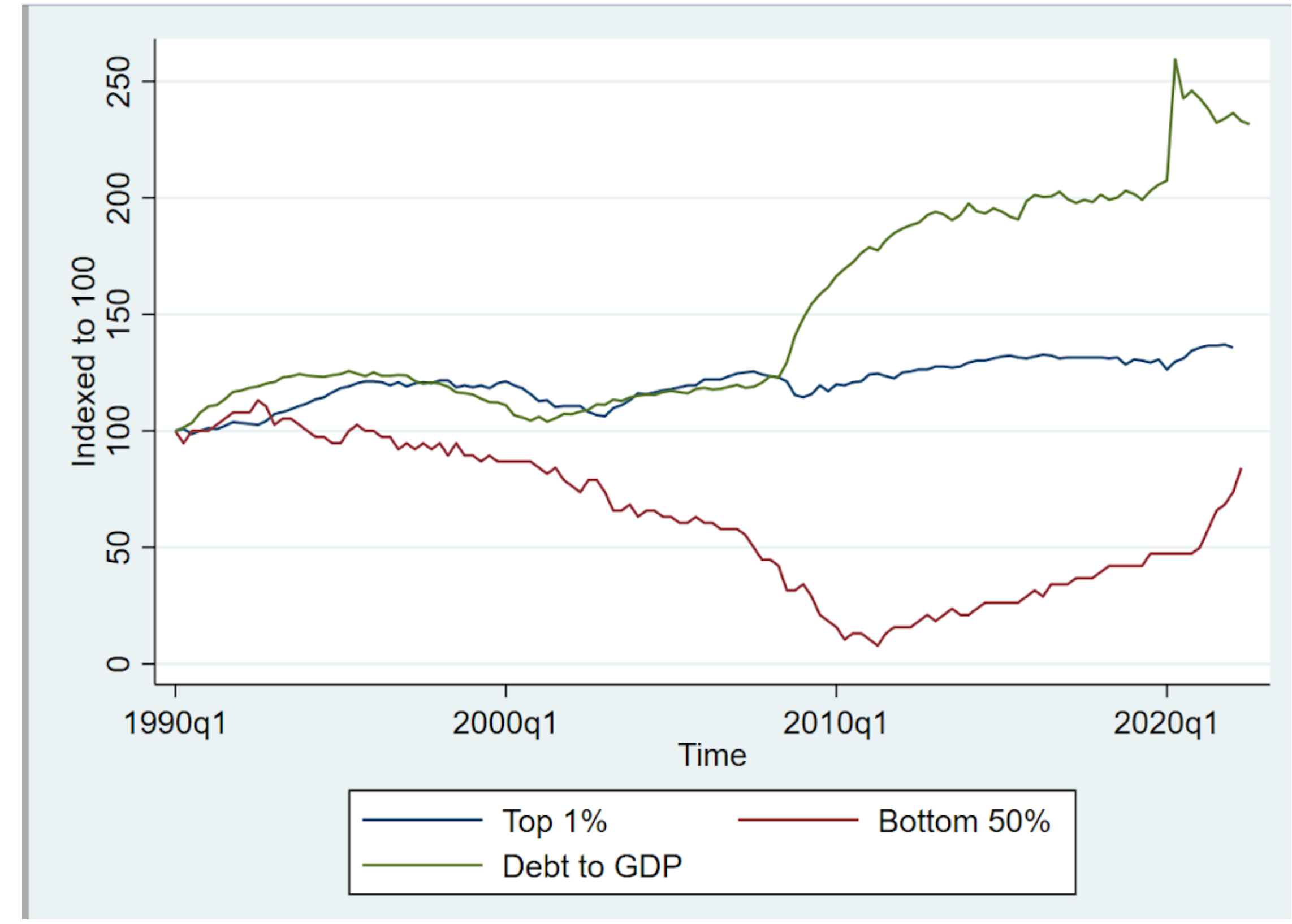
Literature Review

Figure 1 shows the relationship between the bottom 90% of wealth shares compared to the top 0.1% of wealth shares. This graph was obtained from Ray Dalio the founder of the world's largest hedge fund Bridgewater. Mr. Dalio is very concerned with the current state of the world especially in terms of income inequality. He believes that the average American may be misrepresented when looked at as a statistic due to the skew in data from the wealthy. This could lead to ill advised monetary policy from the Federal Reserve.

An important observation from the chart shows that the most severe financial crises happen during the largest disparities in income equality. For example, from 1920-1930 where the most visible divide is shown in the wealth distribution in The United States there was serious financial turmoil. Starting in 1920 there was an economic boom, this however was short lived, during the 1930's the United States experience extreme deflation that led to bank runs and the collapse of the New York Stock Exchange

Data & Methodology

Figure 2



Indexing Data

In order to get a clear visual representation of the performance of Debt to GDP relative to the wealth gap over the last 30 years we indexed the three variables shown below to 100. Indexing a variable to 100 means that the values of the variable are expressed as a percentage of a base value of 100. As shown above this can be helpful in identifying the relative change over time and for comparing variables.

The variable left out of the indexed graph above is the velocity of M2. Velocity of M2 is measured by how quickly/frequently the M2 money supply is being used in transactions.

The velocity of M2 is heavily influenced by variables including interest rates and inflation. This is an important variable in our regression analysis as velocity in some instances can have a negative relationship with Debt to GDP. Why? Well, if a country has too high of a debt burden a significant portion of the income may be required to reservice the debt. This leads to less dollars, out of the total supply, being spent on goods and services (GDP) which stimulate the economy.

Figure 3

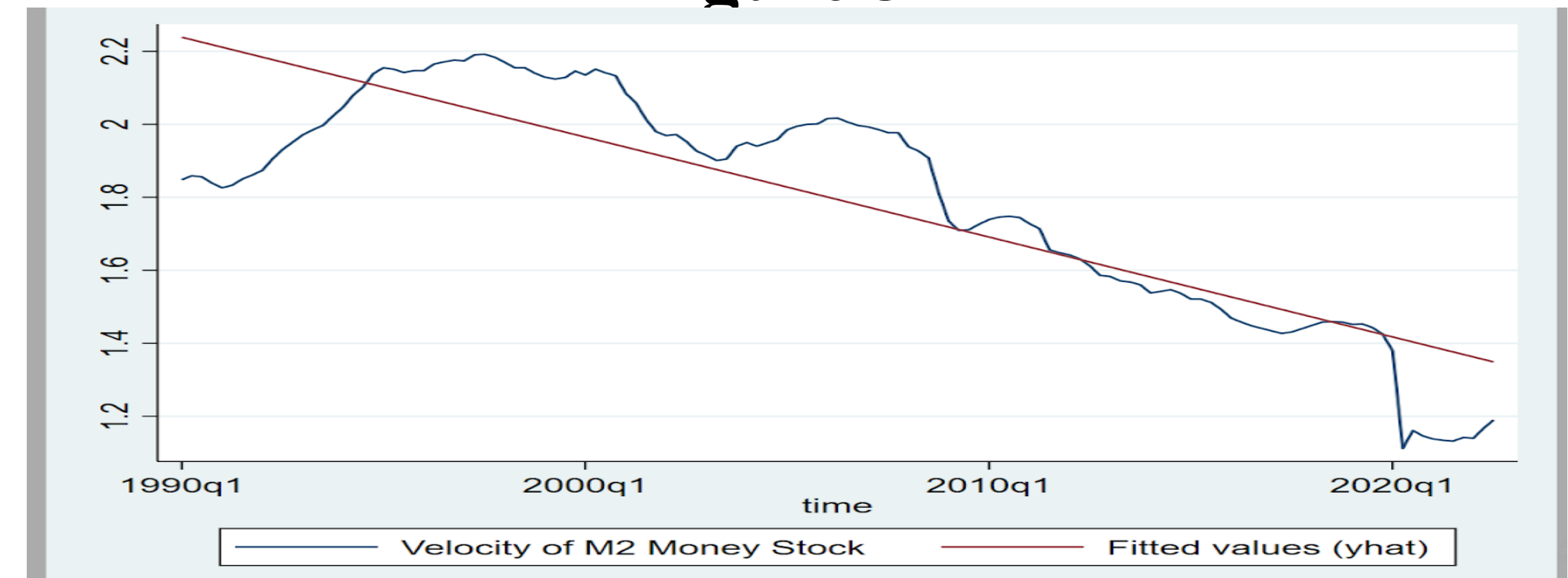


Table 1

```

    . regress d.debtgdp d.top1 d.M2V
    _____+-----+-----+-----+-----+-----
    Source      |      SS          |    df    |       MS          |      Number of obs   |      =       |
    -----+-----+-----+-----+-----+-----
    Model       | 677.823902       |         2 | 338.911951       |      F(2, 125)       |      =       |
    Residual    | 320.647386       |       125 | 2.56517909       |      Prob > F        |      =       |
    Total       | 998.471288       |       127 | 7.86197865       |      R-squared        |      =       |
    _____+-----+-----+-----+-----+-----
    D.debtgdp   | Coefficient      | Std. err. | t      | P>|t|      | [95% conf. interval]
    -----+-----+-----+-----+-----+-----
    top1       |
    D1         | 1.566679         | .3912891  | 4.00   | 0.000     | .7922693   2.341089
    M2V       |
    D1         | -75.39571        | 4.663567  | -16.17 | 0.000     | -84.62549  -66.16593
    _cons      | .0341453         | .1468195  | 0.23   | 0.816     | -.2564287  .3247193
    
```

Regression Analysis

The overall findings of the regression were extremely encouraging given that none of the 4 assumptions were breached under the test statistics performed which included in the do file, White's test, Watson's D statistic, Godfrey test, Breusch-Pagan, and VIF. The estimated coefficients confirmed our suspicions in the regression output. The share of net worth held by the top 1% was positively correlated with debt to GDP while being statistically significant at the 95% confidence interval. The velocity of M2 also had a negative correlation with debt to GDP which aligned with our intuition.

Summary

In our research we sought after finding correlations between the debt to GDP ratio and the wealth gap. We found this to be a fulfilling topic for a multitude of reasons. First off it has political ramifications that affect us in a variety of ways. Second, the debt to GDP ratio in conjunction with the wealth gap has signaled some very historic financial crises.

Model Issues

Although, we were able to reduce a significant amount of multicollinearity with our model it is still minimally apparent. This could change the results of our standard errors. With the results of this model need to be approached cautiously. We also used difference operators for our explanatory and independent to have a proper D-Statistic for the Watson Test.