# Using Stock Returns to Identify Government Spending Shocks: New Insights

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## ABSTRACT

The existing instruments of government spending using accumulated stock returns of military contractors generate vastly different consumption and investment impulse responses when compared to the narratively identified war news shocks as per Ramey (2011). I show that a reason for this difference is because of the persistence in the accumulated stock returns. Instead, a return spread between diversified portfolios of defense firms minus private consumption and investment good firms (*DMP*) renders persistence and generates responses akin to war news shocks. *DMP* return spread is a relevant instrument for post-1963 period and the spread Granger-causes shocks identified using standard VAR approach.

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## PUZZLE!

- A strand of literature uses external narrative sources of variation in defense spending to identify government spending shocks.
  - This approach relies on the argument that defense spending is driven by military events rather than by macroeconomic events (e.g., Hall (1980), Ramey and Shapiro (1998), Ramey (2011)).
- Literature using this **war news approach** find that government spending shocks reduce **consumption**.

- In the same narrative category are the shocks identified using stock returns of military contractors (Fisher and Peters (2010); Berndt, Lustig, and Yeltekin (2012)).
  - Fisher and Peters (2010) use the log of accumulated returns of the top 3 military contractors in excess of the market portfolio returns to measure government spending shocks.
- Using **top 3 contractor cumulative returns**, they find that government spending shocks **increase consumption**.

## MY CONTRIBUTION

- I reconcile the estimates from the stock return-based approach and the war news approach.
- I show that a **correctly identified stock return-based measure** provides **consistent results with Ramey (2011)** war news approach.
  - Different results between the war news narrative and stock return approaches stem from the serial correlation in cumulative returns.
  - The accumulated return measure is non-stationary because the returns are aggregated from the beginning of the time-series.
- **To mitigate persistence issues**, the econometrician can **employ a well-diversified return spread** instead of cumulative returns of few stocks.
  - I construct a **portfolio of defense good producers minus private** (consumption plus investment) **good producers** with approximately the same weighted average market equity (henceforth, *DMP*).
- Using an expectational VAR, I show that the DMP stock return spread generates impulse responses (IRs) consistent with the war news identification.

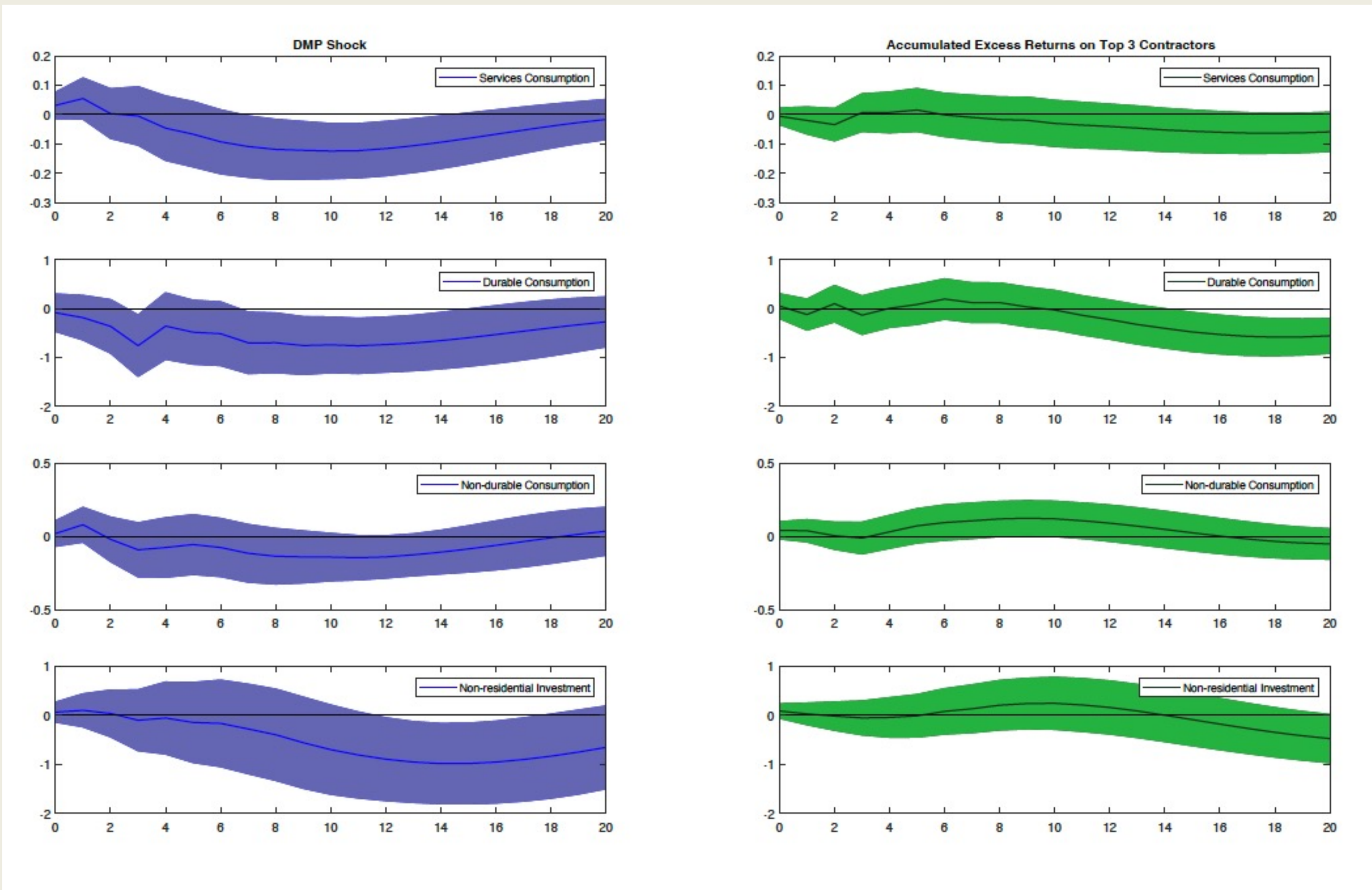


**Figure 1. Comparison of Narrative Identification Methods: Response to a Government Spending Shock**.

## REFERENCES

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## WHY THE DIFFERENCES?

- Using log of accumulated returns of top 3 contractors creates timing errors.
- See below 3 instances of changes to government spending.

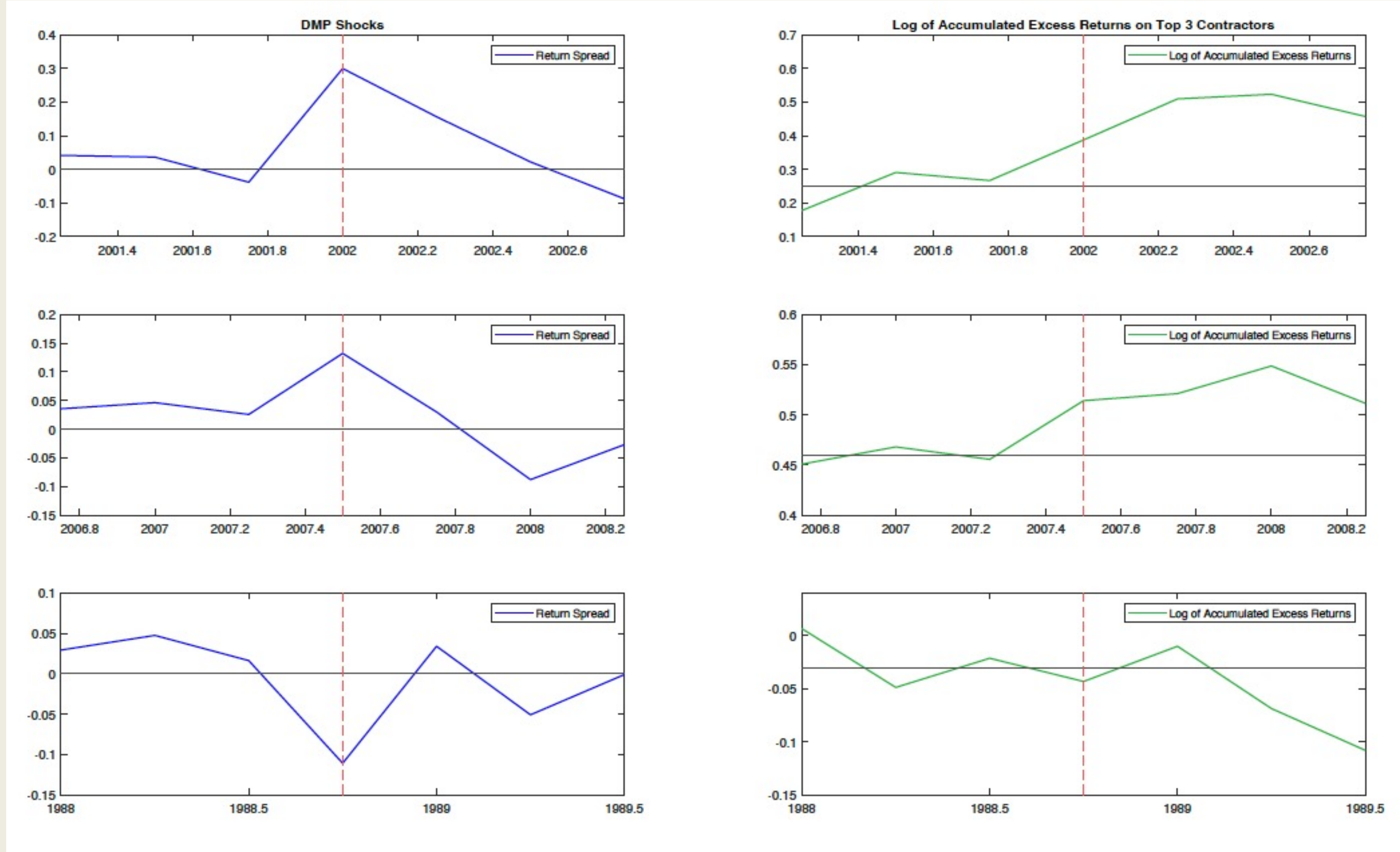


**Figure 2.** Timing of the Stock Return-based Shocks

- The left and right panels plot the *DMP* returns and the log of the accumulated excess returns of the top 3 military.
- Top panel shows returns when President George W. Bush proposed to increase the Pentagon's annual budget (2002 $q1$).
- Middle shows returns when defense projections increased to support wars in Iraq and Afghanistan (2007 $q3$).
- Bottom panel shows returns when President George H. W. Bush was forced cut to the planned Pentagon spending (1988 $q3$).

## COMPARISON WITH STRUCTURAL VAR SHOCKS

- *DMP* returns at quarter $t$ co-vary positively with the VAR shocks at quarter $t+1$.
- ***DMP* return spread Granger-causes the VAR shocks** at 5 percent significance level.
  - VAR shocks do not Granger-cause *DMP* returns.
  - VAR shocks are forecastable using *DMP* returns.

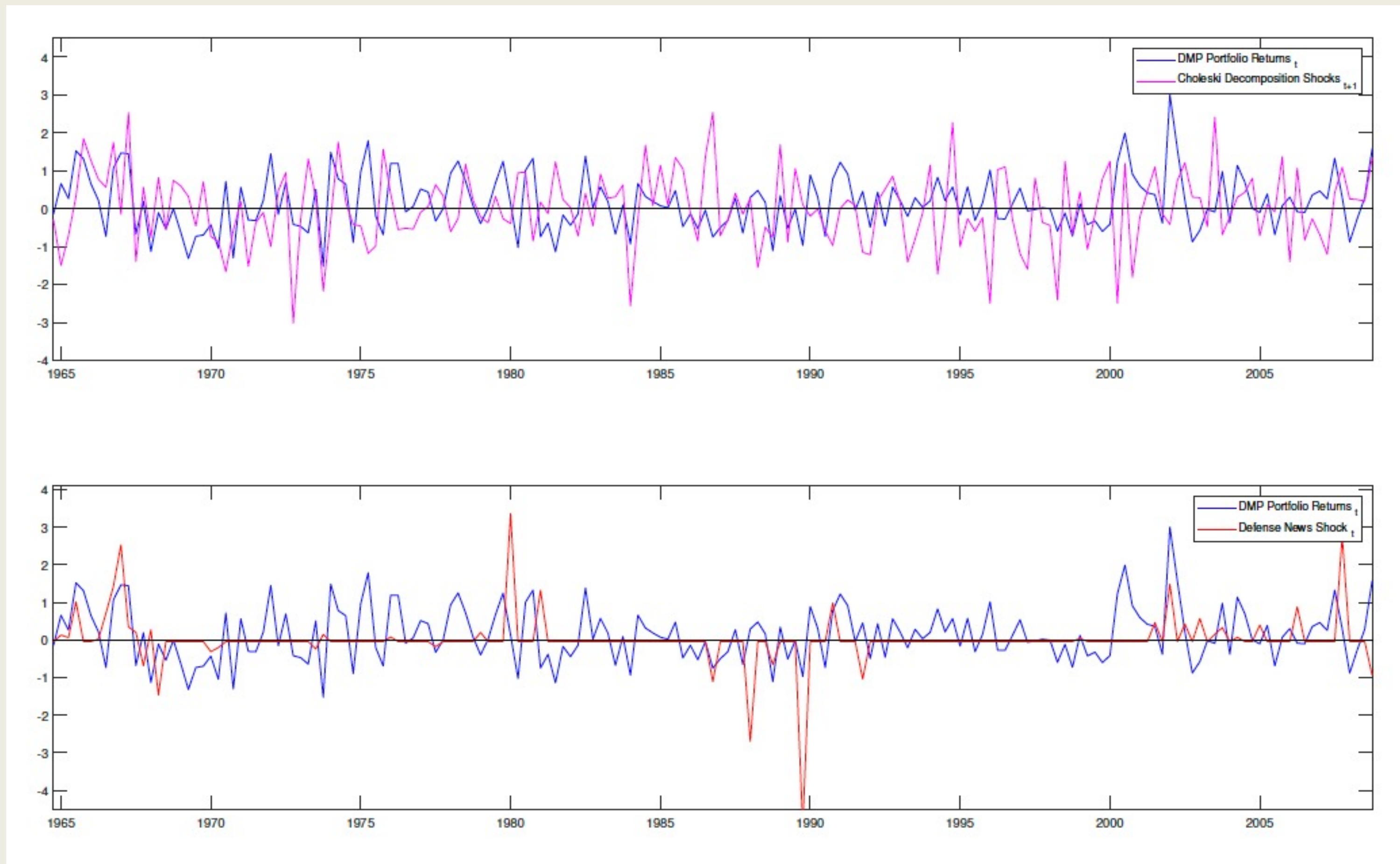

**Figure 3. Comparing DMP returns with other Identification Methods**

## CONCLUSIONS

- This paper is an attempt to reconcile the differences between the two narrative based measures of government spending shocks.
  - Differences in the responses arise due to persistence issues in the log of accumulated stock returns instrument.

- I propose two ways to get around to mitigate the persistence issues.
  1. Use a value-weighted return spread between defense good minus private consumption and investment good producers (DMP) with approximately the same weighted average market equity.
  2. Use local projections (LPs) as per Jorda (2005).
     - Consumption responses become negative when LPs are used to generate responses following a shock to government spending.