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The Time-Varying E!ect of Monetary Policy on Income Inequality in the US

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events such as Þnancial market liberalization and changes in the Federal ReserveÕs priorities, and short-term unexpected shocks like policy decisions or announcements[3]

However, studies on the e!

debate. A benchmark study is provided by Primiceri (2005), who provided not only the time-varying counterparts to the fixed-parameter structural VARs but also added to the bad luck side of the story as did Benati and Mumtaz (2007) in the upcoming years based on sign restrictions.

Regarding more recent investigations on the time-varying effects of monetary policy, Aastveit et al. (2017) examines whether the FED responded to the house and stock price changes. The findings state that stock price growth (represented by the S&P500) entered the reaction function with a positive and significant coefficient. Similar conclusions are provided for house prices. A study that looks at the response of asset prices to a monetary policy shock, i.e. deviations from the monetary policy rule and hence, the other side of the picture compared to Aastveit et al. (2017) is provided by Paul (2020). The author states that a monetary policy shock always leads to decreased industrial production, inflation and house prices. Thereby, stock and house prices show a substantial time variation in their responses.

in McKay and Wolf (2023). The crucial insights are that new heterogeneous agent approaches are placing more weight on the indirect e!ects (i.e., general equilibrium forces) to explain the transmission channels of monetary policy shocks (Ampudia et al. (2018)).

The empirical front of this area presents mixed Þndings of monetary policy on inequality concerning the signs of the e!ects. A concise yet inclusive list of benchmark studies reveals evidence that suggests expansionary monetary policies can increase inequality (Inui et al. (2017), Cloyne et al. (2018)) while others conÞrm that a monetary tightening leads to an increase in inequality especially in the US (Coibion et al. (2017)), the UK (Mumtaz and Theophilopoulou (2017)), the EU (Guerello (2018), Samarina and Nguyen (2019)) as well as a sample of countries (Furceri et al. (2018)).

3 Data and Instrument

We use household data from the real-time inequality database.[6] Following Blanchet et al. (2022) this database produces monthly income distributions that become available within a few hours after the o"cial high-frequency national account aggregates are published. It uses publicly available data sources and combines monthly and quarterly survey data with corresponding monthly and quarterly national account statistics. One positive feature of this approach is that it is free of the common drawback of pure survey-based data that tend to underestimate the level of inequality.[7]

measure to decompose growth since it adds up to national income. We calculate the sum of income by ID and deÞne income at the household level. Based on the provided weights, we derive the deciles of factor income and its main components. Our Þnal dataset comprises the deciles of total income, capital income, labour income, as well as the sub-components of capital income (i.e., interest income, corporate proÞts and proprietorsÕ income). Thereby, the Þrst decile comprises the average income of households from the 0 to the 10th percentile, the second decile comprises households between the 10th and the 20th percentile, and so on. Using the deßator provided in the database, we then calculate real income values

functions. The relative IRF can be derived by:

$$r_{k,j} =$$

5 Baseline Results

Our baseline results are presented in Þgure 1, which shows the time-varying e!ects of a monetary policy shock on the US economy from January 1991 to September 2017. While it is common to normalize the shock to make the impact response of the policy rate equal for every year, this method would result in rescaled shock sizes every year. Therefore, in our estimation, we normalize the shock to produce a 20 basis point impact increase in the

(a) Interest Rate

(b) CPI

(c) Shares

(d) Industrial Production

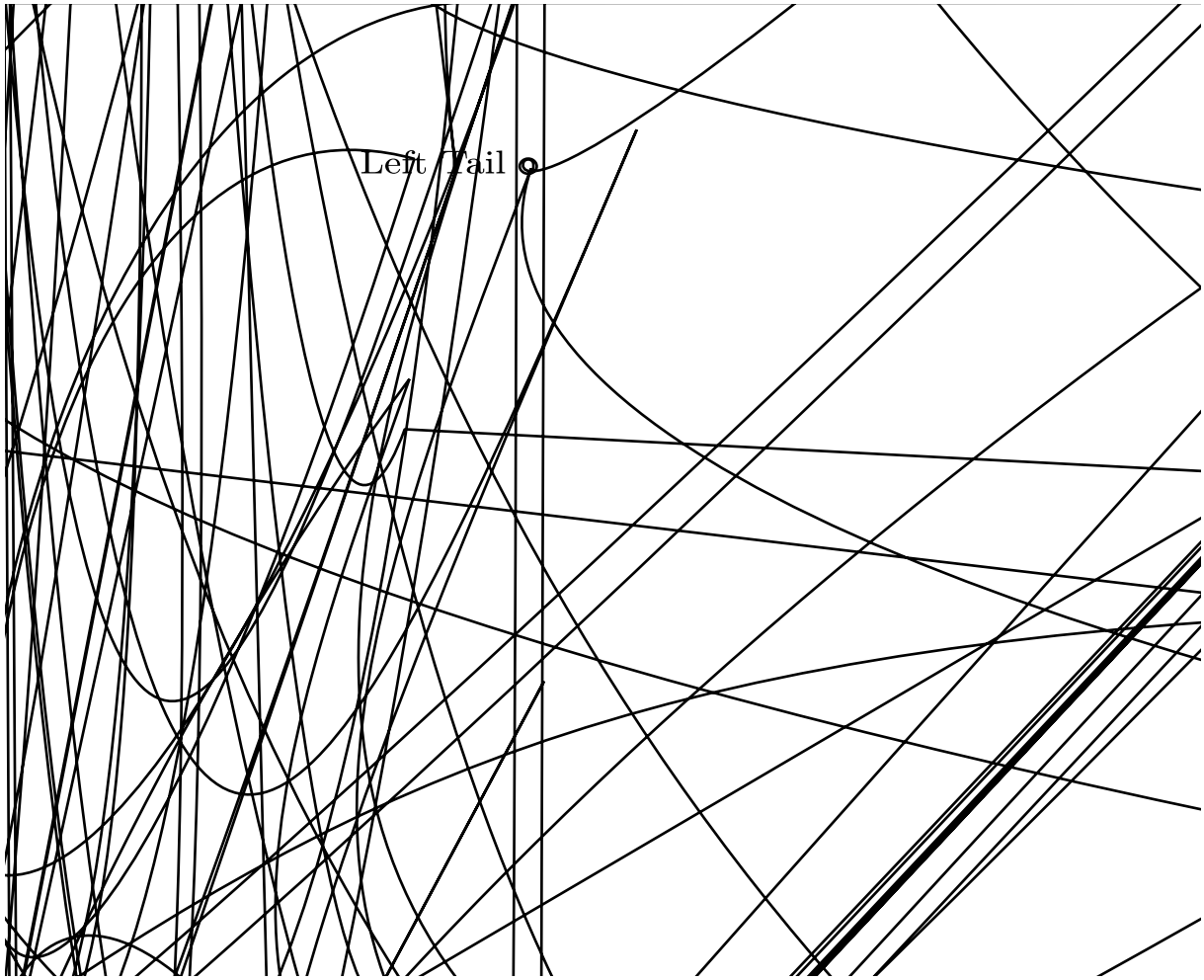
(e) P80/P20

Figure 1: Baseline Results - cumulative IRFs to a contractionary monetary policy shock that lead to an increase of 20 Bps in the FFR in 1991M1. All variables entered the model in log di!erences except the FFR.

P80/P20 ratio (red line) in a 2D format along the time axis. Looking at the levels of inequality, the Þgure displays high ßuctuations over the observation period. The P80/P20 ratio decreased substantially during the Þrst decade of the sample reaching the lowest level closely after the dotcom crisis. The period between the dotcom crisis and the great Þnancial crisis in 2008 was characterized by rather stagnating levels of income inequality. The great Þnancial crisis left the US uneq6 (t) -390.8 (Þ Tf [2 (i)) -0. (a) -0.8 (i)6.2 (y) 80 -390. -1

(a) P50/P20 (b) P80/P50

Figure 3: Tails of the Income Distribution - cumulative IRFs to a contractionary monetary policy shock. All speciÞcations equal the Baseline estimation.


Left Tail

as we move up the income distribution. Households at the top end of the distribution tend to receive a signiÞcant proportion of their income from other sources than labour i.e., businesses and interests. Consequently, capital income, whose main components are corporate proÞts and interest income, plays a signiÞcant role for high-income households, indicating a higher exposure to Þnancial markets of this group[12] While the literature states that business income (i.e., corporate proÞts and proprietorsÕ income) is negatively a!

(a) Capital Income Left Tail

(b) Labour Income Left Tail

(c) Capital Income Right Tail

(d) Labour Income Right Tail

Figure 6: Impulse Response Functions of the main Income components. The Figure presents the two tails of the income distribution. All settings of the estimation equal the benchmark speciÞcation.

Looking at the response of interest income inequality, we observe that the impact of the shock varies considerably over time. In more recent years, the IRFs indicate both more persistent and more pronounced reactions. The highest point of this increase was reached during the crisis of 2008. After the crisis the responsiveness remains at high levels. At the same time, the right tail displays a short-term increase in inequality in the right tail which remains homogeneous over time.

Turning to inequality in proprietorsÕ income, the left tail displays a similar shape as seen for the previous component. The responsiveness of inequality in the Þrst decade of the sample remains low and slightly increases above zero. However, this behaviour changed after the dotcom crisis in 2001. Inequality becomes more responsive and even displays

(a) Corp. ProÞts Left Tail

(b) Corp. ProÞts Right Tail

2. Hyperparameter selection: as noted by Primiceri (

(a) Time-Varying Volatility

8 Conclusion

of capital income inequality, we decomposed capital income into its main components. We Þnd substantial time variation in the responsiveness to a monetary policy shock for each component of the left tail with all components indicating a persistent increase in the left tail that lasts over the whole IRF horizon. Compared to these Þndings the results regarding the right tail display a short-term increase in inequality which gradually fades away over the IRF horizon. This e!ect is less time-varying with the only exception be-

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A Appendix: The Evolution of the Real Factor Income Share Gap in the US

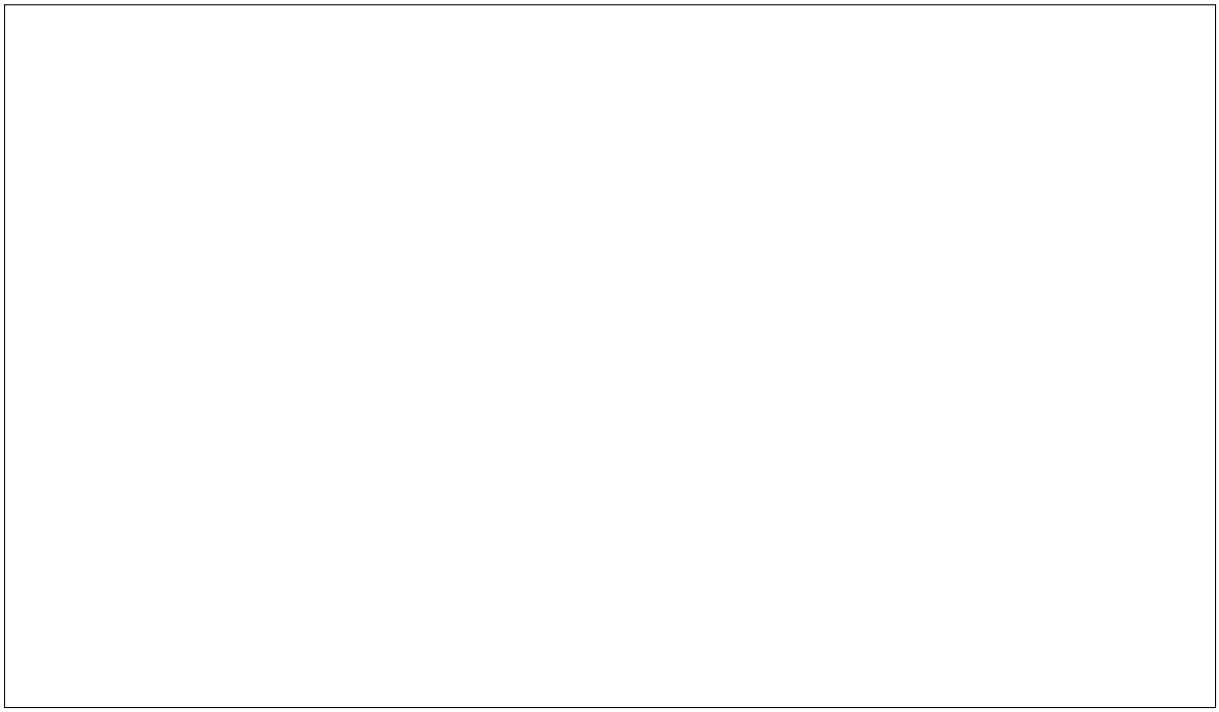

Figure 9: The evolution of real factor income share in the US by the corresponding percentile. Factor income is deÞned as the sum between labour and capital income and deßated by the GDP deßator. The data is available at the Realtime Inequality Database which can be accessed here.

C Appendix: Stochastic Volatility Extension: Overall setup and priors

In our robustness check of plot (a) in Figure 7, we extend the volatility setup following Cogley and Sargent (2005). Consider the following decomposition of the variance-covariance matrix of the VAR errors from equation (6) in the main text:

$$\Sigma = C^{-1} H_t C^{-1\prime} \tag{8}$$

with C being a lower triangular matrix of covariance parameters and H_t a diagonal ma-