

Introduction to “The Deep Historical Roots of Macroeconomic Volatility”

1. What is the question of the paper?

The paper poses the question whether historical variables affect macroeconomic volatility today and which variables are most important if they do.

2. Why should we care about it?

Macroeconomic volatility has been proven to put a negative impact on economic growth and reduce people’s welfare through the labor market. Thus it is always the main topic to be discussed in the economic field. The author is inspired by the literature which focuses on growing and the fundamental factors of macroeconomic volatility to take a step further to conduct this study. Knowing how historical variables affect can contribute to the ongoing debate regarding the fundamental determinants of macroeconomic volatility.

3. What is the authors’ answer?

A country’s macroeconomic volatility is significantly affected by the country’s historical variables. But not all variables can provide equally important explanations. The state history variable is the most important. Its effect is manifested not only in high-frequency volatility but in medium-term and remains significant and substantial after controlling for a host of structural variables through robustness check. It is more important in countries with a higher level of macroeconomic volatility and more recent more matters. Also it affects current volatility through independent channels, rather than the growth channel alone. Other historical variables, such as agricultural history and the adoption of technology in 1 C.E., are only found to affect medium-run trend-growth breaks.

4. How did the author get there?

Step1: Define and construct the two measures of macroeconomic volatility and the historical variables used in the regressions. The high-frequency volatility is measured by the standard deviation of annual output growth while the medium-term is measured by the occurrence of trend-growth breaks.

Step2: Present descriptive and econometric evidence through linking historical variables to macroeconomic volatility. The following econometric formula is considered:

$$y_i = \theta_1 + \theta_2 \cdot \text{history}_i + \theta_3 \cdot \mathbf{W}_i + \mu_i$$

First, the author uses OLS regressions with the output measurement to get a result roughly showing state history variable is the only one which is statistically significant in t-test. Adding another historical variable to confirm. Then adopt the other measurement of volatility to run the probit regression to show agricultural history and the adoption of technology in 1 C.E. is also statistically significant besides state history variable. In particular, the author also run the OLS and quantile regression between state history and output volatility.

Step3: Conduct robustness checks to see how sensitive are the baseline results by using alternative periods of state history, controlling for the volatility of state history, using instrumental variable estimation to control for potential endogeneity bias, controlling for more confounding variables, such as excluding African countries from the regression, making detailed classification of climates and soils and using state history that has not been adjusted for world population migration since 1500 C.E.. These further robustness checks reassure the state history variable’s significance.

Notations:***Index formula:***

$$statehis = \frac{\sum_{t=0}^{39} (1.05)^{-t} S_{i,t}}{\sum_{t=0}^{39} 50 * (1.05)^{-t}}$$

S_{it} :the state-history variable for country i in the 50-year period t . The three scores which varies between 0 and 1 (government above the tribal level, locally based, controlling more than 50 percent of the territory of the modern country) are multiplied by each other, then the result is multiplied by 50 to give S_{it} .

Econometric model:

$$y_i = \theta_1 + \theta_2 \cdot history_i + \theta_3 \cdot W_i + \mu_i$$

y_i : dependent variable, denotes one of the two measures of macroeconomic volatility for country i ;

$history_i$: historical variables (which mainly contain the history of agriculture, technology adoption, state-level political institutions and Genetic distance. All the historical variables are adjusted for population migration using World Migration Matrix.);

W_i : a vector of the control variables(for example: geographic variables, which can be dummy variables adding in the model.);

μ_i : the residual , assumed to be iid;

θ_2 : the parameter of special interest, which provides an estimate of the relationship between a given historical variable and macroeconomic volatility.