Detrending method:

Liquidity creation has grown dramatically over time (see Section 2.2) and may contain seasonal components. This poses a problem because an examination of whether high levels of liquidity creation precede financial crises may be strongly affected by trends and seasonal components. We are interested in deviations from the trend and seasonality. To link liquidity creation to the advent of a crisis, we therefore use an approach widely employed in the macroeconomics literature (e.g., Barro, 1997): we first deseasonalize and then detrend the data.

To deseasonalize the data, we use the U.S. Census Bureau X11 procedure, which identifies and adjusts for outliers. For detrending, we use the Hodrick and Prescott (1997) (HP) filter, originally created to fit US GDP data but generally used to remove cyclical components from macroeconomic data.4 Henceforth, we call deseasonalized and detrended data “detrended data” for brevity.

To ensure that the detrended amounts are based purely on historical data, we use the following approach. Since the HP filter requires that at least twelve quarterly observations are used, we first detrend the initial twelve quarters in the sample period (1984:Q1–1986:Q4). We drop the first eleven quarterly detrended amounts since they are in part based on forward-looking data. Thus, the first detrended amount in our analyses is from the twelfth quarter, 1986:Q4. For the following quarter, we use data from 1984:Q1 to 1987:Q1 in our detrending process and only keep the result for 1987:Q1. We follow a similar procedure for subsequent quarters. - Bank liquidity creation, monetary policy, and financial crises (Allen N. Berger, Christa Bouwman)