**Forecasting in Economics**

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**Written Project Report**

**Forecasting M2 Money Stock**

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Why M2

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Taking a closer look on M2 between 2008 and beginning of 2020 we can see that there is linear trend and just when the Corona-Virus crisis began there was a huge spike upwards in M2. Looking just at the outbreak of the Corona crisis, we can also see somewhat of a linear trend, even though not as clear as pre-Corona. The below graphs show the deviations of the linear trends from the above graphs.

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In the first graph we can see that the deviations from the linear trend are not too far off, except at the time of the Corona outbreak, there is clearly a big jump upwards. The second graph we are just looking at the year 2020. Here we can also see that M2 was growing in a somewhat linear growth, but obviously a steeper one than the years before.

Models:

Our dependent Variable was M2, the money stock in billion US-Dollars. We take a look on different time horizons, the whole (1980-2020), from 2008 on and at last just 2020. Our dataset was based on monthly data, except for the latter, we used weekly data. For the multivariate models we take a look on 3 different independent variables. For all those variables we didn’t have problems with missing data or too little data, everything was available for us. The first independent variable is the CCI (US Consumer Confidence Index), the second S&P500 (we took Closing Price in USD) and lastly the Yield Curve (1-Month Treasury Constant Maturity Rate).

Univariate Model:

Let us first take a look on the autocorrelation of M2 Growth.

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The first is the autocorrelation for 2008-2020 and the graph on the right is for the 2020 data. Here we have more lags, simply because we use weekly data and not monthly as in the one before, but even like this there is a similar pattern between those two autocorrelations.

Using auto.arima function we get an ARIMA(0,1,1) with drift for the not transformed dataset in 2020. We used the absolute values for easier readability. This simple forecast is telling us that in the next weeks M2 will rise and sometime will rise over 19000 billion USD.

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As M2 is very much an endogenous variable and influences other variables it is hard to find exogenous variables for this model. Thus, Multivariate Models won’t work very well and should be seen just for educational purposes, and in reality we wouldn’t go for that route, but in the next section we are still going to discuss some Multivariate Models.