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Project Definition for the Master Thesis in
Banking and Finance

Subject:
Scarcity channel of Quantitative Easing:
Examining the Overnight Treasury Repo Market in the US

It is plausible that quantitative easing (QE) programs, by decreasing the supply of Treasuries, increase the scarcity of these securities in financial markets, especially in the repo market. This effect is labelled as the scarcity effect of QE. Repo markets are a key component of the financial system and they rates have been focus of research (see e.g. Duffie, 1996, and Nyborg, 2019). Some research has found evidence of the scarcity effect of QE by studying the relationship between central bank asset purchases a special repo rates in the U.S. (D'Amico et al., 2014) and the EU (Arrata et al., 2020). Over the past years the FED has significantly increased their holdings of US Treasuries, especially in response to Covid-19.

The objective of this Thesis is to investigate the scarcity effect of QE on US Treasuries using new data from Treasury repo markets. As a result, your Thesis should be able to answer the following questions: (1) What are drivers of the supply and demand of US Treasuries (see e.g. Krishnamurthy et al., 2012)? (2) Do you find evidence for a scarcity effect of QE on US Treasury repo rates, and thereby can you confirm findings of the existing literature? (2) How did the FED's response to Covid-19 impact Treasury repo markets?

The first part of the Thesis should consist of a literature review. The second part would be dedicated to the data presentation. The third part consists of the empirical analysis. As a last part you should include a detailed discussion of results and a general assessment.

Preferably the analysis is implemented using STATA, MATLAB, R or a comparable software upon discussion with the supervisor.





Since this Thesis relies on careful data collection and empirical analysis, included tables should be very thoroughly designed and clearly captioned.

As data source we recommend using Refinitiv Eikon, Datastream or Bloomberg. Bloomberg has limits on the amounts of data that can be downloaded in a given month while Eikon and Datastream do not have such limits. Further helpful data sources for your thesis are the websites of the Depository Trust & Clearing Corporation (DTCC) and the Federal Reserve Economic Data (FRED).

Sincerely,

University of Zurich
Department of Banking and Finance



Prof. Dr. Kjell G. Nyborg
Chair Corporate Finance

References

- Nyborg, K. G., 2019. Repo Rates and the Collateral Spread Puzzle. *Swiss Finance Institute Research Paper No. 19-04*.
- Nyborg, K. G., Roesler C., 2019. Repo Rates and the Collateral Spread: Evidence. *University of Zurich, Swiss Finance Institute, and CEPR*.
- Arrata, W., Nguyen, B., Rahmouni-Rousseau, I., Vari, M., 2020. The scarcity effect of QE on repo rates: Evidence from the euro area. *Journal of Financial Economics*. Vol.137. Issue 3, pp. 837-856.
- D'Amico, S. Fan, R. Kitsul, Y., 2018. The Scarcity Value of Treasury Collateral: Repo-Market Effects of Security-Specific Supply and Demand Factors. *Journal of Financial and Quantitative Analysis*. Vol. 53, No. 5, pp. 2103-2129.
- Duffie, D. 1996. Special Repo Rates. *Journal of Finance*. Vol 51, Issue 2, pp. 493-526.
- Krishnamurthy, A., Vissing-Jorgensen, A., 2012. The Aggregate Demand for Treasury Debt. *Journal of Political Economy*. Vol 120, No. 2.





Course of your thesis:

If you have questions you can ask your supervisor for an appointment. However, the goal is to acquire the knowledge on your own and to try to solve problems on your own, but to discuss your own solution to a problem with your supervisor.

Formal criteria and submission:

- You compose the thesis in English (students may write in German. However, we strongly recommend writing in English since this is a good first exercise to learn it).
- The structure of the thesis might roughly be the following one:
 1. Front page
 2. This Project Definition
 3. Executive Summary
 4. Introduction, where you
 - a. say what your topic is about and why it is important,
 - b. present your main findings,
 - c. give an overview to related literature and in which sense your topic is related to this literature,
 - d. show how you proceed throughout the thesis.
 5. Main part
 6. Conclusion, where you
 - a. summarize and present your findings,
 - b. evaluate the results in order to provide an answer to the research question
 - c. give a perspective on possible extensions and open questions.
- Quality comes before quantity. Be brief and compact in writing. Your thesis should not be longer than 40 pages, counting from the introduction to the conclusion and including the graphs and tables referred to in the thesis but excluding the list of references and any appendix.
- Pay attention on writing correctly and watch out for a scientifically, concise, but a fluent writing style. Do also pay attention on a correct use of citation (in the text not full information, only author and year), like commonly used in Journal of Finance or Journal of Financial Economics. Also in other formal aspects use the layout of these two Journals. Only use sufficiently described black-white graphs. Graphs and tables should be self-explanatory and understandable also without reading the whole thesis.
- At the beginning of the thesis you write a short abstract (question, results) like in JFE or JF. This abstract is short and even more concise than an Executive Summary and comprises not more than 100 words.
- Create a maximally four-sided Executive Summary (question, procedure, results and general evaluation), which typically is similar to the introduction of the thesis.





- Please upload your thesis to OLAT before the deadline has passed. Upload a zip file to OLAT containing following files:
 - Cover page of your thesis (PDF-document)
 - Executive summary (PDF-document)
 - Whole thesis (LaTex- or Word-file as well as PDF-document)
 - Full data material which has been used for the paper
 - Computer-codes for a replication of your results
 - Electronically saved references (papers in PDF-format).

The Department of Banking and Finance has the rights of your thesis and may use part of it within the scope of science.

If you have questions or if you want to discuss your thesis you can contact benjamin.schneider@bf.uzh.ch

