Information on Master’s Thesis Supervision

Center for Digital Transformation
Technical University of Munich
TUM School of Management
TUM Campus Heilbronn

Heilbronn, February 3, 2020
Contact Information

• In case you have any organizational questions eg. About the registration of your thesis or questions regarding your study progress, please contact the program management / grade management in the first place:

• E-mail: studentcounseling_heilbronn@wi.tum.de
Agenda for Today

- Application Process

- Presentation of Topics
  - Prof. Dr. Sebastian Müller – Finance
  - Prof. Dr. David Wuttke – Supply Chain Management
  - Prof. Dr. Jens Förderer – Innovation and Digitalization
  - Prof. Dr. Maximilian Lude – Innovation
  - Prof. Dr. Peter Schäfer - Accounting
Application Process
Application Process

1) Submit the application form

2) Attach your application documents
   • Transcript of records
   • CV
   • Motivational Letter for the 1st preference (1 page, incl. intended use of methodology)

Via email to Office.cdt@wi.tum.de

Application deadline: March 13, 2020!
Prof. Dr. Sebastian Müller
Finance
**Prof. Dr. Sebastian Müller- Master‘s Thesis**

**Topics**

**Overview**

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<td>Is there a Bitcoin factor? An empirical analysis for international stocks.</td>
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<td>2</td>
<td>The Costs of Trading Market Anomalies: Evidence from International Funds and ETFs.</td>
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Prof. Dr. Sebastian Müller- Master‘s Thesis Topics

Topic 1 Is there a Bitcoin factor? An empirical analysis for international stocks.

The rise of Bitcoin is likely one of the most significant developments in modern 21st century financial markets. It coincides with the digitalization of business models and markets. At the time of this writing, the market capitalization of Bitcoin is about 150 billion US$.

The purpose of this thesis is to explore in empirical work to what extent cryptocurrencies like Bitcoin and traditional financial (equity) markets are integrated. Specifically, the student should analyze if there are certain stocks (or industries) that are exposed to a Bitcoin factor, i.e. whose returns can be in part explained by the returns of Bitcoin. Based on the results, the student should analyze the direction of the information flow (from stocks to cryptocurrency markets or vice versa). This investigation sheds new light on the informational efficiency of cryptocurrency markets.

The master student will receive data for a sample of international stocks, Bitcoin and other major cryptocurrencies. He will be taught on how to retrieve further data - if required –from major data providers. Basic statistical knowledge from undergraduate courses is a pre-requisite for this master thesis. Students should have a very strong interest in Finance, working with data, and learning statistical-mathematical software.

References:

There appears to be a large controversy in academia regarding the degree of stock market efficiency. While the Efficient Market Hypothesis argues that risk-adjusted stocks returns are unpredictable, hundreds of academic research papers document apparent “anomalies” and mispricings. In recent work, Patton and Weller (2019) show that there is a substantial gap between the profitability of a trading strategy “on paper” and that attainable in practical implementation. Specifically, they show that US-funds are not able to achieve the same paper profits of prominent anomalies, even if they are strongly exposed to these anomalies.

The aim of this thesis is to add to the existing debate by analyzing the costs of trading anomalies for international stock markets (European, Pacific, and Emerging Markets). The master student should use the provided data to replicate the methodology of Patton and Weller (2019). A further research question could be if regional heterogeneity in the costs of trading anomalies can be explained by differences in market development or investor differences.

The master student will receive data for a sample of international funds and return anomalies. He will be taught on how to retrieve further data - if required –from major data providers. Basic statistical knowledge from undergraduate courses is a pre-requisite for this master thesis. Students should have a very strong interest in Finance, working with data, and learning statistical-mathematical software.

References:

Prof. Dr. David Wuttke - Master’s Thesis Topics in Supply Chain Management

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With virtual reality (VR), virtual environments can be created. For instances using VR headsets, users can be placed in these virtual environments and interact. While there are many use cases in the computer games industry, increasingly the use of VR is considered in more serious cases. Many firms consider the use of VR, for instance for new product presentations. TUM has a mixed reality lab located at the HN campus to explore the use of VR in teaching applications. It is conjectured that using VR can lead to an improved learning experience, better focus, and more excitement. Will this lead to better learning performance? Objective of this theses will be to create a (small) VR application and to systematically test whether (and when) this has a positive impact on learning. The underlying method is behavioral experiments. Selecting this topic, students have the opportunity to engage in a research project with strong academic support, cutting-edge technology, and great impact.

References:

Supply Chain Finance (SCF) is usually studied from a corporate and buying firm’s perspective. This thesis is concerned with the supplier’s perspective, specifically, with their decision processes when being offered to join a program. Specific focus shall be given to family business firms. The suggested method is case study based (or related empirical methods).

References:

Digitalization is increasingly discussed to automate processes in manufacturing and service operations management. While often conceptual, many executives have high demands and expectations. Which problems will digitalization most likely address? What are the limits? Depending on the specific focus, different methodologies are conceivable – either quantitative (e.g., game theory) or empirical (e.g., case study).

References:


Prof. Dr. David Wuttke - Master‘s Thesis Topics

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<td>If you wish, please send a proposal for a related topic, which may relate to (1) Virtual, Augmented, or Mixed Reality, (2) SCF, (3) Supply Chain Risk Management, (4) New Product Development in Supply Chains, or (5) Behavioral Operations Management</td>
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Prof. Dr. Jens Förderer
Innovation and Digitalization
## Overview

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<td>Governmental privacy regulation and firm performance – evidence from GDPR</td>
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In response to the substantial increase in data collection and usage by firms, the EU adopted the General Data Protection Regulation in 2016, giving individuals more control over their data and improving privacy for all citizens of the EU. While data protection is mainly beneficial to individuals owing to the enhanced privacy, it is a challenge to firms in terms of ensuring compliance. Also, firms dependent on data and advertisements in their business models will be adversely affected in revenue generation. This thesis project informs about the tension between privacy and economic growth. In this thesis project, the student’s task is to analyze a large amount of data using econometric methods.

References:


Supervisor: Tobias Kircher
Driven by increasing consumer concerns about privacy, governments intensified privacy regulation and firms adjusted their data collection and usage practices. With the privacy regulations, governments try to protect citizens from adverse consequences of their data being collected and shared, but also harm firms whose business models are based on data and advertising. As a result, firms affected by the regulations may react with defensive strategies including lay-offs, repositioning and restructuring. Thereby, lawmakers could cause adverse effects on competition and labor, facing tension in their responsibilities. This thesis project informs about unintended consequences of regulation and defense mechanisms of firms. In this thesis project, the student’s task is to analyze a large amount of data using econometric methods.

References:


Supervisor: Tobias Kircher
Due to the recent technological progress allowing the enormous collection of data about consumers, data became another input factor to firm production. As privacy concerns unfold and lawmakers introduce privacy laws to protect citizens, some firms who are dependent on data and advertisement are adversely affected, as opposed to other firms adjusting privacy policies in order to differentiate from competition. This thesis project informs about the economic reasons of the variations in privacy strategies among firms. In this thesis project, the student's task is to collect large amounts of data from the internet and to analyze it using econometric methods. Programming skills in Python are necessary.

References:


Supervisor: Tobias Kircher
Firms increasingly possess large amounts of data about their customers and store them as the data may unveil valuable insights as regards customer preferences and relationship. However, for individuals the data storage is risky since the data may be personal, used at the expense of customers or leak out during a data breach. Recently, data breach laws have been introduced in several countries to protect the data of individuals. While a data breach could adversely affect a firm’s share price, the long-term outcomes of data security on firm performance are unclear. In this thesis project, the student’s task is to analyze a large amount of data using econometric methods.

References:


Supervisor: Tobias Kircher
Darknet platforms have undergone legal investigations in the past due to the massive amounts of illegal products transacted. The goal of this thesis is to understand seller behavior in Darknet platforms, especially to inform our understanding of the market dynamics in the Darknet. In this thesis project, the student’s task is to collect large amounts of data from the Darknet and to analyze it using econometric methods. Outstanding performance in the course Empirical Research Methods in Economics and Management is recommended. Programming skills in Python are necessary. Prior familiarity with Tor is recommended.

References:

• Chan, Jason and He, Shu and Qiao, Dandan and Whinston, Andrew B., Shedding Light on the Dark: The Impact of Legal Enforcement on Darknet Transactions (September 30, 2019). NET Institute Working Paper No. 19-08.

Supervisor: Prof. Dr. Jens Föderer
# Digital Transformation Strategy for SMEs

Small and Medium-Sized Enterprises (SMEs) are increasingly subject to global competitive environment where an effective and efficient strategy for digital transformation is essential for success. Thus, while MNEs allocate extensive resources for strategy implementation, SMEs cannot rely on the same magnitude of resources. The thesis’s goal is to provide a better understanding, how SMEs cope with the challenges of digital transformation. The student’s assignment is to provide a profound overview of the current state of research regarding digital transformation and conduct empirical research on SMEs.

**References:**


Supervisor: Cornelius Schulken
Open Source Software (OSS) provides controversial benefits for firms compared to closed software and it is highly debatable, in which scenarios using OSS is more reasonable. Therefore, an empirical research on the effect of using OSS could promise to provide further insights into its effects. The thesis’s goal is to provide a better understanding of OSS use and its effect on measures such as productivity. The Student’s assignment is to conduct econometric empirical research. Hence, a solid background in Econometrics and Econometric Modeling is highly recommended.

References:


Supervisor: Cornelius Schülken
Prof. Dr. Maximilian Lude
Innovation
Prof. Dr. Maximilian Lude- Master‘s Thesis Topics in Innovation

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<td>2</td>
<td>The Green Family Firm – Are family firms perceived as more sustainable/green?</td>
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<td>3</td>
<td>The (perceived) innovation ability dilemma of family firms</td>
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All topics center around the following core themes:
- Consumer Behavior
- Family Firms
- Innovation Perception
- Sustainability Perception

These topics can be combined or considered as independent of each other. Each master thesis requires an empirical (quantitative) analysis (e.g. online survey, online experiment, field experiment, laboratory experiment).
Topic 1  Family Firms Owner Structure as Signal for Investors’ Decisions

The aim is to explore whether the owner structure of a family firm influences the investment decision of nonprofessional investors in the context of stock exchange investments. The student should design an experimental design which can be conducted online. The theoretical foundation should be on the intersection between family business research and behavioral finance. Relevant contributions for theory and practice should be derived.
The master thesis should explore whether the signal family firm influences consumers’ perception regarding sustainability of corporations. Due to higher identification because of greater humanization of family firm brands compared to non-family firm brands (Beck & Prügl, 2018), one might argue consumers’ perception of family firms doing good is more pronounced. Given the fact that sustainability is a timely issue, this research could add significant value for practice and theory.
Being perceived as innovative company should be one of the key objects of any company in the world. Recent research identified that family firms do have an advantage in terms of trust and authenticity perceptions (e.g., Lude & Prügl, 2019; Schellong et al., 2018) compared to their non-family analogs. However, as family firms are perceived as trustworthy, local, and long-term oriented the question rises whether family firms are perceived as less innovative (scale: perceived innovation ability). This research question should be explored by an experimental study focusing on perceived innovation ability as dependent variable. Potential moderating variables can be included (founding year, generational stage, firm size).
All of the listed topics can also serve as inspiration for other research ideas. All students are very welcome to send own ideas.
## Prof. Dr. Peter Schäfer - Master‘s Thesis Topics in Accounting

### Overview

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<td>Review on consequences of corporate tax planning and avoidance</td>
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<td>3</td>
<td>Review of the theoretical and empirical literature on executive hedging opportunities</td>
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Empirical Evidence for Relative Performance Evaluation and the Design of Relative Performance components in the U.S.

When a firm designs a CEO compensation scheme, it may benchmark the own firm’s performance against the performance of competitors to get a better proxy of the CEO’s performance. Academic literature refers to this as Relative Performance Evaluation (RPE). In this thesis, students should collect and analyze data about RPE usage in the U.S. between 2013 and 2018. How did usage of Relative Performance Evaluation (RPE) in the U.S. develop? How are RPE schemes designed in detail?

References:

Topic 2  Review on consequences of corporate tax planning and avoidance

There are major differences in the degree to which corporations engage in tax avoidance, i.e. some firms continuously pay a lot less taxes than others. There are several agency related arguments regarding the determinants and the consequences of such behavior. This Master's thesis is supposed to introduce the reader to that theory and to review the related empirical literature with a special focus on the consequences of tax avoidance.

References:

CEOs and other top executives usually have significant portions of their wealth tied to their employing firms through stocks and firm-specific human capital. There may therefore be incentives to reduce the exposure to firm-specific risk through hedging. This Master’s thesis is supposed to review the theoretical and empirical literature on executive hedging.

References:

Thank your for your attention. Questions?