

## Category Banking & Risk Management

### **Title: A risk management approach toward the assessment of sustainable sovereign debt levels**

**Supervisor: Dennis Bams** ([w.bams@maastrichtuniversity.nl](mailto:w.bams@maastrichtuniversity.nl))

**Short text:** Subsequent to the Global Financial Crisis, many countries have seen their government debt levels increase substantially. From an economic stability perspective it is relevant to assess the sustainability of elevated debt levels. Large holders of sovereign bond portfolios such as pension funds are critically dependent on a proper risk assessment of sovereign bond risk.

IMF and the European Stability Board have developed a risk measuring system, in which specific indicators should remain within specific limits. In an ESM working paper by Gabriele et al, (ESM, 2017) entitled "Debt Stocks Meet Gross Financing Needs: A Flow Perspective into Sustainability", the authors pursue a statistical approach to define relevant explanatory variables for debt (un)sustainability.

The topic of this thesis proposal is to develop an economic foundation to support the assessment of sovereign debt sustainability. In particular, the Merton model uses the concept of a distance-to-default model in the context of company credit risk, making use of balance sheet information. This thesis topic seeks to adopt a Merton model a-like application for countries. In the empirical part of the thesis the model is to be empirically tested for a country of your choice.

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### **Title: Bank leverage in Europe**

**Supervisor: Dirk Broeders** ([d.broeders@maastrichtuniversity.nl](mailto:d.broeders@maastrichtuniversity.nl))

**Short text:** This involves an empirical study into leverage by large European banks over the last 20 years. How has leverage changed after the financial crises and during the current Covid-19 crisis?

**References:** tbd

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### **Title: Household risk management**

**Supervisor: Dennis Bams** ([w.bams@maastrichtuniversity.nl](mailto:w.bams@maastrichtuniversity.nl))

**Short text:** Households are in different phases of their life exposed to different risk drivers with in potential major financial consequences. You may think for example of the impact of divorce, unemployment, death and disability on mortgage requirements as well as on adequate saving for the retirement period. Households may act in a suboptimal manner regarding important consumption decisions as well as with regards to financial planning decisions.

The aim of this thesis proposal is to apply a risk management framework such as the COSO framework to develop for households. Subsequently, the thesis should include a relevant simulation study for different type of households in different economic circumstances. In particular the simulation should put forward ways in which risk drivers lead to potential undesirable outcomes and suggest what tools households have at their disposal to manage these risks.

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## **Title: Does Culture Affect Outcomes in Finance and Banking?**

**Supervisor: Stefanie Kleimeier** ([s.kleimeier@maastrichtuniversity.nl](mailto:s.kleimeier@maastrichtuniversity.nl))

**Short text:** Nowadays, societies, markets and businesses are faced with “globalization”, e.g. the growing interdependence between countries, peoples and cultures. Regarding the consequences of this globalization process, proponents of the *convergence* theory argue that globalization will lead to homogenization in individual decision making and to transnational standardization of markets and economies. In contrast, proponents of the *divergence* theory argue that regional differences are rooted in national culture which allowed them to persist over a long time period and which will allow them to persist in the future despite the pressure of globalization. The theory of divergence thus predicts that economic, financial or accounting characteristics should differ strongly across countries, even in a globalized economy, and that cultural traits can explain these uniquely national characteristics.

Guiso et al. (2006) describe the research field of “cultural economics” starting from the premise that culture is largely a 'given' to individuals – through religion or ethnicity – and cannot be changed easily. In turn, culture affects economic decision making. For example: In trusting cultures, banks might be less likely to require collateral or guarantees from borrowers as they trust in the borrower’s intention to repay the loan. Cross-border mergers might be more successful when the managers of the different business units are used to the same business culture with respect to power and hierarchy in managerial decision making. Investors might exhibit a large home bias in their stock and bond portfolios if they feel culturally very different from the foreign markets in which they could invest. Countries might trade more with each other when they share a common culture due to a historical colonial relationship.

Reuter (2011) and Karolyi (2016) discuss the different approaches for measuring culture and provide an overview of different research areas. Their surveys show that a wide variety of analyses are possible in this topic area and that many questions are as yet unexplored. In a thesis, students can investigate the impact of culture at different levels ranging from (1) decision level analyses, (2) firm level analyses, to (3) country level analyses. Here are a few examples for cultural studies in Finance and Banking: Kleimeier and Chaudhry (2015) is an example of a decision level analysis and illustrates how *cultural differences* between the bank and the company can affect the structure of the loan contract. – Heuchemer et al. (2009) and Sander et al. (2016) are examples of country-level studies that show how *cultural differences* across countries affect cross-border banking. Note that the data used in these two studies are now publically available in Table 6.2 of the BIS’ Locational Banking Statistics. – Costa et al. (2013) is an example of a country level analysis and illustrates how *national culture* affects IPO underpricing. – Orij (2010), Holderness (2016) and Díez-Esteban et al. (2019) are examples of firm level analyses and illustrate how *national culture* affects corporate social disclosure levels, ownership structures and corporate risk taking respectively. Note that Holderness’ (2016) study was published in a special issue of the *Journal of Corporate Finance* on the culture-finance link and more related studies can be found in this special issue.

### **Sources for cultural data on a country level:**

Hofstede’s cultural dimensions: <http://www.geerthofstede.nl/dimension-data-matrix> or <http://globe.bus.sfu.ca/>

World Value Survey: [www.worldvaluessurvey.org](http://www.worldvaluessurvey.org)

European Social Survey: <http://www.europeansocialsurvey.org/>

### **Sources for cross-border banking data on a country level:**

BIS Locational Banking Statistics, Table 6.2:

<https://www.bis.org/statistics/bankstats.htm?m=6%7C31%7C69>

**Please note that during the last couple of years, several SBE students have investigated this topic with specific focus on the effect of cultural differences on**

**the performance of cross-border M&A. Thus, new thesis proposals on this specific sub-topic will not be accepted.**

**References:**

- Costa, B. A., Crawford, A., & Jakob, K. (2013). Does culture influence IPO underpricing?. *Journal of Multinational Financial Management*, 23(1), 113-123.
- Díez-Esteban, J. M., Farinha, J. B., & García-Gómez, C. D. (2019). How does national culture affect corporate risk-taking?. *Eurasian Business Review*, 9(1), 49-68.
- Guiso, L., Sapienza, P., & Zingales, L. (2006). Does culture affect economic outcomes?. *Journal of Economic Perspectives*, 20(2), 23-48.
- Heuchemer, S., Kleimeier, S., & Sander, H. (2009). The determinants of cross-border lending in the Euro Zone, *Comparative Economic Studies*, 51(4), 467-499.
- Holderness, C. G. (2017). Culture and the ownership concentration of public corporations around the world. *Journal of Corporate Finance*, 44, 469-486.
- Karolyi, G. A. (2016). The gravity of culture for finance. *Journal of Corporate Finance* 41, 610-625. *Opening Article to Special Issue on Culture and Finance*.
- Kleimeier, S., & Chaudhry, S. M. (2015). Cultural differences and the structure of loan syndicates. *Finance Research Letters*, 15, 115-124.
- Orij, R. (2010). Corporate social disclosures in the context of national cultures and stakeholder theory. *Accounting, Auditing & Accountability Journal*, 23(7), 868-889.
- Reuter, C. H. (2011). A survey of 'culture and finance'. *Finance*, 32(1), 75-152.
- Sander, H., Kleimeier, S., & Heuchemer, S. (2016). The resurgence of cultural borders during the financial crisis: The changing geography of Eurozone cross-border depositing. *Journal of Financial Stability*, 24, 12-26.
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**Title: The effect of ESG on commodity risk (sustainable finance)**

**Supervisor: Bram van der Kroft** (b.vanderkroft@maastrichtuniversity.nl)

**Short text:** This thesis track considers the impact of ESG information the resource consumption of companies. In this track you will consider the impact of ESG on the natural resource consumption of firms and subsequently analyse how this differs for different ESG motives (I will send you my paper on this). You will most likely use an event study to identify shocks in commodity prices or create a fama-french sensitivity model given the industry of the firm. This thesis topic will be somewhat quantitative of nature and truly novel, as I do not know any research that directly relates on this topic (please note that I will be writing an academic article on this myself in the near future). You will need to be able to work with data and perform regression analysis. You might also consider to look at the relation of risk benchmarks to ESG information.

For some further reading, consider reading up about the relations of ESG to financial returns (Flammer, 2013), the investor preference towards carbon emissions (which can be linked to oil prices or electricity prices) (Krueger et al., 2020) and especially the resource-based view of the firm (Wernerfelt, 1984; Hart, 1995)

**References:**

- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic management journal*, 5(2), 171-180.
- Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of management review*, 20(4), 986-1014.
- Flammer, C. (2013). Corporate social responsibility and shareholder reaction: The environmental awareness of investors. *Academy of Management Journal*, 56(3), 758-781.
- Krueger, P., Sautner, Z., & Starks, L. T. (2020). The importance of climate risks for institutional investors. *The Review of Financial Studies*, 33(3), 1067-1111.
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**Title: Do stock prices respond to climate change news?**

**Supervisor: Dirk Broeders** ([d.broeders@maastrichtuniversity.nl](mailto:d.broeders@maastrichtuniversity.nl))

**Short text:** This involves an empirical study. Do prices of European large cap stocks respond to climate change news?

**References:**

Robert F. Engle, Stefano Giglio, Bryan T. Kelly, Heebum Lee, Johannes Stroebel (2019), Hedging Climate Change News, NBER Working Paper No. 25734

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**Title: Can tail risk and systemic risk of financial institutions be jointly reduced?**

**Supervisor: Stefan Straetmans** ([s.straetmans@maastrichtuniversity.nl](mailto:s.straetmans@maastrichtuniversity.nl))

**Short text:** Systemic risk is at the forefront of regulatory and policy discussions since the banking and financial crisis of 2007-2009. Post-crisis financial regulatory reform also claims to tackle systemic risk by e.g. targeting so-called "SIFI's" (Systemically Important Financial Institutions) by imposing additional capital surcharges. The purpose is to disincentivize financial institutions to being systemically important. Recent research, however, questions whether it is possible to both regulate tail risk of financial institutions and their systemic contribution, see e.g. Beale et al. (2011). More specifically, by diversifying their risks, financial institutions reduce their own probability of failure. However, if many banks decrease their risks in comparable fashion, then the likelihood of multiple failures (systemic risk) may increase. Whereas the Beale et al. (2001) paper mainly provides a theoretical analysis of this apparent trade off (and resulting policy dilemma), the aim of the current research project is to provide more empirical evidence by calculating different proxies of tail risk and systemic risk over time and for many different institutions and by investigating their correlation. Is there indeed a negative correlation visible between popular measures of tail risk and systemic risk over time and across institutions?

**References:**

- Beale, N, Rand, D.G., Battey, H., Croxson, K, May, R.M., Nowak, M.A., 2011. Individual vs. Systemic risk and the Regulator Dilemma. Proceedings of the National Academy of Sciences of the United States (PNAS) 108 (31), 12647-12652.
  - De Jonghe, O., 2010. Back to the basics in banking? A Micro-analysis of Banking System Stability. Journal of Financial Intermediation, 19, 387-417.
  - Idier, J., Lame, G., Mésonnier, JS. 2014. How useful is the Marginal Expected Shortfall for the Measurement of Systemic Exposure? A practical assessment. Journal of Banking and Finance 47, 134-146.
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**Title: Finite endpoint distributions in economics and finance**

**Supervisor: Stefan Straetmans** ([s.straetmans@maastrichtuniversity.nl](mailto:s.straetmans@maastrichtuniversity.nl))

**Short text:** The boundedness of economic or financial variables is often open to discussion: is there a lower or upper bound and if so does it increase or decrease over time? For example, since the 1960s and the birth of the 'eco-movement' (even long before the discussions on the climate crisis even started), economists started to question the limits to (long run) growth and productivity given the limited resources of the earth. Are there boundaries to industrial output and productivity (probably yes) but (more importantly), how did these bounds change over time? Another example where boundedness plays a role is efficiency measurement (governmental institutions, banking sector etc). Do these institutions produce their goods and services at the lowest possible costs or are there 'inefficiencies' in the system? The estimation of finite endpoints provides an alternative methodology to measuring these inefficiencies within an institutional context. Yet another application could be in the domain of climate data: do temperature and weather distributions have finite endpoints and if so, does it shift rightward?

Establishing this statistically may provide further empirical evidence for climate change.

**References:**

- Jesson J. Einmahl, John H. J. Einmahl & Laurens de Haan (2019) Limits to Human Life Span Through Extreme Value Theory, *Journal of the American Statistical Association*, 114:527, 1075-1080, DOI: 10.1080/01621459.2018.1537912
  - Daouia, A., Florens, JP, Simar, L. (2010). Frontier estimation and extreme value theory. *Bernoulli*. 16(4), 1039–1063, DOI: 10.3150/10-BEJ256
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**Title: Discrimination in lending: taste-based versus statistical discrimination**

**Supervisor: Jaap Bos** ([j.bos@maastrichtuniversity.nl](mailto:j.bos@maastrichtuniversity.nl))

**Short text:** When banks make lending decisions, are they pricing risk ... or basing their decisions on a biased, discriminatory view? And ... how can we distinguish between the two? In this project, you look at discrimination in lending decisions. This project requires an above average interest in banking, and in quantitative methods.

**References:**

Ferguson, M. F. and S. R. Peters (1995). What constitutes evidence of discrimination in lending? *The Journal of Finance* 50(2), 739–748.  
Shaffer, S. (1996). Evidence of discrimination in lending: An extension. *The Journal of Finance* 51(4), 1551–1554.

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**Title: Discrimination in lending: an Algorithmic approach**

**Supervisor: Jaap Bos** ([j.bos@maastrichtuniversity.nl](mailto:j.bos@maastrichtuniversity.nl))

**Short text:** Fintech has changed the way we make lending decisions. But ... has it lowered discrimination in lending? Can algorithms discriminate? And if so, how do they do it? This project requires an above average interest in banking, and in quantitative methods.

**References:**

Bartlett, R., A. Morse, R. Stanton, and N. Wallace (2019). Consumer-lending discrimination in the fintech era. Technical report, National Bureau of Economic Research.

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**Title: Discrimination in lending: Redlining ... or silver lining?**

**Supervisor: Jaap Bos** ([j.bos@maastrichtuniversity.nl](mailto:j.bos@maastrichtuniversity.nl))

**Short text:** What is true of the individual, is not necessarily true of the group that individual belongs to. And ... vice versa. But how does that 'simple' wisdom affect lending decisions? In this project, you look at the impact of redlining in banking. This project requires an above average interest in banking, and in quantitative methods.

**References:**

Tootell, G. M. (1996). Redlining in Boston: Do mortgage lenders discriminate against neighborhoods? *The Quarterly Journal of Economics* 111(4), 1049– 1079.

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**Title: Finding your banking market**

**Supervisor: Jaap Bos** ([j.bos@maastrichtuniversity.nl](mailto:j.bos@maastrichtuniversity.nl))

**Short text:** In many empirical analyses, especially when we are measuring competition, we need to define the market in which firms operate. Are banks active nationally, in a certain city or in a state. In this project, you will research cross-elasticities, and think creatively of empirical methods to delineate markets. Great project for a student who likes microeconomics and banking.

**References:**

- Bikker, J.A. and J.W.B. Bos (2008). Bank Performance: a theoretical and empirical

framework for the analysis of profitability, competition and efficiency,  
<https://www.routledge.com/Bank-Performance-A-Theoretical-and-Empirical-Framework-for-the-Analysis/Bikker-Bos/p/book/9780415569613>.

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**Title: What can we learn from simulating treatment effects?**

**Supervisor: Jaap Bos** ([j.bos@maastrichtuniversity.nl](mailto:j.bos@maastrichtuniversity.nl))

**Short text:** Identifying the causal effect of a certain (policy) change in an empirical (regression) analysis is far from easy. All kinds of problems can appear that make things difficult: endogeneity, omitted variables, multicollinearity, etc. In this project, we want to investigate how we can assess the bias in treatment effects by simulating processes where we know that treatment cannot be properly identified.

**References:**

- <https://www.mostlyharmlesseconometrics.com>

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**Title: Pricing of default risk in the cross-section of European stocks**

**Supervisor: Alexander Lee** ([a.lee@maastrichtuniversity.nl](mailto:a.lee@maastrichtuniversity.nl))

**Short text:** The Merton model (1974) is useful in its incorporation of market information and volatility for the prediction of financial distress and bankruptcy of exchange-listed firms unlike backward looking models like the Altman-Z or Ohlson-O scores (2014) or (1980). In this thesis-topic we are interested in finding out whether distress risk is priced in the cross-section of European stocks by looking at whether excess distress risk is rewarded by higher returns. We do so similarly to Vassalou and Xing (2004). Data acquisition can be started at a smaller scale using Factset. Background knowledge of Empirical or Mathematical Finance will help but is not a prerequisite. I am currently performing similar research on the cross-section of US stocks.

**References:**

Merton, R. C. (1974). On the pricing of corporate debt: The risk structure of interest rates. *The Journal of finance*, 29(2), 449-470.

Altman, E. I., Iwanicz-Drozdzowska, M., Laitinen, E. K., & Suvas, A. (2014). Distressed firm and bankruptcy prediction in an international context: A review and empirical analysis of Altman's Z-score model. Available at SSRN 2536340.

Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of accounting research*, 109-131.

Vassalou, M., & Xing, Y. (2004). Default risk in equity returns. *The journal of finance*, 59(2), 831-868.

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**Title: Credit rating stability and cliff effects**

**Supervisor: Dirk Broeders** ([d.broeders@maastrichtuniversity.nl](mailto:d.broeders@maastrichtuniversity.nl))

**Short text:** Users of credit ratings want credit ratings to be both stable and accurate. Consequently, credit agencies face a difficult trade-off between these two objectives. To reach this goal, rating agencies assign credit ratings on a through-the-cycle basis by evaluating the credit risk of a borrower assessing only permanent characteristics that are static or slowly moving over time. In contrast, financial markets assess credit risk continuously, based on all information available. There is some concern that in a crisis, credit rating agencies cannot keep up the through-the-cycle approach and downgrade issuers based on short-term indicators in line with market developments. This creates a cliff-effect. In this thesis you will research if there is empirical support for the existence of such a cliff-effect.

**References:** Kiff, J., M. Kisser and L.B. Schumacher (2020): Rating Through-the-Cycle :

What does the Concept Imply for Rating Stability and Accuracy, IMF, available on SSRN.