WORKING PAPERS

1. Dupuy, A., Kennes, J., **Lyng, R. S.**, Job Amenities in the Market for CEOs, ***Submitted to the Journal of Political Economy***

We develop a two-sided multidimensional matching model of the market for CEOs that allows for both pecuniary and non-pecuniary (amenity) compensation. The model is estimated by maximum likelihood estimation using matched CEO-firm data from Denmark. We show that CEOs have preferences for building legacy and gaining empowerment. The legacy mechanism explains why there is low mobility in the CEO market even though firms demand general CEO skills. The empowerment mechanism explains why CEOs are willing to sacrifice significant pecuniary income to manage high equity firms. The overall conclusion is that job amenities matter in the market for CEOs.

2. Batsaikhan, M., Gørtz, M., Kennes, J., **Lyng, R. S.,** Monte D., Tumennasan N., Discrimination and Daycare Choice: Evidence from a Randomized Survey, ***Under Review at Journal of Human Resources, IZA Discussion Paper No. 14803***

We use a randomized survey to study how discrimination affects parenting choices. In our survey, parents with young children choose between two public daycares, which are described by testimonials from other (fictitious) parents. The testifying parents in the first daycare describe a free play institution, which reflects a pro-typical Scandinavian 'permissive parenting' approach to childcare. The testifying parents in the second daycare describe a more structured daycare, which reflects an alternative approach to childcare that is broadly consistent with 'paternalistic parenting'. We randomize the fictitious names of the testifying parents across respondents. We find bias against ethnic minorities among parents who prefer a structured childcare institution but not among parents who prefer free play one. These biases are not reduced when we provide additional information on testifiers' professions. Our findings offer validation for a model of parenting where biases regarding discrimination are likely to come from parents preferring less permissive/more authoritarian methods of parenting.

3. **Lyng, R. S**. & Zhou J., Household Portfolio Choice Before and After House Purchase, *nominated for the Best Paper Awards at the "2018 FMA Annual Meeting in San Diego"*

Using unique administrative panel data from Denmark, this paper documents the development of households' liquid wealth, equity market participation (the extensive margin), and the conditional risky asset share of liquid wealth (the intensive margin) over a 7-year period around a house purchase. We find that households' equity market participation rate drops during the year of house purchase. Conditional on participation, the risky asset share of liquid wealth follows a V-shape around the house purchase. It decreases and reaches the lowest point 1 year before a house purchase but jumps up immediately after. This finding suggests that of the three channels identified in the literature that affect the risky asset demand after a house purchase, the debt retirement channel and the diversification effect dominate the liquidity concern.

4. **Lyng, R. S**., The Impact of the Financial Crisis on Homeowners' Portfolio Choice

This paper examines the mediating effect of the recent financial crisis on the relationship between house value fluctuation and households' liquid portfolio choice. To isolate exogenous variation in homeowners' home equity and mortgage debt before and after the crisis, I use a new regional level construction cost index along with other commonly used house price determinants as instruments. Using an administrative register-based panel data for the entire Danish population in the period 2004 – 2012, I find that the effect of housing on households' risky asset holdings is asymmetric before and after the crisis. The elasticity of risky asset shares with respect to mortgage debt and home equity is -0.31 and 0.28 respectively in pre-crisis period. On the other hand, whereas for the post-crisis period, the elasticity of risky asset shares with respect to mortgage debt and home equity is -0.37 and 0.34 respectively. Suppose an average household had spent 10% more on housing, the estimates suggest that they would hold 6% less in risky shares pre-crisis and 7% less post-crisis. Homeowners rebalance their liquid portfolio to a larger extent in response to their housing value fluctuation after the financial crisis, adding an additional effect that is likely to exacerbate the instability of an already tumultuous financial system.

5. Kennes, J., **Lyng, R. S.** & Zhou J., Household Portfolio Choice at Mortgage Runoffs: A Regression Discontinuity in Time Analysis

   Lack of participation in the stock market remains an ongoing discussion in finance. Brown, Veld & Veld-Merkoulova (2018) find that Perceived Equity Risk Premium (PERP), defined as the difference between the individual's expected stock market return and her personal opportunity cost of capital, can explain limited stock market participation, but were unable to provide causal evidence on that. We examine the causal impact of PERP on portfolio choice by estimating changes in portfolio choice at the time of mortgage runoffs. We merge administrative register-based panel data from Statistics Denmark with individual mortgage transaction data from the Association of Danish Mortgage Banks. Using a Regression Discontinuity in Time (RDiT) framework, we find the probability of equity market participation increases discontinuously at mortgage runoff, and conditional on equity market participation, the share of liquid wealth held in risky assets decreases discontinuously. Our result confirms Becker and Shabani (2010) theoretical prediction, and is consistent with Brown, Veld & Veld-Merkoulova (2018) and the life-cycle model prediction of Davis, Kubler and Willen (2006). PERP is an important determinant for portfolio choice.

WORK IN PROGRESS

1. with Ronald Wolthoff and John Kennes, Matching and Welfare Analysis of the Danish Mortgage Market

   Buying a home is the most important financial decision that most people will make in their life. The primary sources of finance for households when buying a home are banks and mortgage credit institutions (MCIs). The types of mortgage products offered by these institutions deeply affect individuals' lifetime well-being. This project investigates how the structure of, and changes in, the mortgage market affect both individual and overall social welfare.

   While it is a matter of course that households ultimately choose their institutions and mortgage products, it is also important to recognize that the institutions themselves have incentives to choose customers with specific characteristics. These incentives are sometimes influenced by regulatory concerns. For example, the Danish FSA introduced in 2016 restrictions on the number of loans a bank can serve to customers for which the Loan to Income (LTI) ratio exceeds a factor of 4 in the Copenhagen metropolitan area and Aarhus. This is an example of a macroprudential policy which has become a focus point for policy makers since the financial crisis in 2007. To assess the welfare impact of new and potential developments in the mortgage market, it is important to consider both sides of the market and how they interact. In this project, we

   1) determine what drives the terms of trade, i.e. pricing and other details of a mortgage contract, and the assignments between any particular individual and institution, and

2) determine how individuals and institutions will behave in response to structural and regulatory changes in the mortgage market.

We do this by extending state-of-the-art theoretical and empirical methodologies and applying it to unique data covering the population of Danish individuals and the universe of credit institutions and mortgage transactions. This project will help to improve the quality of the Danish mortgage market by identifying direct and indirect trade-offs associated with policy proposals aimed at managing systemic risks. For example, policy makers would be interested in a counterfactual policy experiment that removes a particular institution (e.g. Bank A goes bankrupt) or a type of mortgage product (e.g. interest-only loans), to determine how the portfolio of loans for the remaining institutions will be impacted, and which customer types will experience the greatest losses/gains in the mortgage market.

Theoretical foundation: We will analyse this pattern of banking relationships and the allocation of gains within these relationships using a two-sided revealed preference framework. Our framework assumes individuals and institutions can compensate each other using transfer payments, which the literature refers to as transferable utility (TU). Moreover, participants on both sides of the market operate competitively and can freely choose trading partners subject to finding agreeable terms of trade. Our theoretical foundation is the "two-side stable matching model with TU" framework which is well known in the market design literature, pioneered by the Nobel Prize winners Alvin Roth and Lloyd Shapley, also known as the Becker model referring to Becker (1973). To estimate this Becker model, we will extend recent developments in econometric methods presented in Fox 2007, 2010, 2018, Akkus et al., 2016, and Fox, Yang & Hsu, 2018.

2. with Arnaud Dupuy, John Kennes and Peter Rohde Skov, Teacher and Principal Labor Markets and School Performance

   Measuring and improving the quality of school leadership and teaching is of fundamental importance in education. This project uses a two-sided multidimensional matching model to provide a full cost-benefit analysis of public policies that impact the assignments of principals/teachers to schools/classrooms. In particular, we will (1) estimate the potential amenities of teaching/managing "easy-to-serve classrooms/schools" for each type of teacher/principal in terms of their wages; (2) estimate how much inequality exists across schools with regard to the quality of teachers and principals; (3) evaluate the impact of counterfactual policy proposals, such as a change in the wage cap of teachers for one group of schools, on the assignments of more effective teachers to disadvantaged schools; (4) obtain new estimates on value-added measures for teachers and principals that take into account the selection of teachers and principals into schools, and (5) compare estimates on the selection and performance of teachers within schools with estimates from other studies. We extend state-of-the-art theoretical and empirical methodologies and apply it to the new and unique matched teacher-to-classroom and principal-to-school data from Denmark. A country that has decentralized school systems and school performance can be measured through national test scores. Our project will develop operational tools for the policymakers to improve the quality and governance of public schools. We aim to provide proof of practice for the general application of our methods to other education systems. Our project is multidisciplinary, involving a combination of education, pedagogy, and developing of quantitative methods. It includes the transfer of knowledge to both academic and public sector, and the training of researcher in new advanced econometric methods. This study contributes to the EU strategy to develop school education systems and strengthen European identity through high-quality education.