

Finance: Selected Doctoral Theses

“Essays in Financial Economics”

Author: Thomas Ernst (2021)

Committee: Haoxiang Zhu (chair), Leonid Kogan, Jiang Wang, Chester Spatt

Abstract:

Chapter 1 constructs a theoretical model of an ETF. Conventional wisdom warns that exchange-traded funds (ETFs) harm stock price discovery, either by “stealing” single-stock liquidity or forcing stock prices to co-move. Contra this belief, I develop a theoretical model that investors with stock-specific information trade both single stocks and ETFs. While the ETF is payoff-redundant, asymmetric information and a position limit for informed traders combine to make the ETF non-redundant. Single-stock investors can access ETF liquidity by means of this tandem trading, and stock prices can flexibly adjust to ETF price movements. Effects are strongest when an individual stock has a large weight in the ETF and a large stock-specific informational asymmetry. I conclude that ETFs can provide single-stock price discovery.

Chapter 2 empirically tests the predictions of the ETF model. Using high-resolution data on SPDR and the Sector SPDR ETFs, I exploit exchange latencies in order to show that investors place simultaneous, same-direction trades in both a stock and ETF. Consistent with my model predictions, effects are strongest when an individual stock has a large weight in the ETF and a large stock-specific informational asymmetry.

Chapter 3 models how risk-averse investors trade when they are uncertain about the quality of their signal. I show that when traders are risk-averse, traders can submit demands which are non-monotone in their signal. While their expected value for the asset may rise with stronger signals, so does the risk that the signal is noise. This leads to short-term behavior which is herding-like. Unlike herding, investors maintain a positive expected value for the asset, but it is their risk aversion leads them to take smaller positions, which has a similar slowing effect on price discovery.

“Essays in Financial Economics”

Author: Peter Hansen (2021)

Committee: Andrew Lo (chair), Hui Chen, Andrey Malenko, Jonathan Parker

Abstract:

Chapter 1 introduces novel preference formulations which capture aversion to ambiguity about unknown and potentially time-varying volatility. These preferences are compared with Gilboa and Schmeidler's maxmin expected utility as well as variational formulations of ambiguity aversion. The impact of ambiguity aversion is illustrated in a simple static model of portfolio choice, as well as a dynamic model of optimal contracting under repeated moral hazard. Implications for investor beliefs, optimal design of corporate securities, and asset pricing are explored.

Chapter 2 develops a method informed by data and models to recover information about investor beliefs. This approach uses information embedded in forward-looking asset prices in conjunction with asset pricing models. We step back from presuming rational expectations and entertain potential belief distortions bounded by a statistical measure of discrepancy. Additionally, this method allows for the direct use of sparse survey evidence to make these bounds more informative. Within this framework, market-implied beliefs may differ from those implied by rational expectations due to behavioral/psychological biases of investors, ambiguity aversion, or omitted permanent components to valuation. Formally, evidence about investor beliefs is represented as a nonlinear expectation function deduced using model-implied moment conditions and bounds on statistical divergence. This method is illustrated with a prototypical example from macro-finance using asset market data to infer belief restrictions for macroeconomic growth rates.

Chapter 3 develops diagnostic tools to assess whether individual factor risk premia are identified from return data. We describe a necessary and sufficient condition for population identification, which we call the kernel-orthogonality condition. This condition can be thought of intuitively as the existence of a “true” factor

mimicking portfolio, and is weaker than the standard rank condition commonly assumed for linear factor models. Furthermore, this condition remains meaningful even if the factor model is misspecified, as a condition for the identification of the factor risk premium consistent with minimal pricing error. We discuss test procedures to assess identification, and provide a novel test of the kernel-orthogonality condition in reduced-rank models. Finally, we apply our test methodology to assess identification of risk premia associated with consumption growth and intermediary leverage.

“Essays in Financial Economics”

Author: Fangzhou Lu (2020)

Committee: Jonathan Parker (chair), Antoinette Schoar, Jennifer Carpenter, Robert Whitelaw

Abstract:

This dissertation consists of three chapters. In Chapter 1, I document that there is a high correlation between the returns of cryptocurrencies and those of utility tokens, which are claims to products and services yet to be developed that are issued through ICOs and traded on crypto-exchanges. I demonstrate the presence of a numeraire effect in the pricing of these tokens and present evidence that it is driven by a combination of group thinking and representativeness bias. Investors mistakenly overestimate the probability that a cryptocurrency-denominated token is issued by a blockchain firm, and thus believe the fundamental value of the token is correlated with that of Bitcoin. I show that a 1% increase in the return on Bitcoin during the month before a token first lists on a crypto exchange predicts a 5% higher ICO return for a cryptocurrency-denominated token than for a fiat-currency-denominated token. If a token is denominated in a cryptocurrency on one exchange and its otherwise identical twin is denominated in a fiat currency on another exchange, then a 1% increase in the cryptocurrency return relative to the fiat currency predicts a 60 bp divergence in their prices.

In Chapter 2, I show that consistent with being driven by a combination of group thinking and representativeness bias, the numeraire effect is more pronounced for tokens with more complex business plans. Moreover, experimental evidence corroborates these empirical findings and suggests that the numeraire effect is present in other asset prices as well and can explain home-currency bias. The combination of high volatility and numeraire effects undermines the ability of cryptocurrencies to serve as units of account.

In Chapter 3, I demonstrate that debt owed to family and friends (DOFF) is a major component of household and entrepreneurial finance, particularly in developing countries. However, such informal finance carries with it an implicit covenant that can cause households to forgo durable-goods consumption. This is because durable-goods consumption can be perceived by the lender as a mis-use of funds and can result in social sanctions or debt recall. This paper uses China’s Vehicle Scrappage Pro-gram (VSP) as a laboratory in which to study the causal link between DOFF and consumption. Merging survey data on Chinese household balance sheets with bid prices from China’s online used-car markets, I find that DOFF on the balance sheet significantly reduces the probability that eligible households participate in the VSP and trade in their clunkers for new cars. Further, I find that this negative effect of DOFF on consumption is significantly mitigated by the presence of formal features such as a written contract, pre-determined debt repayment schedule, or positive interest rate. Together these results suggest that developing more formal channels for household finance can lead to increases in consumption. This is particularly important for developing countries such as China, where low consumption rates impede economic growth.

“Essays in Financial Economics”

Author: Maarten Meeuwis (2020)

Committee:

Jonathan Parker (chair), Antoinette Schoar, Lawrence Schmidt

Abstract:

This dissertation consists of three essays in financial economics, with a focus on household financial decisions and their implications for asset pricing and macroeconomic dynamics.

In Chapter 1, I use data on the portfolio holdings and income of millions of US retirement investors to show that positive and persistent shocks to income lead to a significant increase in the equity share of investor portfolios, while increases in financial wealth due to realized returns lead to a small decline in the equity share. In a standard homothetic life-cycle model with human capital and constant risk aversion, the portfolio responses to these two wealth shocks should be of equal magnitude and opposite sign. The positive net effect in the data is evidence for risk aversion that decreases in total wealth.

In Chapter 2, I show that decreasing relative risk aversion preferences have significant long-run implications for inequality and asset prices. I estimate the structural parameters of a life-cycle consumption and portfolio choice model that accounts for inertia in portfolio rebalancing. The model matches reduced-form estimates of the portfolio responses to wealth shocks with a significant degree of non-homotheticity in risk preferences, such that a 10% permanent income growth leads to a decrease in risk aversion by 1.7%. I find that decreasing relative risk aversion in the model doubles the share of wealth at the top, as equity is concentrated in the hands of the wealthy. The model also implies that rising income inequality in the US has led to a 15% decline in the equity premium over the past three decades.

In joint work with Jonathan Parker, Antoinette Schoar, and Duncan Simester, we document in Chapter 3 how agents who believe in different models of the world change their investment behavior differently in response to a public signal. We use a proprietary dataset of the portfolio holdings of millions of US households and identify households ex ante that hold different models of the world using political party affiliation (probabilistically inferred from zip code). Our public signal is the unexpected outcome of the US national election of 2016. Relative to Democrats, Republican investors actively increase the equity share and market beta of their portfolios following the election. The rebalancing is due to a small share of investors making large adjustments. We conclude that this behavior is driven by belief heterogeneity because of extensive controls for differential hedging needs or preferences, including detailed controls for age, wealth, income, state, and even county-employer fixed effects.

“Essays in Financial Economics”

Author: Alexis Montecinos (2019)

Committee: Deborah J. Lucas (chair), Robert Merton, Daniel Greenwald

Abstract:

This dissertation consists of three essays on financial economics, specifically focusing on the role of government banks in the aggregate economy and in the role of capital utilization to determine leverage. The first essay shows the empirical relevance of state-owned banks nowadays and their implications for economic growth. I show using a new data set for government ownership of banks in 2017, that government banks are still pervasive and a big player in the financial market around the world. These still account in average for twenty percent of the total assets of the top ten banks in every country in 2017. Their effect in the GDP growth depends strongly on the existent heterogeneity of the countries under study, particularly the final effect is related to how deep the financial market is, measured as the private credit over GDP and how good the country's institutional background is, measured using either the democracy index or the political rights index. Therefore, depending on what stage of development the country is in terms of its access to the financial market and the quality of its government institutions, government banks can either be an engine for economic growth or a source of deterioration in the long-run development.

The second essay studies the role of government banks in a dynamic stochastic general equilibrium (DSGE) model with heterogeneous financial intermediaries and heterogeneous households. In accordance with the empirical literature on the subject, this study shows that the presence of government-owned banks alters the reaction of the aggregate variables to negative shocks relative to standard DSGE models. Those results depend on the trade-off between the cycle stabilization goal of the government and the degree of inefficiency inherent to state-owned banks. When the first goal is predominant over the degree of inefficiency in government banks, the economy is able to recover faster following negative shocks due to the less procyclical behavior of these institutions. The paper shows that ignoring the heterogeneity that exist between private and government banks may render misleading assessments and conclusions regarding economic variables, such as GDP, consumption, investment, labor, etc. This is particularly important to evaluate the effectiveness of the macroprudential policy into the economy.

The third essay, based on joint work with Diogo Duarte and Hamilton Galindo, we document the relation between capital utilization and leverage and explain how this can be a key factor in the determination of short-term debt. The essay documents procyclical behavior between capital utilization and short-term debt. This strong positive relationship persists even when we control the regressions for firm size, profits, and growth, attesting to the robustness of our findings. In addition, our analysis of the time series and panel data shows that the relationship is present at both the aggregate and firm levels. Based on this empirical finding, we develop a DSGE model that sheds light on the role of capital utilization in propagating real and financial shocks to financial assets. We show that in the presence of capital utilization, positive real and financial shocks cause the firm to change its financing of the equity payout policy from earnings to debt, resulting in an increase in short-term debt. Therefore, ignoring the firm's optimal decision on capital utilization may lead to misleading conclusions on how leverage is undertaken.

“Essays on Empirical Asset Pricing”

Author: Yixin Chen (2018)

Committee: Leonid Kogan (co-chair), Jonathan Parker (co-chair), Hui Chen

Abstract:

Chapter 1 shows that, for active mutual funds, historical in-sample alpha is a poor predictor of out-of-sample alpha. However, by focusing on a subset of skilled managers who are able to generate positive alpha via profitable bets on firm specific risks (stock-picking), I show that a new first-order stochastic dominance (FSD) condition can be employed as an additional search criterion to identify such skilled stock-pickers. I implement an FSD filter to select funds by bootstrapping the return distribution in a given period associated with a random stock-picking strategy that has a given factor exposure and degree of diversification. Simulations show that the identification of funds as skilled by the FSD filter performs well in finite samples, in the face of heteroscedasticity and benchmark mis-specification. With the new FSD filter, I identify a group of active funds that are able to outperform the Carhart benchmark by 2.04% ($t=2.78$) per year before fees (0.78% ($t=1.07$) per year after fees) out of sample. Moreover, in this sample of funds, in-sample alpha is significantly predictive of out-of-sample alpha: the top quintile of stock-picking mutual funds deliver an out-of-sample alpha of 3.55% ($t=3.24$) per year before fees (2.24% ($t=2.05$) per year after fees). These outperforming funds tend to be more aggressive stock-pickers (hold more concentrated portfolios), charge higher fees, and attract more fund flows.

By exploring mutual fund managers' Herding tendency and Trading Intensity, Chapter 2 develops a systematic approach to identify mutual fund managers with the Warren Buffett style, i.e. managers who are fundamental, long-term, value investors. Using data during 1995-2015, I further show that the group of such managers outperformed the Carhart four-factor benchmark by 3.06% ($t = 3.58$) per year before fees (1.94% ($t = 2.35$) per year after fees). Moreover, these managers have both statistically and economically high exposures to AQR's Quality Minus Junk (QMJ) factor. Last but not least, I show that their before-fees performances can be almost perfectly replicated by an investor who implements the strategy of investing in the lagged portfolio holdings of these managers when they become publicly available.

Chapter 3 proposes a methodology to recover countries' stochastic discount factors (SDFs) from exchange rates under three assumptions: 1) the Euler equation holds internationally; 2) there is a factor structure among exchange rates; 3) there does not exist a special global risk factor which has identical influence on all countries. By designing an empirical test using exchange rates and equity returns of 28 countries from 1988 to August of 2014, I show that the moment conditions are rejected in the data. The failure of the exchange-rate-recovered SDFs to price countries' assets reflects the violation of my assumptions, and highlights the importance of the special global risk factor to price assets in different countries.

“Essays in Financial Economics”

Author: Daniel Green (2018)

Committee: Jonathan Parker (chair), Nittai Bergman, Hui Chen, Andrey Malenko

Abstract:

The essays in this thesis study issues in finance affecting large corporations, developing economies, and households. The common theme that connects these essays is a focus on how financial institutions, frictions, and policies affect the allocation of resources in the economy.

The first chapter explores a classic question in corporate finance: how valuable are restrictive debt covenants in reducing the agency costs of debt? I answer this question by exploiting the revealed preference decision to refinance fixed-coupon debt, which weighs observable interest rate savings against the unobservable costs of a change in restrictive debt covenants induced by refinancing. Plausibly exogenous variation in this trade-off reveals that firms require higher interest rate savings to refinance when it would add restrictive covenants and require much lower interest rate savings when refinancing sheds covenants. A high-yield bond's restrictive covenant package increases the value of speculative-grade firms by 2.4 percent on average.

Joint work with Ernest Liu in Chapter 2 provides a theory that explains how institutional weakness in credit markets can fail to stimulate development even when there is ample credit supply. We show that when borrowers lack credible mechanisms to commit not to borrow further from other lenders in the future, not only does the increasing availability of lenders raise the interest rate on loans and reduce the amount of funds that entrepreneurs can borrow, but perversely it is those entrepreneurs with more profitable investment opportunities that will end up raising fewer investments precisely because they have stronger desires to seek out additional lenders in the future. This effect further discourages entrepreneurs from initiating the most efficient and productive endeavors, generating persistent underdevelopment.

Chapter 3 explores the role of liquidity constraints in households' responses to fiscal stimulus programs. In joint work with Jonathan Parker and Brian Melzer, this chapter evaluates the impact of the Car Allowance Rebate System (CARS) on vehicle purchases. We find that the liquidity provided by CARS amplified household responses to the economic subsidy. Liquidity provision was lower for the owners of clunkers encumbered by loans, since participation required loan repayment. Such households had a very low participation rate, which we attribute to liquidity constraints and distinguish from the effects of other indebtedness, household income, and the size of the program subsidy.

“Essays in Financial Economics”

Author: Winston (Wei) Dou (2017)

Committee: Antoinette Schoar (chair), Jonathan Parker, Deborah Lucas

Abstract:

This thesis consists of three essays that theoretically and empirically investigate the asset pricing and macroeconomic implications of uncertainty shocks, propose new measures for model robustness, explain the joint dynamics on equity excess returns and real exchange rates. In the first chapter, I show that the effect of uncertainty shocks on asset prices and macroeconomic dynamics depends on the degree of risk sharing in the economy and the origin of uncertainty. I develop a general equilibrium model with imperfect risk sharing and

two sources of uncertainty shocks: (i) cash-flow uncertainty shocks, which affect the idiosyncratic volatility of firms' productivity, and (ii) growth uncertainty shocks, which affect the idiosyncratic variability of firms' investment opportunities. My model deviates from the neoclassical setting in one respect: firms' investment policies are set by the experts who are subject to a moral hazard problem and thus must maintain a non-diversified ownership stake in the firm. As a result, risk sharing between experts and other investors is imperfect. Limited risk sharing distorts equilibrium investment choices, firm valuation, and prices of risk in equilibrium relative to the frictionless benchmark. In the calibrated model, the risk premium on growth uncertainty shocks is negative under poor risk sharing conditions and positive otherwise. Moreover, the cross-sectional spread in valuations between value and growth stocks loads positively on the growth uncertainty shocks under poor risk sharing conditions and negatively otherwise. Empirical tests support these predictions of the model.

The second chapter is based on the joint work Chen, Dou, and Kogan (2015), in which we propose a new quantitative measure of model fragility, based on the tendency of a model to over-fit the data in sample with poor out-of-sample performance. We formally show that structural economic models are fragile when the cross-equation restrictions they impose on the baseline statistical model appear excessively informative about combinations of model parameters that are otherwise difficult to estimate. We develop an analytically tractable asymptotic approximation to our fragility measure which we use to identify the problematic parameter combinations. Using these asymptotic results, we diagnose fragility in asset pricing models with rare disasters and long-run consumption risk. The third chapter is based on the joint work Dou and Verdelhan (2015), which presents a two-good, two-country real model that replicates the basic stylized facts on equity excess returns and real interest rates. In the model, markets are incomplete. In each country, workers cannot participate in financial markets whereas investors trade domestic and foreign stocks, as well as an international bond. The investors' asset positions are subject to a borrowing constraint, along with a short-selling constraint on equity. Foreign and domestic agents differ in their elasticity of inter temporal substitution and in their risk-aversion. A time-varying probability of a global disaster implies time-varying risk premia in asset markets, and therefore large and time-varying expected valuation effects on international asset positions. The model highlights the role of market incompleteness and heterogeneity across countries in accounting for the volatility of equity and debt international capital flows.