# Senior Honors Class

**2015-2016**

# Department of Economics
# 2015-2016 Undergraduate Honors Thesis Class

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| **Fite, Caroline** |
| **Gosrani, Chiraayu** |
| **Harris, Robert** |
| **Huang, Alice** |
| **Mbonu, Oluchi** |
| **Punjabi, Maitri** |
| **Sale, Laura** |
| **Stelpflug, Will** |
| **Su, Joycelyn** |
| **Tysinger, May** |
| **Wang, Longxuan** |

# Laura Sale– Advised by Dr. David Guilkey

## Health Shocks and Retirement Timing in Latin America

This thesis analyzes the health related and demographic factors that influence the timing of people's decisions to retire. The study uses pooled data from six Latin American countries and investigates cross-country variations in retirement age and response to health shocks. The focus is on the effects of heart attacks, strokes, and cancer as well as two measures of overall health status before and after nationwide pension reforms. The baseline model is the hazard function of work-stopping behavior. To control for the endogeneity of health shocks, the study uses childhood events as instrumental variables. Heart attacks, strokes, and cancer diagnoses are found to have a strong effect on the retirement hazard, with little variation across demographic groups.

Joycelyn Su– Advised by Dr. Simon Alder and Dr. Toan Phan

## Where Do the Roads Go? Evaluating the Impact of Corruption on Infrastructure Allocation in China

Where do government officials allocate infrastructure resources when there are margins for personal discretion? In a panel of 276 Chinese cities with observations from 1993 to 2009, the study examines the relationship between the birthplaces of government officials and the area of paved roads built in each respective city. On average, the area of paved roads in cities that are also the birthplaces of high-level officials is found to increase as the number of high-level officials and the number of years during which they stay in office increase. This phenomenon is especially significant after China decentralized its fiscal process in 2004 and it provides support for the proposed theoretical framework where local officials build roads in high-level officials' hometowns in hopes of receiving promotion. This study contributes to the few works in the economics literature that examines distributive politics in an autocratic state.

Benjamin Director – Advised by Dr. Sergio Parreiras

## The Role of Unverifiable Information in Online Peer-to-Peer Lending

Over the past decade, online peer-to-peer lending has emerged as a viable alternative to traditional consumer finance by connecting individuals with small financing needs with individual investors seeking the consistent returns of lending traditionally reserved for financial institutions. To date, the literature on leading loan providers like Lending Club and Prosper Marketplace is relatively sparse and has failed to keep up with the constantly changing industry funding standards. This study contributes to this body of literature by examining information that is unverified by the Lending Club such as stated loan purpose and homeownership. Our results indicate that these unverified factors are significantly correlated with loan performance but also that Lending Club's interest rate assignment process acts as a partial control for these deviations. While statistically significant disparities do emerge even after Lending Club's interest rate assignment process, these marginal differences become economically insignificant because of practical complications in effectively exploiting them, thereby suggesting Lending Club has constructed an efficient market for these loans.

# Caroline Fite– Advised by Dr. Neville Francis

## Examining Asymmetric State-Level Impacts of U.S. Monetary Policy Surprise from 1970-2012

This paper uses a two-part model to measure the asymmetric responses to monetary policy surprise in U.S. states from 1970-2012. There has been limited theoretical discussion surrounding states as individual, heterogeneous economies subjected to a monetary system that views them as equal parts of the aggregate. In addition, studies that have attempted to model these asymmetries face empirical constraints in modeling the root causes of differing state effects. We overcome these empirical challenges by using time series methods to produce an aggregate vector autoregressive model measuring the determinants of monetary policy. We feed this model into a state-level panel data model as an exogenous shock to state economies, finding that monetary surprise leads to lower growth in state economic activity. We find that states have statistically different reactions to monetary shocks, with states in the Great Lakes region being most sensitive to unexpected changes in monetary policy. Differences in industry composition, state fiscal policy, and business size do not substantively or significantly influence a states' response to policy. Instead, we find that reactions are mostly determined as a result of their regional geography, providing support for limited regional monetary autonomy in district banks.

# Michael Catalano– Advised by Dr. Donna Gilleskie

## The Impact of Public Smoking Bans on Tobacco Consumption Behavior and Environmental Tobacco Smoke Exposure in Argentina

This paper examines the effects of the implementation of public smoking bans on smoking behavior and environmental tobacco smoke exposure in Argentina. The focus is on the difference between full and partial smoking bans by taking advantage of the time and province variation in ban implementation in order to determine the true effects of each type of ban. The study finds that full bans reduce national smoking prevalence over time, especially among the younger demographic groups, but have no significant effect on intensity of smoking among smokers. Full bans also benefit nonsmokers, as they are associated with a significant reduction in environmental tobacco smoke exposure. Partial bans do not have any significant impact on smoking prevalence, but they are associated with an increase in smoking intensity among individuals that smoke heavily. It is recommended that policymakers push for provinces to ratify the National Tobacco Control Law of 2011 and impose full public smoking bans

Chiraayu Gosrani – Advised by Dr. Helen Tauchen

## From Family Court to Criminal Court: The Impact of Child Maltreatment on Arrest

This paper explores the impact that child maltreatment has on the development of criminal behavior and arrest. Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), we estimate whether the occurrence, frequency and timing of various forms of abuse have significant impacts on the probability or hazard of arrest. This paper employs a probit and logit model to estimate the probability of arrest and a hazard model to estimate an individual's risk ratio in the life cycle. Our results suggest that the occurrence of child maltreatment increases the likelihood of arrest. Individuals who have experienced maltreatment more frequently are more likely to be arrested, and maltreated individuals are also more likely to be arrested earlier in their life than individuals who have never been maltreated. Maltreatment also increases the hazard of arrest by a given age.

Alice Huang– Advised by Dr. Klara Peter

## Accounting for the Effects of Mortality Selection Bias on Health Outcomes: A Case Study of the Great Chinese Famine

This study examines the long-term health effects of early life exposure to the Great Chinese Famine in 1958-1962. It uses the longitudinal China Health and Nutrition Survey (1989-2011) and 2000 China Census data. Using historical monthly province-level data on the size of birth cohorts and temporal, regional, and individual-level variation in famine intensity, the exposure to famine in utero and early childhood is found to negatively impact adult height, lower BMI, worsen health status, and reduce the incidence of serious illness and hypertension later in life. Previous studies failed to account for the selective mortality bias, as individuals with poor health are more likely to die before subsequent survey rounds. This study attempts to correct for the non-random mortality by using innovative techniques such as the Inverse Probability Weighting and the Joint Modeling of Longitudinal and Survival Data. Another important contribution of this study is the breakdown of the average treatment effect into various treatment margins such as age of exposure, length of exposure, and intensity of exposure, which were not considered in previous literature.

# Oluchi Mbonu – Advised by Dr. Valentin Verdier

## Do Relationships Last? Contrasting Peer Effects of 'Old' Classmates and 'New' Classmates

This study examines whether there exists any heterogeneity in peer effects based on whether or not students were in the same classroom in the previous time period or not. We consider two groups of peers: students with whom the individual was in the same classroom at time t-1, and those students with whom the individual was not in the same classroom at time t-1. This paper discerns whether there are differences in the impact of peer effects on academic outcomes by 'old' and 'new' peers. The study uses data collected by the North Carolina Education Research Data Center and concentrates on elementary school children in grades 3-5. The study estimates the linear-in-means model and controls for non-random sorting into peer groups with time constant unobserved covariates. The main finding is that non-random sorting into peer groups diminishes peer effects and are thus important for estimations of peer effects. No difference in the multipliers produced by these two groups of students is found, indicating that it does not matter whether or not a peer's individual is 'old' or 'new'.

Maitri Punjabi– Advised by Dr. Jonathan Williams

# The Impact of Secondary Innovation on Firm Market Value in the Pharmaceutical Industry

This paper analyzes the effect of the changing nature of innovation on pharmaceutical firm market value from 1987 to 2010 by using U.S. patent and claim data. Over the years, firms have started shifting focus from primary innovation to secondary innovation as new ideas and new compounds become more difficult to generate. In this study, we analyze the impact of this patent portfolio shift on the market capitalization of pharmaceutical firms. After using firm fixed effects and the instrumental variable approach, we find that there exists a strong positive relationship between secondary innovations and the market value of the firm– in fact, we find a stronger relationship than is observed between primary innovation and market value. When focusing on the different levels of innovation within the industry, we find that this relationship is stronger for less-innovative firms (those that have produced fewer patents) than it is for highly innovative firms. We also find that this relationship is stronger for firms that spend less on research and development, complementing earlier findings that research productivity is declining over time.

May Tysinger– Advised by Dr. Mike Aguilar

# The Inflation-Utilization Breakdown

Economists recognized the predictive ability of capacity utilization on inflation as early as the 1970s. However, recent research by Dotsey and Stark (2005) from the Federal Reserve Bank of Philadelphia found contradicting empirical results, which shows that the relationship between capacity utilization and inflation has diminished. Our study investigates the potential reasons behind the inflation-utilization relationship breakdown. In particular, the research examines the relationship between capacity utilization and inflationary pressure on an industry specific basis. Empirical analysis shows that the relationship between capacity utilization and future inflation deteriorated after the 1980s, but forecasting power returns marginally after 2000. In addition, while on an aggregate basis, capacity utilization rate contains no information for future inflation measured by producer price index (PPI), empirical results show that the predictive power of industry specific capacity utilization on corresponding industry PPI inflation remains in certain industries.

# Longxuan Wang– Advised by Dr. Jonathan Hill

## Causal Relationship and Volatility Spillover between Chinese CSI 300 Index and Index Futures

This paper examines the causal relationship and volatility spillover between two prices of China's CSI 300 Index, the one in the stock market and the one in the futures market. Empirical studies on various developed markets show that changes in futures prices can help predict changes in stock prices. A study by Yang, Yang, and Zhou (2010), however, finds that the above relationship does not apply to China's CSI 300 Index. High barriers of entry to the futures market are cited as a possible explanation. This study includes periods of both low and high barriers of entry from March 2015 to September 2015, three months before and three months after the market crash in June 2015. By using a vector error correction model (VECM) for mean causality, we find that changes in futures prices cause changes in stock prices in the sense of Granger (1969) when barriers are low, and is non-causal when barriers are high. We also use an extended Q-test for volatility spillover and find evidence of bi-directional volatility spillover when barriers are low but only unidirectional futures-to-stock spillover when barriers are high.

# Will Stelpflug– Advised by Dr. Patrick Conway

This study analyzes the determinants of China’s foreign energy investment during the period 2001 to 2014. These investments include mergers and acquisitions and portfolio investments as well as loans. The analysis is done at the country level and the following factors are considered: motives of market access (such as GDP and Chinese FDI), efficiency/cost reduction (such as GDP growth and per-capita GDP), access to energy resources (such as oil and natural gas reserves) and building political support (such as the presence of arms trade). The determinants of investment are estimated using a Tobit model with random effects, a two-stage Heckman Selection model, and Two-Stage Least-Squares (2SLS) simultaneous equations. Chinese investors are found to take into account considerations of securing access to energy resources, primarily oil, and building political support for China internationally, in tandem with their commercial motives to secure market access and reduce costs. For the largest investments, the motive to secure long-term control over oil supplies is especially strong.

# Robert Harris– Advised by Dr. Andy Yates

## **Price Volatility in Renewable Energy Certificate Markets: Implementing Rate Standards**

This paper offers a policy solution to reduce price volatility in markets for renewable energy certificates (RECs), which have been historically characterized by severe fluctuations. This volatility has resulted from a vertical demand curve for RECs. This study proposes to replace the current regulatory structure with an emissions rate standard that would connect RECs to carbon dioxide emissions. This paper demonstrates that a rate standard will create a downward-sloping demand curve for certificates by giving generators the option to abate pollution or buy certificates. A downward-sloping demand curve is key to limiting price volatility over time. The study builds a theoretical model for certificate demand based on the proposed rate standard constraint and uses a stochastic certificate generation model from Coulon et al. (2015) to model the price of certificates over time. This paper then demonstrates, using a dynamic programming algorithm that an emissions rate standard would reduce REC price volatility.