

## SHORT-TERM GRANTS

## $\mathbf{For}$

## MACROECONOMICS AND POLICY WORKSHOP

April 1, 2018 - March 31, 2019

**Activities Report** 

### **MACROECONOMICS AND POLICY WORKSHOP**

- **Part A:** Summary of GRIPS-Todai Conference on Macroeconomics and Policies
- Part B: Summary of Mini Workshop on Policies in Macroeconomics
- **Part C:** Evaluation and Achievement

## Part A. Overview of GRIPS-Todai Conference on Macroeconomics and Policies

### **Conference program**

Date: November 1-2, 2018

Venue: Room 3C, 3rd Floor, GRIPS

Total number of attendants: 69 (Non-GRIPS participants: 56 GRIPS Students: 7, GRIPS faculty: 6)

PROGRAM (available at <u>https://sites.google.com/site/gripsut2018/</u>)

### Day 1: November 1, 2018

- 09:15-09:30 Welcome coffee
- 09:30-10:15 Espen Henriksen, BI Norwegian Business School "Demographics and the European Divide"
- 10:15-10:35 Coffee break
- 10:35-11:20 Mi Luo, Emory University "Assets and Job Choice: Student Debt, Wages and Job Satisfaction"
- 11:20-11:40 Coffee break
- 11:40-12:50 **Keynote presentation 1: Gueorgui Kambourov, University of Toronto** *"Hours, Occupations, and Gender Differences in Labor Market Outcomes,"*
- 12:50-14:00 Lunch
- 14:00-14:45 Yili Chien, Federal Reserve Bank of St Louis "Optimal Ramsey Capital Income Taxation —A Reappraisal"
- 14:45-15:05 Coffee break
- 15:05-15:50 Minjoon Lee, Carleton University "Older Americans Would Work Longer If Jobs Were Flexible"
- 15:50-16:10 Coffee break
- 16:10-17:15 Keynote presentation 2: Dirk Krueger, University of Pennsylvania "Macroeconomics and Household Inequality: Data, Models and an Application"

### Day 2: November 2, 2018

- 09:00-09:10 Welcome coffee
- 09:10-09:55 Ismail Baydur, Singapore Management University "Duration Dependence and Business Cycles"
- 09:55-10:10 Coffee break
- 10:10-10:55 Keiichiro Kobayashi, Keio University "A Theory of Nonperforming Loans"
- 10.55-11:10 Coffee break
- 11:10-12:20 Keynote presentation 3: Zheng Michael Song, Chinese University of Hong Kong "Conglomerate Formation in China"
- 12:20- Lunch and Adjourn

### Summary of each presentation

Dr. Henriksen gave a presentation of his paper titled "Demographics and the European Divide" in meeting room 3C. His research tried to decompose the effect of demographic changes on the GDP growth among European countries.

Dr. Luo gave a presentation of his paper titled "Assets and Job Choice: Student Debt, Wages and Job Satisfaction" in meeting room 3C. Her research explores the trade-off in the labor market between earning and job satisfaction and how this trade-off is affected by the amount of individuals' debts.

Dr. Kambourov gave a presentation of his paper titled "Hours, Occupations, and Gender Differences in Labor Market Outcomes" in meeting room 3C. His research documents a new empirical findings related to the average and variation in working hours among various occupational groups. He proposes a model that can explain this fact. His model also has an implication in explaining the wage gender gap.

Dr. Chien gave a presentation of his paper titled "Optimal Ramsey Capital Income Taxation — A Reappraisal" in meeting room 3C. His research points out the overlooked mechanism to provide an optimal insurance in an incomplete market economy.

Dr. Lee gave a presentation of his paper titled "Older Americans Would Work Longer If Jobs Were Flexible" in meeting room 3C. His research uses a novel research design question strategy to uncover the underlying preference that affects the retirement decision of American elderly.

Dr. Krueger gave a presentation of his paper titled "Macroeconomics and Household Inequality: Data, Models and an Application" in meeting room 3C. His keynote speech emphasizes the importance of household's heterogeneity in income and wealth when studying the behaviors of macroeconomic variables in response to aggregate shock.

Dr. Baydur gave a presentation of his paper titled "Duration Dependence and Business Cycles" in meeting room 3C. His research illustrates a novel structural model to decompose the effect of statistical discrimination on the hazard rate of unemployment using the variation that happens during the different phase of business cycle.

Dr. Kobayashi gave a presentation of his paper titled "*A Theory of Nonperforming Loans*" in meeting room 3C. His research uses a model when borrows have a limited commitment to explain the inefficiency in bank lending. His model can generate, so called, "Debt Luffer Curve".

Dr. Song gave a presentation of his paper titled "Conglomerate Formation in China" in meeting room 3C. His research documents a new empirical findings related to the formation of conglomeration in China. He proposes a model that can explain this fact. His model also has an implication on how financial friction is a driving force to create the large conglomerations.

### Pictures for the workshop



GRIPS-UT Macroeconomics and Policy Workshop



Espen Henriksen (BI Norwegian Business School)



Mi Luo (Emory University)



Gueorgui Kambourov (University of Toronto)



Yili Chien (Federal Reserve Bank of St Louis)



Minjoon Lee (Carleton University)

## Pictures for the workshop (Cont.)



Drik Krueger (University of Pennsylvania)



Ismail Baydur (Singapore Management University)



Keiichiro Kobayashi (Keio University)



Zheng Michael Song (Chinese University of Hong Kong)



Workshop participants



Workshop participants

## Pictures for the workshop (Cont.)



Discussion during coffee break



Discussion during coffee break



Lunch discussion

Lunch discussion



Discussion during lunch



Discussion after presentation

## Part B. Overview of Mini Workshop on Policies in Macroeconomics

Date: March 22, 2019 (Friday)

Time: 9:15 – 14:00, Venue: Room 4A (GRIPS)

Total number of attendants: 10 (Non-GRIPS participants: 3, GRIPS Students: 4, GRIPS faculty: 3)

### PROGRAM

- 9.15-9:30 Welcome coffee
- 9:30-10:30 **Speaker 1** : Serena Rhee (Korea Development Institute) "Labor Market Screening and Social Insurance Program Design for the Disabled" joint with Naoki Aizawa and Soojin Kim
- 10:30-10:40 **Coffee break**
- 10.40-11:40 **Speaker 2:** Tomoaki Kotera (Bank of Japan) "<u>Old Workers and Fiscal Sustainability in Population Aging</u>"
- 11:40-13:00 Lunch break
- 13:00-14:00 **Speaker 3:** Juliana Yu SUN (Singapore Management University) "<u>Economic Structure and Investment Specific Technical Change</u>" joint with Roberto Samaniegov
- 14:00- **Adjourn**

### Summary of each presentation

Serena Rhee gave a presentation of her paper titled "Labor Market Screening and Social Insurance Program Design for the Disabled". Her research examines the interaction between the discrimination in term of disability in the labor market and the insurance provision through disability insurance program. In her framework, firms have an incentive to use both wage and workplace accommodation for the disable to sort their prospective employees. She also explore the optimal structure of the labor market policy, namely employment subsidy and disability benefit.

Tomoaki Kotera presented his paper titled "Old Workers and Fiscal Sustainability in Population Aging". In his paper, he examine the fiscal sustainability under population aging in the US using a quantitative life-cycle model. This paper argues that old workers are the key to reducing the tax burden. The distinctive features of my model are health capital and education heterogeneity. The main findings are following. In the economy where population growth rate falls and a health condition becomes better, the number of old workers would be larger than the baseline economy. Nonetheless, the government would have to impose somewhat higher additional tax. This additional tax would be levied more heavily if the size of old workers is smaller. More importantly, raising the full-retirement age would be considerably effective to minimize the fiscal cost of aging if more old workers stay in the labor force. Hence, the presence of old workers plays a significant role in sustaining fiscal policy.

Juliana Yu SUN gave a presentation of her paper titled "Economic Structure and Investment Specific Technical Change". Her research documented a new empirical fact related to the dispersion of capital prices across countries. Then she construct a multi-sector model to rationalize this observation. The quantitative results show that her model can well explain the price dispersion as in the data. In addition, she does not find an evidence of a distortion in capital investment in the sample countries.

## Pictures for the workshop



Serena Rhee (Korea Development Institute)

Tomoaki Kotera (Bank of Japan)



Juliana Yu SUN (Singapore Management University)

Welcoming remark



Discussion during break

Audience

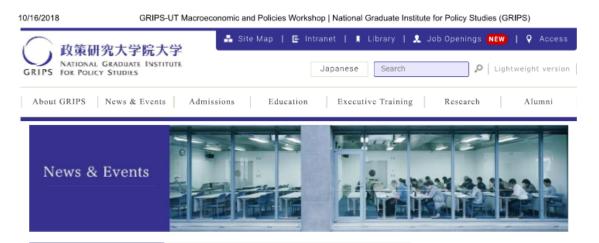
## Part C. Evaluation and Achievement

This year we continued the collaboration with the University of Tokyo and held the 1<sup>st</sup> joint GRIPS-University of Tokyo Macroeconomics and Policy Workshop (the 11th GRIPS International Conference of Macroeconomics and Policy). The workshop brought the world renowned scholars to Tokyo. This included Dr. Gueorgui Kambourov from University of Toronto, Canada, (well-known researcher on topics related to labor market); Dr. Dirk Krueger from University of Pennsylvania, (famous researcher on macroeconomics and public finance, with emphasis on models with heterogeneous households) and Dr. Zheng Michael Song form Chinese University of Hong Kong, (an expert on Chinese economy and political economy) as our keynote speakers. There was a formal call for paper for the workshop, and many high quality papers from researchers both inside and outside Japan submitted to the workshop. Due to the high quality of the submitted papers, we decide to have six additional papers in the program. Speakers were experts in related fields from all over the world, including Norway (BI Norwegian Business School), USA (Emory University, Federal Reserve Bank of St Louis), Canada (Carleton University), Singapore (Singapore Management University), and Japan (Keio University). This conference also attracted many local experts and graduate students to participate, for example researchers (and students) from University of Tokyo, Hitotsubashi University, Kobe University, Ohio State University, Shanghai University of Finance and Economics, University of Queensland, University of Connecticut, Turkish Embassy.

The joint international workshop has brought world famous researchers to Japan and created opportunities for local researchers to learn from and discuss with those experts from overseas. The long continuation of our conference series establishes its reputation among domestic researchers as a major annual economic conference in Tokyo. The conference has built up a close academic collaboration between GRIPS, University of Tokyo, and domestic research institutes in Japan. The participants were from both academic and non-academic groups and the number of participants has been increased over years. More importantly, it has significantly raised both domestic and international recognition of GRIPS's research activities in both the academic and non-academic circles.

In addition to the call for paper and call for participants, we also use various channels to outreach researchers who might be interested in the conference. This includes email circulation, publically accessible conference program website, and GRIPS's event announcement. The following picture is the screenshot from GRIPS's website.

We hope our good effects can be maintained and enlarged by the continuing support from GRIPS' Policy Research Center and by the extended cooperation with more universities in Japan in the next year.



#### **Events** Information

#### 2018.11.1[Thu]

#### GRIPS-UT Macroeconomic and Policies Workshop

The GRIPS will stage its 11th International Conference of Macroeconomics and Policy on Nov 1st and 2nd, 2018, in Tokyo. We intend to provide a forum in Asia for local and international researchers to present their work in related fields, to share research ideas, to discuss related policy issues/implications. We also hope that the conference will be a nice and permanent platform for research cooperation. Please see the detailed information through the link below.

Keynote speakers:

- Dr. Gueorgui Kambourov, University of Toronto
- Dr. Dirk Krueger, University of Pennsylvania
- Dr. Zheng Michael Song, Chinese University of Hong Kong

#### Entry

All participants need to register through the following link [Entry] before Oct 7.

Date / Time	1~2 November, 2018 1 November(Thu) 9:15-17:30 2 November(Fri) 9:15-12:40		
Venue	Meeting Room 3C (3rd floor)		
Fee	Free		
Language	English		
About Entry	Events Information		
GRIPS	Print Out		
-22-1 Roppongi, Minato-ku, Tokyo 106-8677 EL : +81-(0)3-6439-6000 AX : +81-(0)3-6439-6010	Copyright © 2007-2017 National Graduate Institute for Policy Studie		
p://www.grips.ac.jp/en/events/20180912-5496/	1		

Appendix

Material for each presentation

### **Demographics and the European Divide**

Thomas Cooley\* NYU Stern School of Business Espen Henriksen<sup>†</sup> BI Norwegian School of Business Charlie Nusbaum<sup>‡</sup> UC Santa Barbara

August 12, 2018

#### Preliminary and Incomplete; Not Yet For Distribution

#### Abstract

Since the early 1990's there has been a persistent slowdown in the four largest European economies: France, Germany, Italy, and the United Kingdom. The persistence of this decline in economic growth suggests that a low-frequency structural change is the culprit. Changing demographics is one candidate. Over the same period as the growth slowdown, these four countries have experienced aging, both in terms of longer individual life expectancies and a shift in the cohort distribution. An aging population effects aggregate factor supplies and measured productivity growth both through individual factor supply choices and the aggreation of these choices. In this paper, we investigate the extent to which aging populations can account for the decline in economic growth from 1995-2007 among these countries. We then project this demographic transition forward to estimate the likely effect of aging populations on economic growth from 2015-2030. We also analyze the additonal headwind these demographic changes indirectly may place on economic growth through the pension systems. We find that demographic change can account for a significant fraction of the historical decline in economic growth. Moreover, we find that the effects of demographic change will begin to weaken for France whereas they will worsen for the UK, Germany, and Italy who have not yet passed through the most painful phase of their transitions.

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# Assets and Job Choice: Student Debt, Wages and Job Satisfaction\*

Mi Luo<sup>‡</sup>, and Simon Mongey<sup>§</sup>

August 7, 2018

#### Abstract

Higher student debt causes college students to take jobs with higher wages and lower job satisfaction. We arrive at this finding using repeated representative samples of college graduates and exploiting withincollege across-cohort variation in financial aid policies. To explain our finding we work within the search with asset accumulation framework of Lise (2013). This baseline model exhibits a negative relationship between debt and wages: fewer assets decreases reservation wages. When extended to accommodate non-pecuniary amenities the model matches our findings: higher debt tilts acceptance policies toward high wage, low satisfaction jobs. In a quantitative extension we identify the utility value of amenities through observed search behavior conditional on reported satisfaction and income, finding that high satisfaction jobs are valued at 6 percent of lifetime consumption relative to low satisfaction jobs. We find that a third of the welfare gains from a counterfactual *income-based repayment* policy derive from students accepting more satisfying jobs absent the pressure of large initial repayments. This trade-off is large enough that computing welfare using only wages leads to a mistaken inference that students prefer a *fixed repayment* policy.

Keywords: Student debt, college education, labor, search, job satisfaction.

<sup>\*</sup>We thank Katka Borovickova, Jarda Borovicka, Bob Hall, Oleg Itskhoki, Greg Kaplan, Phillip Kircher, David Laibson, Tom Sargent, Kevin Thom, and Gianluca Violante for useful comments and suggestions. We also thank seminar participants at the NYU Macroeconomics Student Lunch, NYU Search and Matching Workshop, Barcelona GSE Summer Forum, Econometrics Summer Forum.

<sup>&</sup>lt;sup>‡</sup>Emory University

<sup>&</sup>lt;sup>§</sup>University of Chicago

## Hours, Occupations, and Gender Differences in Labor Market Outcomes<sup>\*</sup>

Andrés Erosa<sup>†</sup> Universidad Carlos III de Madrid Luisa Fuster<sup>‡</sup> Universidad Carlos III de Madrid

Gueorgui Kambourov<sup>§</sup> University of Toronto

Richard Rogerson<sup>¶</sup> Princeton University

#### Abstract

We document several facts about hours of work, occupations and wages. First, there is a robust negative relationship between the log of mean annual hours in an occupation and the standard deviation of log annual hours within that occupation. Second, high mean hours occupations are associated with higher wages. Third, women are disproportionately represented in low mean hours occupations. We develop a unified model of occupational choice and labor supply that features heterogeneity across occupations in the return to working additional hours and show that it can match the key features of the data both qualitatively and quantitatively. We use the model to shed light on gender differences in labor market outcomes that arise because of gender asymmetries in home production responsibilities. Our model generates large gender gaps in hours of work, occupational choices, and wages. In particular, an exogenous difference in time devoted to home production of ten hours per week increases the observed gender wage gap by roughly eleven percentage points and decreases the share of females in high

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<sup>\*</sup>This version: May 29, 2018. We thank Fabien Postel-Vinay and Henry Siu as well as seminar participants at ASU, the Barcelona Summer School in Economics, Bristol, Bocconi, CEA, CMSG, Chicago, Chicago Fed, Cornell, CREI-UPF, Edinburgh MacCaLM Workshop, ERMAS, Guelph Workshop on Skills and Human Capital, IFS Conference on Labor Supply and the Welfare State, Midwest Macro, Minneapolis Fed, Oslo, Philadelphia Fed, SAEe, San Francisco Fed, Sichuan, SED, Stockholm School of Economics, Sveriges Riksbank, Stanford, Toronto, Toulouse, USC, and UCLA. Erosa and Fuster acknowledge financial support from the Spanish Economics Minister grant #ECO2015-68615-P. Kambourov acknowledges financial support from SSHRC Grant #435-2014-0815.

## Optimal Ramsey Capital Income Taxation —A Reappraisal<sup>\*</sup>

Yili Chien<sup>†</sup> Yi Wen<sup>‡</sup>

July 23, 2018

#### Abstract

This paper uses a tractable model of heterogeneous agents with incomplete credit markets to address a set of long-standing issues in the optimal Ramsey capital taxation literature. The tractability of our model enables us to analytically study the tradeoff facing the Ramsey planner between aggregate allocative efficiency (in terms of the modified golden rule) and individual allocative efficiency (in terms of self-insurance). Facing this trade-off, the Ramsey planner prefers issuing debt rather than taxing capital to correct the capital-overaccumulation problem. In particular, the planner always intends to supply enough bonds to crowd out capital on the one hand and improve individuals' self-insurance position on the other hand to simultaneously achieve the modified golden rule and full self-insurance objectives. Public debt is financed by labor income tax as it is less distortionary than a capital tax. Thus, capital taxation is not the optimal tool to achieve aggregate allocative efficiency despite overaccumulation of capital—because capital tax tightens individual borrowing constraints and deteriorates individual allocative efficiency. Consequently, depending on the planner's ability to issue debt, the optimal capital tax can be zero, positive, or even negative. So, facing the trade-off the modified golden rule can fail to hold in a Ramsey equilibrium whenever the government encounters a debt-limit. Finally, the planner's desire to satiate individuals with sufficient self-insurance can lead to an ever-increasing debt level, resulting in a dynamic path featuring no interior Ramsey steady state. Yet the assumption of the existence of an interior Ramsev steady state is often made in the literature without proof, which can lead to erroneous results.

JEL Classification: E13; E62; H21; H30

Key Words: Optimal Capital Taxation, Ramsey Problem, Incomplete Market

\*The views expressed are those of the individual authors and do not necessarily reflect the official positions of the Federal Reserve Bank of St. Louis, the Federal Reserve System, or the Board of Governors.

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### Older Americans Would Work Longer If Jobs Were Flexible\*

 John Ameriks
 Joseph Briggs
 Andrew Caplin

 The Vanguard Group, Inc.
 Federal Reserve Board of Governors
 New York University and NBE

Minjoon Lee	Matthew D. Shapiro	Christopher Tonetti
Carleton University	University of Michigan and NBER	Stanford GSB and NBER

October 2, 2018

#### Abstract

Older Americans, even those who are long retired, have strong willingness to work, especially in jobs with flexible schedules. For many, labor force participation near or after normal retirement age is limited more by a lack of acceptable job opportunities or low expectations about finding them than by unwillingness to work longer. This paper establishes these findings using an approach to identification based on strategic survey questions (SSQs), purpose-designed to complement behavioral data. These findings suggest that demand-side factors are important in explaining late-in-life labor market behavior and need to be considered in designing policies aimed at promoting working longer.

JEL classification: E24, J22, J26

<sup>\*</sup>This research is supported by a program project grant from the National Institute on Aging P01-AG026571. Andrew Caplin, Joseph Briggs, and Christopher Tonetti acknowledge the support of the Sloan Foundation Working Longer Program for this project. This research uses data from the Vanguard Research Initiative (VRI) that was developed under the NIA program project P01-AG026571. The Vanguard Group Inc. supported the data collection of the VRI. Vanguard's Client Insight Group and IPSOS SA were responsible for implementing the VRI survey and provided substantial input into its design. The design of the VRI benefited from the collaboration and assistance of Wandi Bruine de Bruin, Alycia Chin, Mi Luo, Brooke Helppie-McFall, Ann Rodgers, and Feiya Shao, as part of the program project, and from Annette Bonner (Vanguard), Sophia Bunyaraksh (Vanguard), and Wendy O'Connell (IPSOS SA). For documentation of the VRI, including a dynamic link to the survey instrument, see http://ebp-projects.isr.umich.edu/VRI/. The views expressed herein are those of the authors and do not necessarily reflect the views of The Vanguard Group, Inc. or the Federal Reserve Board.

### Duration Dependence and Business Cycles<sup>\*</sup>

Ismail Baydur<sup>†</sup>

Jianhuan Xu<sup>‡</sup>

Singapore Management University

Singapore Management University

February 2018

#### Abstract

This paper studies duration dependence over the business cycle. We develop a random matching model with aggregate shocks and negative unemployment duration dependence that stems from unobserved heterogeneity, statistical discrimination, and skill decay. We estimate our model using micro-level data from Current Population Survey (CPS) and decompose the contribution of each channel to job finding rates by duration. We identify statistical discrimination and skill decay using the business cycle fluctuations. In our counter-factual analysis, we find that shutting down statistical discrimination alone increases the job finding rates more relative to shutting down skill decay alone. However, job finding rate for long term unemployed increases substantially only if both channels are shut down.

Keywords: Unemployment Duration Dependence, Business cycles, Skill Depreciation, Statistical Discrimination

JEL Classifications: E24,E32,J64

<sup>\*</sup>All errors are our own.

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## Lack of debt restructuring and lenders' credibility

## (A theory of nonperforming loans)

Keiichiro Kobayashi<sup>1</sup> Tomoyuki Nakajima<sup>2</sup> Shuhei Takahashi<sup>3</sup>

<sup>1</sup>Keio University

<sup>2</sup>University of Tokyo

<sup>3</sup>Kyoto University

GRIPS-UT Workshop, November 1-2, 2018

Kobayashi Nakajima Takahashi

Nonperforming loans

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# Labor Market Screening and Social Insurance Program Design for the Disabled<sup>\*</sup>

Naoki Aizawa<sup>†</sup>

Soojin Kim<sup>‡</sup>

Serena Rhee<sup>§</sup>

March 5, 2019

#### Abstract

We evaluate social insurance program designs for the disabled by empirically implementing a frictional labor market model with screening employment contracts. In the model, firms post a screening contract consisting of wage and job amenities, and workers with different levels of disability make labor supply decisions. We first theoretically analyze the optimal structure of disability insurance (DI) and employment subsidies to firms with disabled workers. Then, by exploiting labor-demand-side policy changes for the disabled in the United States, we empirically examine which job amenities may be used by firms to screen out the disabled, and we structurally estimate our equilibrium model. Using the estimated model, we quantitatively explore the optimal joint design of DI and employment subsidies. We find a welfare-improving role for employment subsidies that encourage firms to provide more job amenities, mitigating the labor supply disincentives of DI and labor market distortions induced by firms' screening contracts. Finally, we show that the presence of a firm's screening incentive significantly affects the effectiveness of the policies: the optimal level of DI should be higher to ameliorate contract distortions caused by the firm's screening activities.

### The Potential Rise of Old Workers and Fiscal Sustainability in Population Aging

### Tomoaki Kotera (Bank of Japan)

#### Abstract

Fiscal sustainability under population aging is currently under debate. This paper argues that old workers are the key to reducing the tax burden. To understand the quantitative impact of old workers in aging economy, I construct a general equilibrium of overlapping generation model with heterogeneous agents. The distinctive features of my model are health capital and education heterogeneity. The baseline model describes the United States of 2010 and then simulate population aging (Year 2050). The main findings are following. In the economy where population growth rate falls and a health condition becomes better, the number of old workers would be larger than the baseline economy. Nonetheless, the government would have to impose somewhat higher additional tax. This additional tax would be levied more heavily if the size of old workers is smaller. More importantly, raising the full-retirement age would be considerably effective to minimize the fiscal cost of aging if more old workers stay in the labor force. Hence, the presence of old workers plays a significant role in sustaining fiscal policy.

# Economic Structure and Investment Specific Technical Change\*

Roberto M Samaniego<sup>\*</sup> Juliana Yu Sun<sup>†</sup>

January 16, 2019

#### Abstract

We show that the rate of change in the relative price of capital varies significantly across countries. We then develop a multi-industry growth model where industries may differ in terms of rates of productivity growth. We show that, when the model is calibrated to match differences in economic structure around the world, the model accounts for the extent of dispersion in rates of change in the relative price of capital in the data. Our findings indicate that the rate of change in the relative price of capital can be interpreted as investment-specific technical change i.e. the extent to which productivity growth is relatively more rapid in the capital-producing sector.

*Keywords:* Investment-specific technical change, multi-sector growth models, structural transformation, relative price of capital.

JEL Codes: O11, O13, O33.

\* We are grateful to Michele Boldrin, Hui He, Diego Restuccia and Yong Wang for valuable comments, as well as participants at the Econometric Society North American Meetings at the University of Minnesota 2014, the Midwest Macro Meetings at Washington University - St Louis in 2015, the IMF

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