

# ENJAR LKHAGVAJAV

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## EDUCATION

Ph.D., Economics, Boston University, Boston MA, May 2022 (expected)

Dissertation Title: *Essays on Firm Innovation and R&D*

Main advisor: Stephen J. Terry

M.A., Political Economics, Boston University, Boston MA, 2019

B.S., Economics with Honors and Mathematics (*with Distinction*), University of Michigan,  
Ann Arbor MI, 2015

## FIELDS OF INTEREST

Macroeconomics, Economic Growth, Economics of Innovation

## WORKING PAPERS

["Patent Disclosure, Firm Innovation, and Growth,"](#) August 2021. Job Market Paper

## WORK IN PROGRESS

"Firms' Heterogeneous Innovations,"

"Survey Expectations and the New Keynesian Wage Phillips Curve,"

## WORK EXPERIENCE

Research Assistant for Laurence J. Kotlikoff, Boston University, Fall 2021

Summer Internship, Monetary Policy Department, Bank of Mongolia, Summer 2017,  
Summer 2018

## TEACHING EXPERIENCE

Instructor, Intermediate Macroeconomics, Department of Economics, Boston University,  
Fall 2020

Instructor, Introductory Macroeconomics, Department of Economics, Boston University,  
Summer 2018, Summer 2020

Head Teaching Fellow, Introductory Macroeconomics, Department of Economics, Boston  
University, 2018-2020

Teaching Fellow, Introductory Macroeconomics, Department of Economics, Boston  
University, 2017-2018

Teaching Fellow, Introductory Microeconomics, Department of Economics, Boston  
University, Fall 2016

## PRESENTATIONS

Economics Graduate Student Conference, Washington University in St. Louis, Fall 2021

Technology and Policy Research Initiative, School of Law, Boston University, Fall 2020

Boston University Macro Dissertation Workshop, Fall 2018, Fall 2019, Fall 2020

**FELLOWSHIPS AND AWARDS**

Graduate Student Fellowship, Boston University, 2015-2020  
Mongolian Government Scholarship, Government of Mongolia, 2012-2015  
Departmental Putnam Competition Honorable Mention, University of Michigan, Spring 2013  
Honorable Mention, International Mathematical Olympiad, 2010  
Silver and Bronze Medals, Mongolian National Mathematical Olympiad, 2007-2010

**CITIZENSHIP/VISA STATUS:** Mongolia/F1

**COMPUTER SKILLS**

R, MATLAB, STATA, Cluster Computing

**REFERENCES**

**Professor Stephen J.  
Terry**

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## **Patent Disclosure, Firm Innovation, and Growth (Job Market Paper)**

A patent system requires innovators to reveal their new ideas in return for monopoly rights to their use. This paper shows both empirically and theoretically that patent disclosure requirements can discourage firm patenting. First, I empirically analyze the effect of the American Inventor's Protection Act of 1999 (AIPA), which shortened publication time for patents filed after 2000. Due to earlier patent disclosure, U.S. public firms lowered their patenting and R&D growth. I then build a Schumpeterian endogenous growth model with firm innovation and patenting together with a role for disclosure policy. At the firm level, the model reveals that patent disclosure can lower patenting due to a trade-off between costly disclosure and patent monopoly protection. The model matches the empirical evidence of lower firm patenting due to higher patent disclosure. At the macro level, the patent disclosure could reduce patenting and overall economic growth, contributing to recent U.S. trends.

## **Firms' Heterogeneous Innovations**

The procyclicality of firms' R&D expenses is well documented. At the same time, the cyclicity of firms' patent output, more generally, innovation output is more interesting since the output is what drives the economic growth. Moreover, the nature of innovations in terms of how novel they are is crucial to study the effect of business cycles qualitatively and quantitatively. In that regard, first, I differentiate the firms' patent output into two types, explorative and follow-up, based on the patent citation nature. Then I show evidence for the procyclicality of firm innovation exploration: during a good condition, they produce more explorative patents than follow-up patents. During a downturn, they produce more follow-up patents than explorative patents. To explain the cyclicity, I build a model with heterogeneous innovation and show that with a realistic calibration, the model explains the fact.

## **Survey Expectations and the New Keynesian Wage Phillips Curve**

Learning the dynamics of wage inflation and its relationship with other macroeconomic variables helps to study monetary policy effects and implement optimal policies for central banks. Expectations matter, at least in baseline macroeconomic models, so much that certain monetary policies are relied on the expectation transmission to affect variables in the economy. This paper estimates the New Keynesian Wage Phillips Curve introduced in Gali (2011b) using rational expectations and survey expectations of wage inflation separately in New Zealand. The empirical result implies no significant relationship between the unemployment rate and wage inflation when rational expectations is considered. However, the unemployment rate takes a statistically significant and negative coefficient when the survey expectations is used. The effect of the unemployment rate on wage inflation was most substantial during 2000-2008, during which the unemployment rate dipped to the all-time low level in New Zealand.