**ŁUKASZ RACHEL**

**LONDON SCHOOL OF ECONOMICS & POLITICAL SCIENCE** **Department of Economics**

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**CITIZENSHIP**: Polish, British

**PRE-DOCTORAL STUDIES**:

BSc Economics, 2004-2007, London School of Economics: First Class Honours
MSc Economics (Research), 2007-2008, London School of Economics: Distinction

**DOCTORAL STUDIES**: London School of Economics

DATES: September 2015

THESIS TITLE: Essays in Applied Macroeconomics

COMPLETION DATE: May 2019

THESIS ADVISOR AND REFERENCES:

Professor Ricardo Reis (Advisor)
Department of Economics
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1. Professor Francesco Caselli
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2. Professor Benjamin Moll
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3. Professor Lawrence H Summers
Harvard Kennedy School
79 John F. Kennedy St.
Cambridge, MA 02138
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## DESIRED TEACHING AND RESEARCH:

Primary Fields: Macroeconomics

Secondary Fields: Growth, Labor, Monetary, Macro-finance, Political Economics

## TEACHING EXPERIENCE:

From 2007 to 2008 **Teaching assistant at the LSE**, undergraduate micro and macro.

## RELEVANT POSITIONS HELD:

From 2018 to now **Senior Research Advisor**, Financial Stability Directorate, Bank of England

From 2012 to 2018 **Senior Economist**, International Directorate, Bank of England

From 2008 to 2012 **Economist**, Monetary Analysis, Bank of England

## PROFESSIONAL SERVICE:

Referee for: *Econometrica, American Economic Review: Insights, Journal of the European Economic Association, Economic Journal, American Economic Journal: Macroeconomics, Journal of Public Economics, Journal of Labor Economics, Macroeconomic Dynamics, Journal of Mathematical Economics, International Finance, Economica, Scandinavian Journal of Economics*.

## LANGUAGES

| Basic Spoken | Fluent Spoken |
|---|---|
| German, Spanish | English, Polish |

| Basic Written | Fluent Written |
|---|---|
| German, Spanish | English, Polish |

## HONORS, SCHOLARSHIPS AND FELLOWSHIPS:

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|---|---|
| 2017-2018 | UK-US Fulbright Commission All-Disciplines Postgraduate Award |
| 2017-2018 | Visiting Research Student, Department of Economics, Harvard University |
| 2015-2017 | Bank of England PhD Sponsorship, LSE |
| 2007-2008 | Bank of England Masters' Degree Sponsorship, LSE |

## COMPLETED PAPERS:

***Job Market Paper:***

**Leisure-enhancing technological change**, R&R Econometrica, October 2020

Modern economies are awash with leisure-enhancing innovations: services supplied in exchange for time and attention, rather than money. This paper develops a general equilibrium theory of such services. At

its core the model features platforms which supply consumers with the non-rival leisure services and businesses with intangible capital. There are five main results. First, leisure technologies emerge endogenously along the growth path. Second, the theory matches the trend-decline in hours worked observed in the data. Third, growth of TFP and output declines once the leisure economy emerges. As currently measured, the GDP growth statistics do not capture the value of the zero-price services, but growth declines even if these services are measured. Finally, there are two new inefficiencies in the market equilibrium: the static inefficiency implies undersupply of leisure-enhancing technology. Dynamic inefficiency goes the other way, emphasizing the adverse impact of leisure-enhancing innovations on future productivity.

***Other Papers:***

**An Analytical Model of Covid-19 Lockdown**, Submitted, August 2020

This paper studies locking down and re-opening an economy during an epidemic. Unlike other models in this area, the framework is analytically tractable, with equilibrium social distancing behavior and optimal lockdown policies described using phase diagrams. The analytics uncover two main insights. First, absent policy intervention, individual precautionary behavior dramatically flattens the epidemic curve relative to a mechanistic workhorse epidemiological model, so much so that the infection externality leads to too much, not too little, social distancing in equilibrium. The equilibrium is characterized by a sharp drop in the effective reproduction number R from approximately R0 during the initial phase of the epidemic to close to but below 1 subsequently. Second, if the infection fatality rate is exogenous, the optimal policy does not flatten the curve per se; instead it avoids the second wave of infections and prevents the epidemic overshoot, minimizing the long-run spread of the disease and cumulative deaths. Because the optimal policy is at the corner of the trade-off between deaths and economic disruption, it is almost entirely independent of the economic parameters such as the value of statistical life.

**The Second Wave**, First Draft, August 2020

Abstract What determines the likelihood of a second wave of an epidemic? Absent a vaccine, populations remain prone to a return of the disease as long as the level of susceptibility remains above the herd immunity threshold. This means that the effectiveness of mitigation policies and behaviors is critical: a lockdown that is sufficiently effective in suppressing the virus paradoxically creates a possibility of a second wave. Indeed, there is a trade-off between the success of initial suppression and the magnitude of the second wave that occurs once restrictions are lifted. The mitigation effectiveness also determines the direction and magnitude of the infection externality that is present in the decentralized equilibrium. A looming second wave means that a more effective lockdown is a high-risk-high-reward instrument: it is greatly beneficial if timed optimally, but carries graver consequences if it is mis-timed.

**Uneven Growth**, with Ben Moll and Pascual Restrepo, Advanced Draft, October 2020

Over the past forty years, economic growth in the United States has been unevenly distributed: income percentiles corresponding to the lower half of the distribution have stagnated while those at the top have sharply increased. At the same time, the aggregate labor share has fallen and wealth inequality has risen. We study technical change as a candidate cause of these trends. To this end, we develop a tractable theory that links technology to the personal income and wealth distributions, and not just the wage distribution as is commonly done in the existing literature. We use this theory to study the distributional effects of automation, defined as technical change that substitutes labor with capital. We isolate a new theoretical mechanism: automation may increase inequality via increasing returns to wealth. The flip side of this mechanism is that, relative to theories in which returns are unaffected, automation is more likely to lead to stagnant wages and therefore stagnant incomes at the bottom of the income distribution. We confront our model with the data and argue that automation can account for part of the observed trends in the distribution of wages, incomes and wealth as well as macroeconomic aggregates.

**On Secular Stagnation in Industrialized World**, with Lawrence H. Summers, Published in Brookings Papers on Economic Activity, October 2019

We argue that the economy of the industrialized world, taken as a whole, is currently—and for the foreseeable future will remain—highly prone to secular stagnation. But for extraordinary fiscal policies, real interest rates would have fallen much more and be far below their current slightly negative level, current and prospective inflation would be further short of the 2 percent target levels, and past and future economic recoveries would be even more sluggish. Using estimates drawn from the literature—as well as two general equilibrium models emphasizing, respectively, life-cycle heterogeneity and individual uncertainty— we suggest that the "private sector neutral real rate" may have declined by as much as 700 basis points since the 1970s. The extent of the substantial shifts in private saving and investment propensities over time has been obscured by the impact of this decline in real rates. Our diagnosis necessitates radical revisions in the conventional wisdom about monetary policy frameworks, the role of fiscal policy in macroeconomic stabilization, and the appropriate level of budget deficits, as well as social insurance and regulatory policies. To that end, much more of creative economic research is required on the causes, consequences, and policy implications of the pervasive private sector excess saving problem.

**Are Low Real Interest Rates Here to Stay?,** with Thomas D Smith, published in International Journal of Central Banking, Vol 13, Number 3, September 2017. This is a shorter and revised version of **Secular drivers of the global real interest rate**, Bank of England Staff Working Paper 571, 2015

Long-term real interest rates across the world are low, having fallen by about 450 basis points (bps) over the past thirty years. To understand whether low real rates are here to stay, we need to understand what has caused the decline. The co-movement in rates across both advanced and emerging economies suggests a common driver: the global neutral real rate may have fallen. In this paper we attempt to identify which secular trends could have driven such a fall. Although there is huge uncertainty, under plausible assumptions we think we can account for around 400 bps of the 450 bps fall. Our quantitative analysis highlights slowing global growth expectations as one force that may have pushed down on real rates recently, but shifts in saving and investment preferences appear more important in explaining the long-term decline. We think the global saving schedule has shifted out in recent decades due to demographic forces, higher inequality, and, to a lesser extent, the glut of precautionary saving by emerging markets. Meanwhile, desired levels of investment have fallen as a result of the falling relative price of capital, lower public investment, and an increase in the spread between risk-free and actual interest rates. Looking ahead, in the absence of sustained changes in policy, most of these forces look set to persist, and some may even build further. This suggests that the global neutral rate may remain low and perhaps settle at around 1 percent in the medium to long run. If true, this will have widespread implications for policymakers-not least in how to manage the business cycle if monetary policy is frequently constrained by the zero lower bound.

**Assessing Vulnerabilities to Financial Shocks,** with Jack Fisher, published in Journal of Risk Management, Vol. 10, Number 1, 2017

This paper describes a quantitative, data-driven method to assess vulnerabilities in a range of countries. We provide country-level vulnerability indices that can be used to gauge the level of fragility at any point in time. In particular, our results suggest that in the run-up to the global financial crisis, vulnerabilities rose to extremely high levels in the USA, but were only a little above average in Europe and had actually receded across much of Asia. The picture has changed dramatically during the recovery, however, with vulnerabilities close to record-highs by the end of 2015 in some of the Asian economies. We document numerous practical challenges that arise when developing such a toolkit, the main one being to know the trend — the 'neutral' level — of a financial variable (eg credit-to-GDP). In that context, one important contribution of this paper is to document the robustness of vulnerability measures to different judgements about the trend level of financial variables. We find that for most countries results are fairly robust to different views of the underlying trend, but importantly that this robustness is not universal. In particular,

at the moment differing views of what 'the new normal' is suggest dramatically different assessments of the level of fragility in the USA and South Korea.

**RESEARCH IN PROGRESS**:

**Automation, Unemployment and Inequality,** work in progress, October 2020

In this paper I study how technological shifts – such as better or more plentiful automation technologies – affect unemployment and inequality in general equilibrium. The model economy features a task-based framework with an endogenous technology choice, incomplete insurance markets and labor market frictions. I show that demand for automation is inversely related to the interest rate and that this sensitivity increases with the existing level of automation. The interplay between incomplete insurance markets and equilibrium unemployment underlies two novel general equilibrium feedback loops that emerge in response to technological shocks. First, these shocks raise income inequality – wages of the wealthy increase by more than the wages of the poor – and thus boost the desire to save: a "saving for higher wages" effect. Second, automation lowers unemployment in the short-run but raises it in the long-run. In the long-run, with higher unemployment risk, savings rise for precautionary reasons: a "risk-mitigation effect". Both mechanisms depress the interest rate and further raise the adoption of capital-intensive technologies.

**Weak Wages and Slow Recoveries** with Rana Sajedi, work in progress, October 2020

Using a continuous time heterogenous agents model with search and matching frictions in the labor market, we analyze how the precautionary motives affected the labor market, and in particular the wage pressures, during and in the aftermath of the Global Financial Crisis.

**Is monetary policy boring?** work in progress, October 2020

Analysis of monetary policy shocks in the information-rich setting using tools from machine learning.