Richmond Fed-UVA Research Workshop

Summary of Presented Research

October 5, 2018
Richmond, Virginia

9:15 a.m.
Welcome and Introductions
Huberto Ennis,
Group Vice President for Macro
and Financial Economics
Federal Reserve Bank of Richmond

9:30 a.m.
Jae Won Lee
Assistant Professor, University of Virginia
*Macroeconomic Effects of Capital
Tax Rate Changes*

10:45 a.m.
Andreas Hornstein
Senior Advisor
Federal Reserve Bank of Richmond
*Aggregate Labor Force Participation and
Unemployment and Demographic Trends*

12:45 a.m.
Grey Gordon
Senior Economist
Federal Reserve Bank of Richmond
*A Quantitative Theory of Hard and Soft
Sovereign Defaults*

2:00 p.m.
Eric Young
Professor, University of Virginia
The Dynamics of the Racial Wealth Gap

3:00 p.m.
Huberto Ennis
*Interventions in Markets with Adverse
Selection: Implications for Discount
Window Stigma*

Since 2014, the economics departments of the Federal Reserve Bank of Richmond and the University of Virginia have a held a semiannual research workshop to share their latest research.

The workshop began as a way to build on the existing partnerships between Richmond Fed and UVA economists. The two institutions have enjoyed long-standing connections on the teaching side, with Richmond Fed staff teaching both undergraduate and graduate classes at UVA, as well as participating in PhD student advising. UVA faculty have been frequent visitors to the Richmond Fed, and there have been many fruitful coauthor relationships between the two groups. In addition, both institutions have a deep interest in understanding the economic forces that shape our national and regional economy. These connections spurred them to partner more formally — on UVA's campus in the spring and in Richmond in the fall — to exchange research ideas. In both Charlottesville and Richmond, economists and graduate students have benefited tremendously from the dialogue with their colleagues from different areas of the economics profession.

Indeed, the profession overall has become increasingly collaborative over the years. Data are more abundant, and research is more quantitative and reliant on specialized methodologies. These trends make relationships within the profession and the continual exchange of ideas even more important to producing effective research that sits at the forefront of today's most pressing research and policy questions.

Within this pamphlet, you'll find summaries of the research discussed at the most recent Richmond Fed-UVA workshop on topics ranging from sovereign default to inequality. Both the Richmond Fed and UVA look forward to continuing and strengthening a relationship that helps each be better, recruit better, and stay better.

Macroeconomic Effects of Capital Tax Rate Changes

By Saroj Bhattarai (University of Texas at Austin), Jae Won Lee (University of Virginia), Woong Yong Park (Seoul National University), and Choongryul Yang (University of Texas at Austin)

Recent U.S. tax reforms reduced the capital tax rate, inviting several questions: What are the long-run and the short-run effects on output, investment, and consumption? What are the distributional consequences? Do wages, consumption, and income inequality increase or decrease? Do these effects depend on how the government finances the change? Are transition dynamics and short-run effects contingent on the stance of monetary policy?

The paper by Bhattarai, Lee, Park, and Yang addresses these questions using a real business cycle model augmented with adjustment costs in investment and prices. The model also features skill heterogeneity, complementarity between high-skilled workers and equipment, and incomplete consumption insurance.

The authors find that a permanent reduction in the capital tax rate from 35 percent to 21 percent generates nontrivial long-run macroeconomic effects, which depend quantitatively on how the tax cuts are financed. If the government has the ability to finance the capital tax in a nondistorting way by cutting back lump-sum transfers, output increases by 10.8 percent,

consumption by 6.7 percent, and investment by 34.7 percent. However, if the government has to rely on distortionary labor taxes, the effects are smaller: output increases by 6.1 percent, consumption by 2.2 percent, and investment by 29 percent. Furthermore, the ratio of after-tax capital income to labor income always increases — even without heterogeneity — and in fact, after-tax wages and labor income decrease in the case of a labor tax rate increase. During the transition to the new steady state, the economy experiences a decline in consumption, output, hours, and wages.

The contraction is more severe when prices are more rigid, monetary policy is less aggressive in stabilizing inflation, and capital tax cuts are financed by raising labor tax rates rather than cutting back lump-sum transfers. Income inequality, the skill premium, and consumption inequality all increase during the transition to a higher long-run level. Finally, the authors find that aggregate effects are affected by the monetary policy response to inflation, how inertial are interest rate changes, and whether there is coordination between monetary and fiscal policy.

Aggregate Labor Force Participation and Unemployment and Demographic Trends

By Andreas Hornstein (Richmond Fed) and Marianna Kudlyak (San Francisco Fed)

Most of the discussion about labor market trends proceeds at an aggregate level, yet unemployment and labor force participation (LFP) rates differ systematically across demographic groups — for example, age, gender, and education. As a result, changes in the demographic composition of the population may affect aggregate labor market trends.

Hornstein and Kudlyak study trends for the U.S. unemployment and LFP rates from 1976 to 2017. Their paper confirms persistent differences in trends across demographic groups. The authors estimate the trends for the LFP and unemployment rates of various demographic groups and combine them with the groups' population shares to construct the aggregate trends of LFP and unemployment rates.

The approach in estimating the trends of aggregate LFP and unemployment rates employs group-specific age-cohort-cycle models. To estimate group trends, they use the civilian noninstitutionalized population age 16 or above from the Current Population Survey data set and categorize the sample into age-gender-education cells. They first estimate the age, cohort, and cycle effects for each gender-education group and calculate the trend of each group as the sum of the age and cohort effects. The trend aggregate LFP and unemployment rates are then calculated as the populated-weighted sum of the groups' trends. What is novel about this approach is that it allows the age effects to vary over time for each group instead of adding additional controls to the age-cohort models.

The authors then use counterfactual experiments to evaluate the contribution of demographic changes to

the trend aggregate LFP and unemployment rates. The results show that the trend aggregate unemployment rate declined from 7 percent in 1976 to 4.5 percent in 2017, and that this decline is almost exclusively driven by demographic factors, about equal contributions from an older and more educated population. The hump-shaped trend LFP rate is driven by aging and increased educational attainment, as well as changes in groups'

trend LFP rates, such as increasing LFP for women prior to 2000.

Finally, extrapolating the estimated trends using Congressional Budget Office population forecasts, the authors project that both the trend LFP rate and the trend unemployment rate will decline over the next ten years.

A Quantitative Theory of Hard and Soft Sovereign Defaults
By Grey Gordon (Richmond Fed) and Pablo Guerrón-Quintana (Boston College)

Sovereign default is a frequent phenomenon, but research is unclear on how default affects a country's economic output. Recent empirical research shows a striking difference in the path for output following "hard" versus "soft" defaults. Hard defaults are characterized by large haircuts and are associated with a sharp and extremely persistent decline in output. Soft defaults feature small haircuts and are associated with a small decline on impact and growing output post-default. This is unexplained by benchmark models, in which defaults feature 100 percent haircuts.

Gordon and Guerrón-Quintana incorporate defaults that are "partial" in the sense of featuring a range of possible haircuts. They address the questions of what determines hard and soft default episodes and how much of the output dynamics are causal. That is, to what extent does low output growth incentivize hard defaults (that is, slowly growing countries are more likely to default) and to what extent does a hard default result in low output growth (that is, default causes low growth)?

In the standard model, the sovereign's decision to default is a once-and-for-all decision to never repay any

existing debt. In contrast, the authors assume the sovereign decides whether to make prescribed debt payments on a period-by-period basis. They further assume that output is given by a transitory shock and a permanent component subject to a growth shock. The model is calibrated using a simulated method of moments and later combined with the bootstrap particle filter and data on output and spreads to recover the path of structural shocks, haircuts, and the cost of default. With this approach, they decompose how much of the empirical correlation between default intensity and output growth is selection and how much is causal.

The calibrated model predicts that growth shocks are the main determinant of whether default is hard or soft. Bad growth shocks reduce output and incentivize default for a long period of time, leading to large haircuts, whereas bad transitory shocks reduce output for a short period of time and result in small haircuts. A decomposition of model forces shows that one-third of hard defaults and one-tenth of soft defaults are explained by actual default costs, with the rest explained by selection.

The Dynamics of the Racial Wealth Gap
By Dionissi Aliprantis (Cleveland Fed), Daniel Carroll (Cleveland Fed), and Eric Young (University of Virginia)

In 1962, the average black household had 18 percent of the wealth and 52 percent of the labor income of the average white household. In 2016, the shares were 20 percent and 58 percent, respectively. Given this persistent racial wealth gap, Aliprantis, Carroll, and Young address two questions: How long should it take the wealth gap to converge, and how important are certain variables in explaining the wealth gap?

The authors employ a model in which heterogeneous households work, consume, save, and eventually retire. Households die with a probability that increases in each period and receive a "warm glow" from leaving a bequest to another household of the same race upon death. Firms pay white and black households an equal rate of return for capital; however, they pay black households less for labor. Firms give what they don't pay black households to white households.

Using the initial 1962 wealth distribution, the authors find it would take 259 years for the black/white wealth ratio to reach 0.9 if the labor income gap closed at the same rate at which it closed between 1962 and 2007. They then run counterfactual experiments to explore how the labor income gap, inheritances, different rates of return for capital, and initial wealth affect the wealth gap. They find that the labor income gap accounts for three-fourths of the wealth gap. If the labor income gap had immediately closed in 1962, then the black/white wealth ratio would have reached 0.93 by 2007. However, if the gap had closed about 60 percent slower than it actually did, then the wealth gap ratio would not reach 0.90 until the year 5877. Additionally, they find that

differences in initial wealth account for one-third of the gap but become less important over time.

Perhaps surprisingly, the authors find that neither differences in bequests nor differences in the returns to capital play an important role in maintaining the wealth gap. Bequests are unimportant because they only make up about 1.7 percent of an individual's wealth. Returns to capital are unimportant because of the large role played by the difference in labor income. The authors suggest that the best approach a policy-maker could take to close the wealth gap would be to improve the labor income gap.

Interventions in Markets with Adverse Selection: Implications for Discount Window Stigma

By Huberto M. Ennis (Richmond Fed)

There is consensus building among policymakers that the Fed's discount window suffers from stigma, that is, the potential reluctance of banks to borrow from the central bank for fear of being regarded as in weak financial condition. The concern is that stigma reduces the efficacy of the discount window. Yet, from a theoretical perspective, stigma is not a well-understood phenomenon.

The paper by Ennis seeks to shed light on the nature of discount window stigma by studying the issue using a workhorse model of adverse selection in financial markets. Different versions of a discount window policy are considered, and the author discusses situations when equilibrium outcomes are consistent with the empirical manifestation of discount window stigma.

The model consists of a continuum of firms, a set of risk-neutral investors, and a central bank. Firms hold a legacy asset of heterogeneous quality that is only privately known, giving rise to the possibility of adverse selection. Firms also have an investment project for which they require external funding that can be provided by investors. Without government intervention, not all firms invest and the level of investment is

inefficient. Discount window lending can improve such a situation.

When the size of the discount window loan is sufficient to cover firms' funding needs, the equilibrium can have riskier firms borrowing from the discount window and less risky firms borrowing from investors. This negative selection at the discount window — a feature of stigma — does not create extra costs because borrowing firms do not need additional funds from the market.

When loans at the discount window are not sufficient to finance an investment project, firms need to also borrow from the market. In this case, firms that borrow from the discount window may pay higher interest rates in the market. Also, firms that do not borrow from the discount window pay a higher interest rate in the market than what they would pay if they borrowed from the discount window. These outcomes are often associated with stigma. However, in the model, this configuration of rates and borrowing activities cannot be obviously considered an indication of problems. Rather, they are an integral part of the way the government intervenes to improve efficiency in the economy.