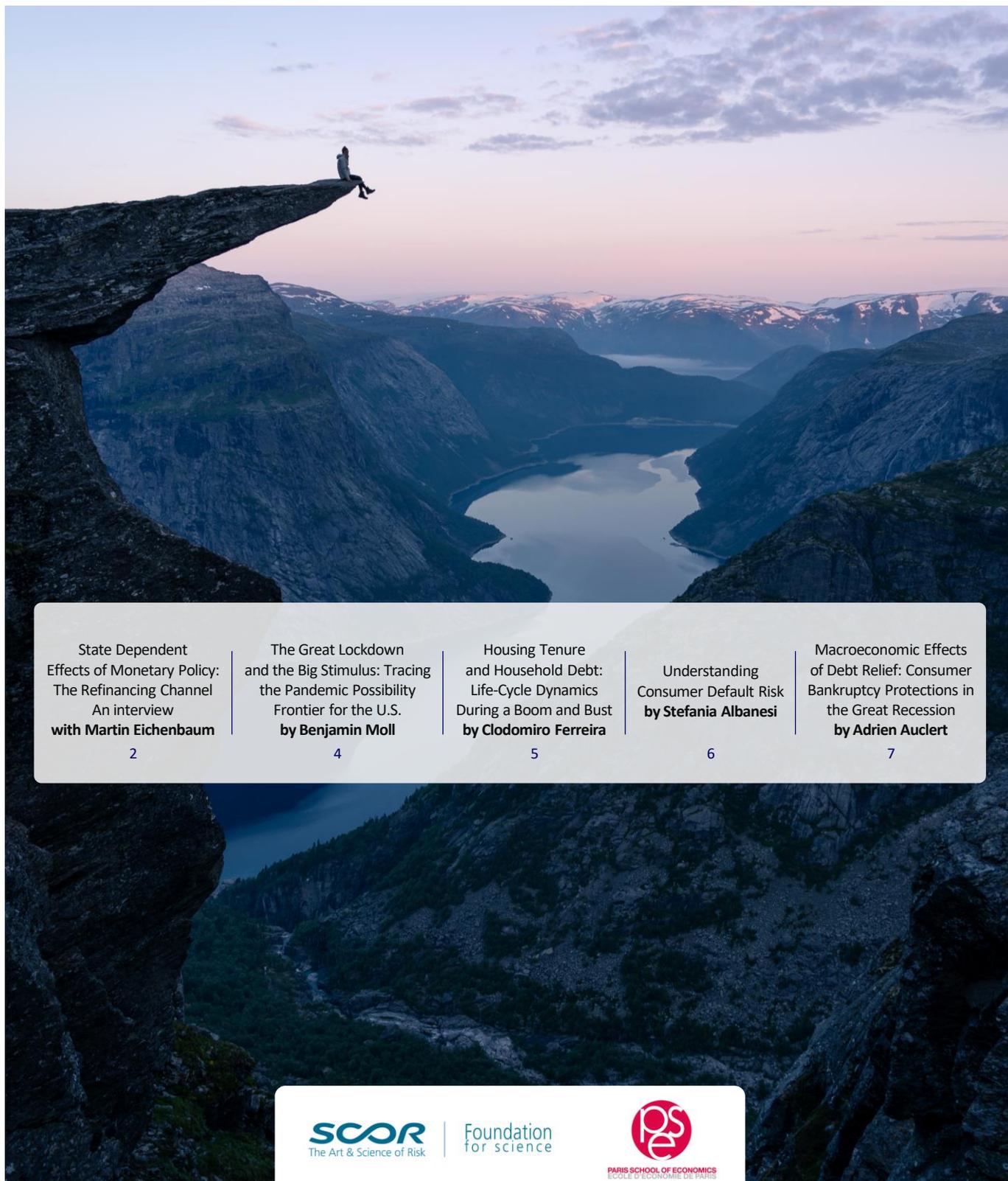


The third annual conference of the SCOR-PSE Chair was held online on September 17, 2020. The keynote lecture was given by **Martin Eichenbaum** (Northwestern University) and several influential economists also participated to present their most recent research on macroeconomic risk.

This newsletter includes an interview of Martin Eichenbaum and a brief description of the research papers discussed at the conference. [+](#)



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# State Dependent Effects of Monetary Policy: The Refinancing Channel

## AN INTERVIEW WITH MARTIN EICHENBAUM

On September 17, 2020, **Martin Eichenbaum** (Northwestern University) gave an online lecture on the theme of monetary policy. Following this lecture, we had the opportunity to interview him about his latest research.

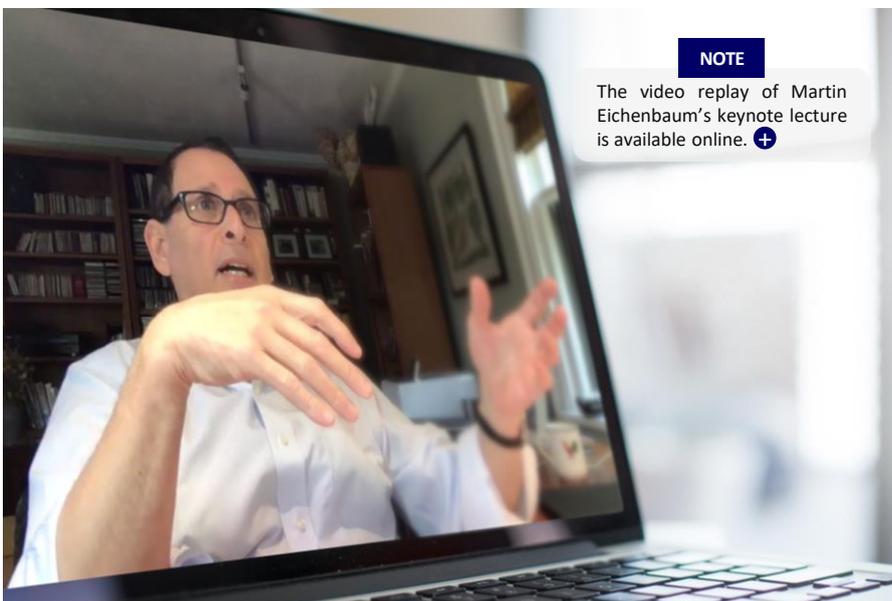
**MONETARY POLICY SEEMS TO HAVE BECOME LESS EFFECTIVE OVER THE LAST DECADE, LEADING THE ECB TO LAUNCH A STRATEGIC REVIEW PROGRAM THIS YEAR. HOW DOES THE PAPER YOU PRESENTED AT THE CONFERENCE - AND YOUR RESEARCH AGENDA MORE GENERALLY - FIT INTO THIS BROAD QUESTION?**

Real and nominal interest rates have declined substantially over the past thirty years. The decline has been particularly dramatic over the past decade. An important part of my research deals with the impact of low interest rates on the efficacy of monetary policy. In different papers I have explored how the traditional monetary transmission mechanism becomes weaker when interest rates are low for a long time, how the zero-lower bound on interest rates affected the Great Recession, and the enhanced importance of fiscal policy in low interest rate periods.

**CAN YOU TELL US MORE ABOUT THE NEW EVIDENCE YOU SHOW IN YOUR PAPER, ON THE STATE-DEPENDENCY OF REFINANCING RATES IN THE US?**

Our specific findings can be summarized as follows. First, there are strong state-dependent effects of a change in mortgage rates on refinancing rates. Second, there are important state dependent effects on the percentage of mortgages with cash-out refinancing, i.e. refinanced mortgages that have higher balances than the ones being replaced. Cash-out refinancing is important because households predominantly use this type of refinancing to increase their consumption. Finally, we find that changes in monetary policy have important state-dependent effects on actual economic activity, as measured by the unemployment rate, aggregate consumption and the number of permits required for new privately-owned residential buildings.

**IN YOUR ARTICLE, YOU DEVELOP A RICH STRUCTURAL MODEL TO UNDERSTAND THE ROLE OF THE REFINANCING CHANNEL. CAN YOU EXPLAIN THE DIFFERENT MECHANISMS INVOLVED? IN PARTICULAR, WHAT HAPPENS WHEN THE CENTRAL BANK DECREASES THE INTEREST RATE?**



### NOTE

The video replay of Martin Eichenbaum's keynote lecture is available online. [+](#)

People in our model face fixed costs when they buy a new home or refinance a mortgage. The decision to refinance depends on the potential savings relative to refinancing costs. A drop in the short-term interest rate induces a decline in the mortgage rate and a rise in the potential savings from refinancing. The latter effect induces an increase in refinancing activity as well as home-owners' disposable incomes and consumption expenditures. Because of short-term borrowing constraints and loan-to-value constraints on mortgages, many home owners are liquidity constrained. When these types of people refinance, they take out cash-out mortgages, effectively loosening their liquidity constraints. The resulting effect on their consumption is much larger than what would be expected from a simple permanent income type calculation.

Consistent with the U.S. data, the large aggregate rise in consumption in our model after a drop in the interest rate is predominantly driven by liquidity-constrained households.

**HOW DOES THIS EFFECT DEPEND ON THE HISTORY OF MONETARY POLICY ACTIONS?**

According to our model, the effect of an interest rate cut depends on the history of monetary policy choices. A drop in the interest rate is less powerful when preceded by a sequence of rate hikes. When rates have been rising, many homeowners have existing fixed mortgage rates lower than the current market rate. So, they aren't

motivated to refinance in response to a modest fall in the interest rate. In contrast, a given interest rate cut is more powerful when preceded by a sequence of rate cuts. When rates have been constant for a long time or falling, many homeowners have fixed mortgage rates that are higher than the new market rate. So, they have a strong incentive to refinance their mortgages.

We use our model to study the impact of a long period of low interest rates on the potency of monetary policy. We find that this potency is substantially reduced for a substantial amount of time after interest rates renormalize. The size of these effects is substantial. In our model-based experiments, when interest rates are below their steady-state values for six years, monetary policy is less potent for up to two years after renormalization.



## REFERENCES

Eichenbaum, Martin, Sergio Rebelo and Mathias Trabandt, The Macroeconomics of Epidemics, March 2020, Working Paper No. 26882. National Bureau of Economics.



### OVERALL, WHAT ARE THE IMPLICATIONS FOR THE DESIGN OF OPTIMAL MONETARY POLICY?

Our model points to an important cost of fighting recessions with a prolonged period of low interest rates. The cost is that the policy reduces the potency of monetary policy in the period after interest rates are normalized. If the economy is hit by a negative shock during that period, policy makers will have less ammunition at their disposal to work with. If they are prepared to cut interest rates by large amounts, e.g. 100 basis points, the potency problem isn't an issue as long as monetary policy isn't constrained by the zero-lower bound. To the extent that the zero lower bound is a constraint, it would be difficult for policymakers to lower rates by a large amount. That in turn raises the conundrum: should monetary policy makers use their ammunition to fight an ongoing recession or the next one?

### IS THERE ALSO A NEW ROLE FOR FISCAL POLICY AT THE ZERO-LOWER BOUND? WHAT FORM SHOULD IT TAKE?

Absolutely. Secular stagnation and low interest rates compel us to re-think the extent to which fiscal policy should be

used to combat recessions. In various papers I have argued that we should adopt a system of asymmetric, automatic stabilizers. Programs like unemployment benefits would, by law, become more generous when macro indicators hit pre-specified macro targets indicating that the zero lower bound constraint on interest rates was binding. Programs would revert to normal levels when those macro targets returned to pre-specified levels. An even more ambitious program would involve legislated, asymmetric changes in tax rates.

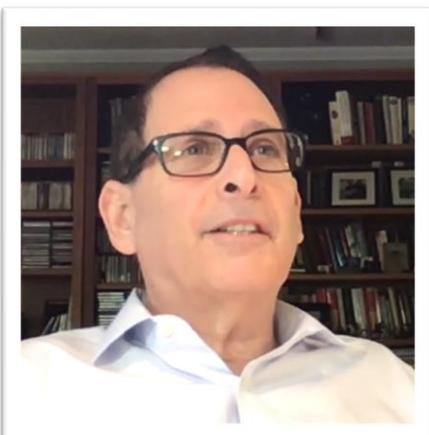
### FINALLY, WE WOULD LIKE TO HAVE YOUR OPINION ON THE CURRENT COVID-CRISIS. GOVERNMENTS ARE CURRENTLY FACING A TOUGH DILEMMA BETWEEN RAISING THE DEATH TOLL AND AGGRAVATING THE RECESSION. ACCORDING TO YOU, IS THERE A WAY TO IMPROVE THE CURRENT TERMS OF THE TRADE-OFF BETWEEN HEALTH AND ECONOMIC COSTS?

Most governments responded initially to the

COVID-19 crisis by implementing simple measures to contain the epidemic. These policies imply a sharp, negative trade-off between the level of economic activity and the health consequences of an epidemic. While beneficial from a health perspective, brute force containment measures aren't politically sustainable. The economic pain is simply too large. It's critically important to design policies that improve the trade-off between economic activity and

“Should monetary policy makers use their ammunition to fight an ongoing recession or the next one?”

health outcomes. Mandatory masks and measures to protect old people are obvious examples of such policies. Less obviously, smart- containment policies that combine testing and quarantines dramatically improve the trade-off. We argue that those policies would result in fewer deaths and a smaller recession than under simple containment or no government intervention at all. In that sense, there is no trade-off: good health policy is good economic policy.



**Martin Eichenbaum** is the Charles Moskos Professor of economics and the co-director of the Center for International Economics at Northwestern University. He is a fellow of the American Academy of Arts and Sciences, a fellow of the Econometric Society, a Research Associate of the NBER and an International Fellow of the C.D. Howe Institute. In addition, he is a Director of the Bank of Montreal (BMO) as well as the Aaron Institute for Economic Policy at the Interdisciplinary Center Herzlia.

He is currently the co-editor of the NBER Macro Annual. He was co-editor of the American Economic Review as well as an associate editor of the Journal of Monetary Economics, the American Economic Journal - Macro, and the Journal of Money, Credit and Banking. He is currently a consultant to the Federal Reserve Bank of San Francisco. He has served as a consultant to the Board of the Governors of the Federal Reserve System, the Federal Reserve Banks of Atlanta, Cleveland and Chicago as well as the International Monetary Fund, Hightower Associates and Goldman Sachs. He received a PhD in economics from the University of Minnesota.

# The Great Lockdown and the Big Stimulus: Tracing the Pandemic Possibility Frontier for the U.S.

**Greg Kaplan, Benjamin Moll and Giovanni L. Violante**, The Great Lockdown and the Big Stimulus: Tracing the Pandemic Possibility Frontier for the U.S., NBER Working Paper No. 27794, 2020. This paper was presented by Benjamin Moll (LSE).

The US policy response to the COVID-19 pandemic has been a **combination of lockdown and fiscal stimulus**, also known as the CARES act. The lockdown aimed at protecting the people’s lives while the fiscal stimulus aimed at supporting the downward-spiralling economy. However, governments face strong trade-offs in handling the current crisis: a longer lockdown generates higher economic costs. How large are those trade-offs? How do different policy mixes compare to each other?

The present paper addresses these questions by deriving a **“pandemic possibility frontier”** (or PPF hereafter), that is a diagram plotting the estimated distribution of economic cost and total number of deaths for different hypothetical policies. Importantly, the authors do not only focus on the aggregate effects but also explore the **full distributional consequences of each policy mix**. Indeed, the measures might have heterogeneous effects on different segments of the population, depending on the extent to which remote work is possible or the amount of liquid wealth owned.

To derive the PPF, the authors build an integrated model, which combines a state-of-the-art epidemiological (SIR) model with a macroeconomic heterogeneous agent model. It features **two-way interactions between the virus and economy activity**: more economic activity increases infection risks while higher infection risk discourages economic activity. Moreover, the economic side of the model features **different sources of heterogeneity**:



the authors distinguish between different types of sectors and occupations. For example, social sectors interactions (like going to the restaurant) while regular sectors or home production do not. Similarly, the extent to which occupations allow for remote work (“occupational flexibility”) varies a lot. Finally, the authors calibrate the model to the U.S. economy and examine several counterfactuals, e.g. “laissez-faire” vs lockdown policy.

require physical

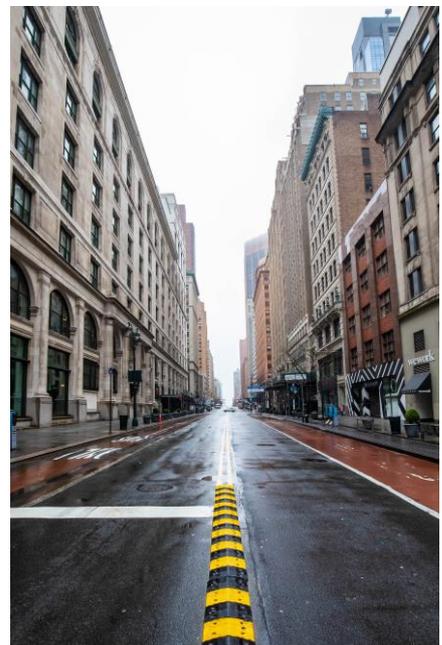
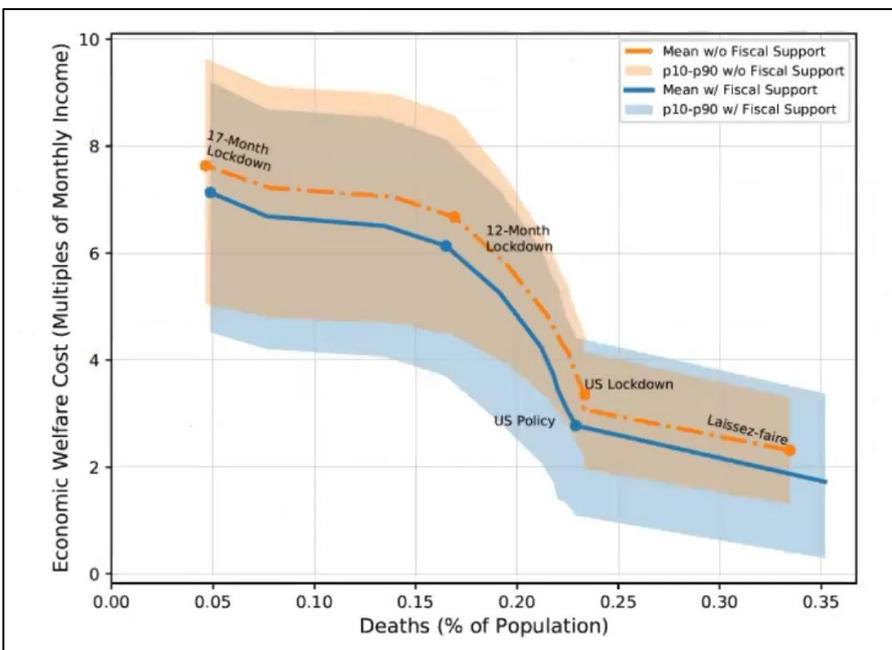
This stands regardless of the policy response, i.e. there are economic costs in the laissez-faire scenario too. The largest

The model features two-way interaction between the virus and economic activity.

welfare costs are borne by the middle class because they have low occupational flexibility and benefit less from the fiscal stimulus than the bottom of the income distribution. Second, the intensity of the trade-off - as measured by the slope of the

PPF - varies substantially depending on the length of the lockdown. This is largely driven by the fact that once the hospital bed constraints is reached, a reduction in the death toll comes at very high economic costs.

The results of the paper are the following. First, **the economic welfare cost of the pandemic are large and heterogeneous.**





## Housing Tenure and Household Debt: Life-Cycle Dynamics During a Boom and Bust

Clodomiro Ferreira, Julio Gálvez and Myroslav Pidkuyko, Housing Tenure and Household Debt: Life-cycle Dynamics During a Boom and Bust, Working Paper, 2020. This paper was presented by Clodomiro Ferreira (Bank of Spain).

Spain went through a **very intense boom-bust cycle** between 2002-2015. Households' consumption, disposable income, outstanding credit and housing investment all went through the same characteristic pattern: first a phase of positive growth up to a peak in 2008, then followed by a second phase of sharp decline. The boom-bust cycle also materialized through drastic changes in credit conditions, changes in labour income dynamics and changes in fiscal conditions. This paper studies how the different cohorts of households were affected by the boom-bust cycle. **How is it reflected on the observed life-cycle profiles**, that is the patterns of consumption and home ownership at different ages? What is the role of the changes in credit conditions, labour income dynamics and fiscal conditions in generating the observed cohort dynamics?

To address these questions, the authors use a **detailed panel dataset on Spanish households' balance sheet between 2002-2017**, which includes notably the household's consumption, asset and income levels. First, they perform a **multivariate heterogeneity analysis** and study how consumption insurance and home ownership changed by assets, income and age. Crucial to the analysis is the estimation of a generalized non-linear income process, which allows to capture the persistency of some labour events (e.g. losing one's job). Second, they build a **rich structural model with life-cycle dynamics and a housing market in equilibrium**, which is estimated

via the Simulated Method of Moments. This enables the authors to perform some counterfactual experiments: they sequentially shut down the observed changes in credit supply, in income dynamics and in fiscal conditions.

The findings are the following. **First, cohort effects rather than age effects drive the dynamics between expansion and recession.** This means that young people entering adulthood during the bust ("at the wrong time") were hit particularly bad - relative to young people entering later.

Second, **there are strong age and history dependence in income dynamics**, which translates into substantial variations in marginal propensity to consume. For example, there is a significant increase in the persistence of bad shocks (e.g. unemployment) for people in the bottom of the income distribution after 2008. Third, they show that **the dynamics is well-explained by a combination of all factors**, i.e. a tightening of credit conditions, fiscal changes and a "worsening" of labour income dynamics.

The boom-bust cycle also materialized through drastic changes in credit conditions, in labour income dynamics and in fiscal conditions.



# Understanding Consumer Default Risk

**Stefania Albanesi and Domonkos F. Vamossy**, Strategic Mortgage Default: Evidence from Machine Learning and Implications for Theory and Policy, Working Paper (forthcoming). This paper was presented by Stefania Albanesi (University of Pittsburgh).

**Consumer credit has grown tremendously** over the last decades, both in the U.S. and in Europe. Given today's outstanding level of consumer debt, small variations in the default rate of consumers could have large macroeconomic impact. Hence, **identifying the determinants of consumer default risk is of first-order importance**. However, credit score models - a widely used ranking of consumer default risk - are proprietary and therefore lack both transparency and accountability. Moreover, they failed to predict mortgage defaults in 2007-2009. Can we get a **better understanding of consumer default risk**, from both a lender and policy-maker perspective?



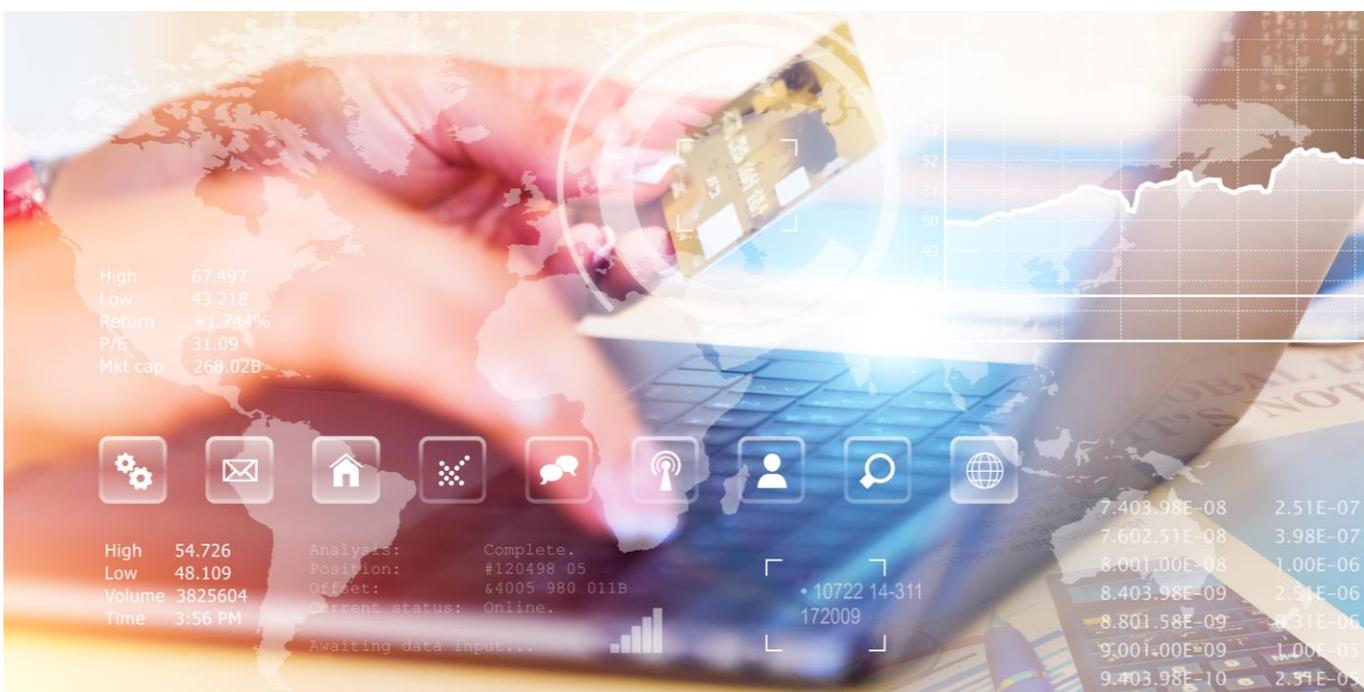
The role of the present paper is to **develop a measure of default risk that performs better than credit score models**. To do so, the authors estimate a "transition function" that predicts whether a debtor will default in the next period, conditional on its history and a list of observable explanatory variables. Note that their data consists in credit report data only, i.e. the same data that credit score companies have access to, so that the horse race between both their own model and credit score models makes sense. In particular, gender, race and other protected information cannot be used as variables. **The originality of the current approach lies in the fact**

**The role of the present paper is to develop a measure of default risk that performs better than credit score models.**

**that it makes an extensive use of tools from machine learning (ML hereafter)** - neural network models here - to estimate non-parametrically the probability to default. Indeed, machine learning techniques are good at capturing associations and discovering regularities in high-volume and high-dimensional data. In contrast, standard regression models have poor performance in such settings because of their usual assumptions of normality, linearity and variable independence.

Their findings can be summarized as follows. First, **their model has a strong predictive**

**power**. Indeed, the average predicted default rate matches quite well the realized default rates. In addition, the true positive rate (people who actually ended up defaulting) is about 75% while the false positive rate (people who do not end up defaulting but that are predicted to default) are about 12%. Second, **their model performs better than credit score models under all standard performance metrics** (e.g. AUC, which traces true positive rates as the classification threshold varies). Third, the authors are able to trace out **which features of the model contribute most to the prediction** using a criterion that is popular in the ML literature, namely the Shapely Additive Explanation (SHAP) criterion. In their model, it appears that the current level of total debt balance plays an important role. In contrast, credit score models put more important weight to the history of default and the number of loans.



# Macroeconomic Effects of Debt Relief: Consumer Bankruptcy Protections in the Great Recession

Adrien Auclert, Will Dobbie and Paul Goldsmith-Pinkham, Macroeconomic Effects of Debt Relief: Consumer Bankruptcy Protections in the Great Recession, NBER Working Paper No. 25685, 2019. This paper was presented by Adrien Auclert (Stanford University).



## NOTE

The video replay of Adrien Auclert's lecture is available online. [+](#)

There is a wide perception that **household debt played a key role in the fall in employment** after 2007. The mechanism comes as follows: the decline in housing value together with the contraction in credit supply resulted in a decline in aggregate consumption, which affected negatively employment. A direct implication of this narrative is that **debt forgiveness would have helped in 2008**. However, in order to evaluate such policy proposals, we first need to have an idea of **how much consumer debt relief can help the economy**. This paper is the first to provide evidence on the macroeconomic implications of large consumer debt relief.

**This paper is the first to provide evidence on the macroeconomic implications of large consumer debt relief.**

As a starting point, the authors document that there was **indeed substantial debt forgiveness during the Great Recession**: it amounted to 1% of GDP, i.e. about the level of the Unemployment Insurance during the Great Recession. Nevertheless, they cannot use this variation alone because consumer write-downs went up exactly when employment was going down. Hence, they turn to the cross-section and **exploit (arguably exogenous) variations in debtor protections across U.S. states**. They find that high protection states experienced a higher number of debt charge-offs and a lower decline in non-tradable employment during the Great Recession. They argue this effect is not driven by unobservable differences

between states: indeed, there were no significant differences in charge-offs and non-tradable employment between high- and low-exemption states before 2008.

Then, the authors construct the **relative employment multiplier**, which measures the effect of an increase in debt forgiveness on employment in high protection states relative to low protection states. They simply compute the former by taking the ratio of the percentage change in employment over the number of write-downs and find a high and significant relative multiplier of

1.81 for non-tradable employment but a non-significant relative multiplier for tradable employment. However, this analysis focuses on relative effects and hence **potentially misses the effect of debt forgiveness in the sole low protection states**. In particular, there could be positive spill-over effects between regions affecting low-protection states positively when debt forgiveness increases in high protection states.

In order to recover the total effect of debt relief, the authors **build a rich structural model**. The model features two regions (high and low exemptions), two goods (tradable and non-tradable) and two agents (borrowers and savers), along with New-Keynesian features (sticky prices). They model debt relief as an unexpected transfer from savers to borrowers, with monetary policy at the ZLB. The results are as follows. First, they need high aggregate price stickiness to match relative non-tradable and tradable multiplier. Second, the zero tradable relative multiplier masks **large positive responses of both regions**, because of positive spillovers between regions through non-tradable employment. Third, they find that **employment would have been 2% higher if bankruptcy protection had been high everywhere before the Great Recession**.

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