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The Latest REM [Working Papers](#)

The center of [Research in Economics and Mathematics](#) (REM) circulates research, notably by its affiliated members, as working papers intended for professional and public discussion and comment. The papers have not been peer reviewed.

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Events

25/02/2019, 11:00h. Model Averaging techniques with Economic applications: a Bayesian perspective, Gonzalo Garcia-Donato, Universidad de Castilla-La Mancha.

26/02/2019, 17:00h. BPLIM, Paulo Guimarães, Banco de Portugal.

[1. Market Timing with Option-Implied Distributions in an Exponentially Tempered Stable Lévy Market](#), João Guerra, Manuel Guerra, Zachary Polaski, *Working Paper 074-2019*.

This paper explores the empirical implementation of a dynamic asset allocation strategy using option-implied distributions when the underlying risky asset price is modeled by an exponential Lévy process. One month risk-neutral densities are extracted from option prices and are subsequently transformed to the risk-adjusted, or real-world densities. Optimal portfolios consisting of a risky and risk-free asset rebalanced on a monthly basis are then constructed and their performance analyzed. It is found that the portfolios formed using option-implied expectations under the Lévy market assumption, which are flexible enough to capture the higher moments of the implied distribution, are far more robust to left-tail market risks and offer statistically significant improvements to risk-adjusted performance when investor risk aversion is low, however this diminishes as risk aversion increases.

[2. Do households care about cash? Exploring the heterogeneous effects of India's demonetization](#), Sudipto Karmakar, Abhinav Narayanan, *Working Paper 073-2019*.

The recent demonetization exercise in India is a unique monetary experiment that made 86 percent of the total currency in circulation invalid. In a country where currency in circulation constitutes 12 percent of GDP, the policy turned out to be a purely exogenous macroeconomic shock that affected all agents of the economy. This paper documents the impact of this macroeconomic shock on one such systematically important agent of the economy: the household. By construction, the policy helped households with bank accounts in disposing of the demonetized cash. We use a new household-level data set to tease out the effects of this policy on households with no bank accounts relative to households with bank accounts. Our results show that the impact of demonetization on household income and expenditure has been transient with the major impact being seen in December-2016. We find that households with no bank accounts experienced a significant decrease in both income and expenditure in December-2016. There is significant heterogeneity in the impact across households indifferent asset classes. We also show evidence of recovery of household finances whereby households were able to smooth out consumption during the post-demonetization period. However, this recovery phase is associated with an increase in household borrowing from different sources, primarily for the purpose of consumption. In particular, informal borrowing (money lenders, shops) increased substantially during this period. Thus, the policy although transient in nature, contributed to the unintended consequence of increased leverage for households.

[3. Sovereign Ratings and Finance Ministers Characteristics](#), António Afonso, João Tovar Jalles, *Working Paper 072-2019*.

This paper empirically assesses the effect of a newly-compiled set of finance ministers' characteristics on the setting by rating agencies of the long-term sovereign rating notations. Using a sample of 26 EU countries between 1980-2012, we find that the existence of more focused delegation-oriented fiscal framework, the Minister of Finance being a woman, and the Minister of Finance having a degree in the areas of finance or "hard sciences" seems to contribute to a better sovereign rating notation, and the opposite in the case of a Law background.

[4. Local territorial reform and regional spending efficiency](#), António Afonso, Ana Venâncio, *Working Paper 071-2019*.

We investigate the effect of a local territorial reform, which reduced the number of parishes, on municipality spending efficiency in the period 2011-2016. We build a composite output indicator and use Data Envelopment Analysis (DEA) to compute efficiency scores, which we then analyze through a second stage regression with socio-demographic, economic factors and the reform. We find efficiency gains for around 10% of municipalities overall. In Alentejo and in Centro, more than 50% of the municipalities improved efficiency. The second stage results show that the reform did not improve local spending efficiency in Mainland Portugal, particularly in the Norte region.

[5. Asymptotic Poincaré Maps along the Edges of Polytopes](#), Hassan Najafi Alishah, Pedro Duarte, Telmo Peixe, *Working Paper 070-2019*.

For a class of flows on polytopes, including many examples from Evolutionary Game Theory, we describe a piecewise linear model which encapsulates the asymptotic dynamics along the heteroclinic network

formed out of the polytope's vertexes and edges. This piecewise linear flow is easy to compute even in higher dimensions, which allows the usage of numeric algorithms to find invariant dynamical structures such as periodic, homoclinic or heteroclinic orbits, which if robust persist as invariant dynamical structures of the original flow. We apply this method to prove the existence of chaotic behavior in some Hamiltonian replicator systems on the five dimensional simplex.

[6. Permanence in Polymatrix Replicators](#), Telmo Peixe, *Working Paper 069-2019*.

Generally a biological system is said to be permanent if under small perturbations none of the species goes to extinction. In 1979 P. Schuster, K. Sigmund, and R. Wolff [14] introduced the concept of permanence as a stability notion for systems that models the self-organization of biological macromolecules. After, in 1987 W. Jansen [8], and J. Hofbauer and K. Sigmund [5] give sufficient conditions for permanence in the usual replicators. In this paper we extend these results for polymatrix replicators.

[7. Assessing Pension Expenditure Determinants the Case of Portugal](#), Maria Teresa Medeiros Garcia, André Fernando Rodrigues Rocha da Silva, *Working Paper 068-2019*.

Pension expenditure is a concern for the sustainability of public finances in the European Union. Therefore, assessing pension expenditure determinants is crucial. This study aims to disentangle the impact of demographic and economic variables, such as ageing, productivity, and unemployment, on pension expenditure. Using Portuguese time-series data, from 1975 to 2014, statistical evidence was found of co-integration between unemployed people aged between 15 and 64 years old, apparent productivity of labour, the old-age dependence index and pension expenditure as a share of gross domestic product. The use of a vector error correction model, with impulse-response functions and variance decomposition, showed that ageing has an almost insignificant impact in the long-run, when compared with unemployment and productivity.

[8. The Effects of Macroeconomic, Fiscal and Monetary Policy Announcements on Sovereign Bond Spreads: An Event Study from the EMU](#), António Afonso, João Tovar Jalles, Mina Kazemi, *Working Paper 067-2019*.

We assess the impact of announcements corresponding to different fiscal and monetary policy measures on the 10-year sovereign bond yield spreads (relative to Germany) of the 10 EMU countries during the period 01:1999 -07:2016. Implementing pooled and country-fixed effects OLS regressions, we find that the European Commission's (EC) releases of the excessive deficit procedure significantly affect the yield spreads. The EC releases of higher debt and better budget balance forecasts contribute to the rise and the decline of spreads, respectively. Moreover, we find that the announcements of the ECB's key interest rates together with the longer-term refinancing operations (LTROs) and the first covered bond purchase programme (CBPP1) negatively affect sovereign yield spreads in our sample of EMU countries.