António Rua

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Education

Technical University of Lisbon
>   Ph.D. in Economics, 2011 (Distinction)

Nova School of Business and Economics:
>   M.Sc. in Economics, 2003 (Best M.Sc. Student Award)

Nova School of Business and Economics
>   *Licenciatura* in Economics, 1999

Employment

Banco de Portugal, since 1999

Economics and Research Department:

2006-...	Head of Unit
2003-...	Portuguese Economy Division
2000-2003	Monetary Policy Division
1999-2000	Portuguese Economy Division

Nova School of Business and Economics:

2016-...	Associate Professor
2014-2016	Principal Researcher
2003-2010	Assistant Professor

Publications in refereed journals

31) Rua, A. (2018) "Modelling currency demand in a small open economy within a monetary union", *Economic Modelling*, 74, 88-96.

30) Pereira, J, Pesquita, V., Rodrigues, P. and Rua, A. (2018) "Market integration and the persistence of electricity prices", *Empirical Economics*, https://doi.org/10.1007/s00181-018-1520-x.

29) Pereira, J. and Rua, A. (2018) "Asset Pricing with a Bank Risk Factor", *Journal of Money, Credit and Banking*, vol. 50, no. 5, 993-1032.

28) Dias, F., Pinheiro, M. and Rua, A. (2018) "A bottom-up approach for forecasting GDP in a data rich environment", *Applied Economics Letters*, vol. 25, no. 10, 718-723.

27) Rua, A. (2017) "A wavelet-based multivariate multiscale approach for forecasting", *International Journal of Forecasting*, vol. 33, 581-590.

26) de Carvalho, M. and Rua, A. (2017) "Real-time nowcasting the US output gap: Singular spectrum analysis at work", *International Journal of Forecasting*, vol. 33, 185-198.

25) Duarte, C., Rodrigues, P. and Rua, A. (2017) "A Mixed Frequency Approach to the Forecasting of Private Consumption with ATM/POS Data", *International Journal of Forecasting*, vol. 33, 61-75.

24) de Carvalho, M. and Rua, A. (2016) "Discussion of 'Of quantiles and expectiles: consistent scoring functions, Choquet representations and forecast rankings' by Ehm, W., Gneiting, T., Jordan, A. and Kruger, F. ", *Journal of the Royal Statistical Society Series B*, vol. 78, no. 3, 539-540.

23) Bobeica, E., Esteves, P. S., Rua, A. and Staehr, K. (2016) "Exports and domestic demand pressure: a dynamic panel data model for the euro area countries", *Review of World Economics*, vol. 152, no. 1, 107-125.

22) Esteves, P. S. and Rua, A. (2015) "Is there a role for domestic demand pressure on export performance?", *Empirical Economics*, vol. 49, no. 4, 1173-1189.

21) Dias, F., Pinheiro, M. and Rua, A. (2015) "Forecasting Portuguese GDP with factor models: pre- and post-crisis evidence", *Economic Modelling*, vol. 44, 266-272.

20) Rua, A. and Lopes, A. S. (2014) "Cohesion within the euro area and the U. S.: a wavelet-based view", *Journal of Business Cycle Measurement and Analysis*, vol. 2014/2.

19) de Carvalho, M. and Rua, A. (2014) "Extremal dependence in international output growth: Tales from the tails", *Oxford Bulletin of Economics and Statistics*, vol. 76 (4), 605-620.

18) de Carvalho, M., Rua, A. and Turkman, K. F. (2013) "Dynamic threshold modelling and the US business cycle", *Journal of the Royal Statistical Society Series C*, vol. 62, no. 4, 535-550.

17) Rua, A. (2013) "Worldwide synchronization since the nineteenth century: a wavelet-based view", *Applied Economics Letters*, 20, 773-776.

16) Pinheiro, M., Rua, A. and Dias, F. (2013) "Dynamic factor models with jagged edge panel data: Taking on board the dynamics of the idiosyncratic components", *Oxford Bulletin of Economics and Statistics*, vol. 75, no. 1, 80-102.

15) Dias, F., Pinheiro, M. and Rua, A. (2013) "Determining the number of global and country-specific factors in the euro area", *Studies in Nonlinear Dynamics & Econometrics*, 17(5), 573-617.

14) Rua, A. (2012) "Money growth and inflation in the euro area: a time-frequency view", *Oxford Bulletin of Economics and Statistics*, vol. 74, no.6, 875-885.

13) Rua, A. and Nunes, L. C. (2012) "A wavelet-based assessment of market risk: The emerging markets case", *Quarterly Review of Economics and Finance*, vol. 52, 84-92.

12) de Carvalho, M., Rodrigues, P. C. and Rua, A. (2012) "Tracking the US business cycle with a singular spectrum analysis", *Economics Letters*, vol. 114, 32-35.

11) Rua, A. (2011) "A wavelet approach for factor-augmented forecasting", *Journal of Forecasting*, vol. 30, 666-678.

10) Rua, A. (2010) "Measuring comovement in the time-frequency space", *Journal of Macroeconomics*, vol. 32, 685-691.

9) Dias, F., Duarte, C. and Rua, A. (2010) "Inflation expectations in the euro area: Are consumers rational?", *Review of World Economics*, vol. 146, no. 3, 591-607.

8) Dias, F., Duarte, C. and Rua, A. (2010) "Inflation (mis)perceptions in the euro area", *Empirical Economics*, vol. 39, 353-369.

7) Dias, F., Pinheiro, M. and Rua, A. (2010) "Forecasting using targeted diffusion indexes", *Journal of Forecasting*, vol. 29, no. 3, 341-352.

6) Rua, A. and Nunes, L. C. (2009) "International comovement of stock market returns: a wavelet analysis", *Journal of Empirical Finance*, vol. 16, 632-639.

5) Reis, H. and Rua, A. (2009) "An input-output analysis: linkages vs. leakages", *International Economic Journal*, vol. 23, no. 4, 527-544.

4) Rünstler, G., Barhoumi, K., Benk, S., Cristadoro, R., den Reijer, A., Jakaitiene, A., Jelonek, P., Rua, A., Ruth, K. and Van Nieuwenhuyze, C. (2009) "Short-term forecasting of

GDP using large datasets: A pseudo real-time forecast evaluation exercise", *Journal of Forecasting*, vol. 28, no. 7, 595-611.

3) Duarte, C. and Rua, A. (2007) "Forecasting inflation through a bottom-up approach: How bottom is bottom?", *Economic Modelling*, 24, 941-953.

2) Valle e Azevedo, J., Koopman, S. J. and Rua, A. (2006) "Tracking the business cycle of the Euro area: a multivariate model-based band-pass filter", *Journal of Business & Economic Statistics*, vol. 24, no 3, 278-290.

1) Rua, A. and Nunes, L. C. (2005) "Coincident and leading indicators for the euro area: A frequency band approach", *International Journal of Forecasting*, vol. 21, no 3, 503-523.

Working papers

29) Esteves, P., Portela, M. and Rua, A. (2018) "Does domestic demand matter for firms' exports", Working Paper no. 26/2018, Banco de Portugal.

28) Rua, A. (2017) "Modelling currency demand in a small open economy within a monetary union", Working Paper no. 10/2017, Banco de Portugal.

27) Portugal, P. and Rua, A. (2017) "Zooming the Ins and Outs of the U.S. Unemployment", Working Paper no. 3/2017, Banco de Portugal.

26) Rua, A. (2016) "A wavelet-based multivariate multiscale approach for forecasting", Working Paper no. 12/2016, Banco de Portugal.

25) Pereira, J, Pesquita, V., Rodrigues, P. and Rua, A. (2016) "Market integration and the persistence of electricity prices", Working Paper no. 9/2016, Banco de Portugal.

24) Duarte, C., Rodrigues, P. and Rua, A. (2016) "A Mixed Frequency Approach to Forecast Private Consumption with ATM/POS Data", Working Paper no. 1/2016, Banco de Portugal.

23) de Carvalho, M. and Rua, A. (2014) "Real-time nowcasting the US output gap: Singular spectrum analysis at work", Working Paper no. 16/2014, Banco de Portugal.

22) Bobeica, E., Esteves, P. S., Rua, A. and Staehr, K. (2014) "Exports and domestic demand pressure: a dynamic panel data model for the euro area countries", Working Paper no. 15/2014, Banco de Portugal (also available as European Central Bank Working Paper no. 1777).

21) Esteves, P. S. and Rua, A. (2013) "Is there a role for domestic demand pressure on export performance", Working Paper no. 3/2013, Banco de Portugal (also available as European Central Bank Working Paper no. 1594).

20) Rua, A. and Lopes, A. S. (2012) "Cohesion within the euro area and the U. S.: a wavelet-based view", Working Paper no. 4/2012, Banco de Portugal.

19) Rua, A. and Nunes, L. C. (2012) "A wavelet-based assessment of market risk: The emerging markets case", Working Paper no. 3/2012, Banco de Portugal.

18) Pereira, J. P. and Rua, A. (2012) "Asset pricing with a bank risk factor", Working Paper no. 2/2012, Banco de Portugal.

17) Rua, A. (2011) "Money growth and inflation in the euro area: a time-frequency view", Working Paper no. 22/2011, Banco de Portugal.

16) de Carvalho, M., Rodrigues, P. C. and Rua, A. (2010) "Tracking the US business cycle with a singular spectrum analysis", Working Paper no. 9/10, Banco de Portugal.

15) de Carvalho, M. and Rua, A. (2010) "Extremal dependence in international output growth: Tales from the tails", Working Paper no. 8/10, 2010, Banco de Portugal.

14) Rua, A. (2010) "A wavelet approach for factor-augmented forecasting", Working Paper no. 7/10, Banco de Portugal.

13) de Carvalho, M., Rua, A. and Turkman, K. F. (2010) "Nonstationary extremes and the US business cycle", Working Paper no. 3/10, 2010, Banco de Portugal.

12) Rua, A. (2010) "Measuring comovement in the time-frequency space", Working Paper no. 1/10, Banco de Portugal.

11) Pinheiro, M., Rua, A. and Dias, F. (2009) "Dynamic factor models with jagged edge panel data: Taking on board the dynamics of the idiosyncratic components", Working Paper no. 13/09, Banco de Portugal.

10) Rua, A. and Nunes, L. C. (2009) "International comovement of stock market returns: a wavelet analysis", Working Paper no. 4/09, Banco de Portugal.

9) Dias, F., Duarte, C. and Rua, A. (2008) "Inflation expectations in the euro area: Are consumers rational?", Working Paper no. 23/08, Banco de Portugal.

8) Dias, F., Pinheiro, M. and Rua, A. (2008) "Determining the number of factors in approximate factor models with global and group-specific factors", Working Paper no. 9/08, Banco de Portugal.

7) Dias, F., Pinheiro, M. and Rua, A. (2008) "Forecasting using targeted diffusion indexes", Working Paper no. 7/08, Banco de Portugal.

6) Barhoumi, K., Benk, S., Cristadoro, R., Reijer, A., Jakaitiene, A., Jelonek, P., Rünstler, G., Rua, A., Ruth, K., and van Nieuwenhuyze, C. (2008) "Short-term forecasting of GDP using large datasets: A pseudo real-time forecast evaluation exercise", ECB Occasional Paper Series no. 84, European Central Bank.

5) Dias, F., Duarte, C. and Rua, A. (2007) "Inflation (mis)perceptions in the euro area", Working Paper no. 15/07, Banco de Portugal.

4) Reis, H. and Rua, A. (2006) "An input-output analysis: linkages vs. leakages", Working Paper no. 17/06, Banco de Portugal.

3) Duarte, C. and Rua, A. (2005) "Forecasting inflation through a bottom-up approach: the Portuguese case", Working Paper no. 2/05, Banco de Portugal.

2) Valle e Azevedo, J., Koopman, S. J. and Rua, A. (2003) "Tracking growth and the business cycle: a stochastic common cycle model for the euro area", Working Paper no. 16/03, Banco de Portugal (also available as Discussion Paper no. 03-069/4, Tinbergen Institute).

1) Rua, A. and Nunes, L. C. (2003) "Coincident and leading indicators for the euro area: a frequency band approach", Working Paper no. 7/03, Banco de Portugal.

Other publications

13) Dias, F., Lourenço, N. and Rua, A. (2018) "Forecasting exports with targeted predictors", Banco de Portugal Economic Studies, vol. 4, no. 2, 45-62, Banco de Portugal (also available in Portuguese as "Previsão das exportações com seleção de previsores", Revista de Estudos Económicos, vol. 4, no. 2, 51-69, Banco de Portugal).

12) Rua, A. (2017) "Dating the Portuguese business cycle", Banco de Portugal Economic Studies, vol. 3, no. 1, 43-58, Banco de Portugal (also available in Portuguese as "Datação dos ciclos económicos em Portugal", Revista de Estudos Económicos, vol. 3, no. 1, 47-63, Banco de Portugal).

11) Dias, F., Pinheiro, M. and Rua, A. (2016) "A bottom-up approach for forecasting GDP in a data rich environment", Banco de Portugal Economic Studies, vol. 2, no. 3, 1-19, Banco de Portugal (also available in Portuguese as "Previsão do PIB através de uma abordagem bottom-up num contexto rico em informação", Revista de Estudos Económicos, vol. 2, no. 3, 1-20, Banco de Portugal).

10) Rua, A. (2015) "Revisiting the monthly coincident indicators of Banco de Portugal", Banco de Portugal Economic Studies, vol. 1, no. 1, 49-64, Banco de Portugal (also available in

Portuguese as "Indicadores coincidentes mensais do Banco de Portugal revisitados", Revista de Estudos Económicos, vol. 1, no. 1, 51-67, Banco de Portugal).

9) Dias, F., Pinheiro, M. and Rua, A. (2014) "Forecasting Portuguese GDP with factor models", Economic Bulletin June 2014, 85-100, Banco de Portugal (also available in Portuguese as "Previsão do PIB para Portugal com base em modelos de fatores", Boletim Económico Junho 2014, 89-104, Banco de Portugal).

8) Cardoso, F., Esteves, P. S. and Rua, A. (2013) "The import content of global demand in Portugal", Economic Bulletin, Autumn 2013, 107-121, Banco de Portugal (also available in Portuguese as "O conteúdo importado da procura global em Portugal", Boletim Económico Outono 2013, 111-126, Banco de Portugal).

7) Esteves, P. S. and Rua, A. (2012) "Short-term forecasting for the Portuguese economy: A methodological overview", Economic Bulletin, Autumn 2012, 137-149, Banco de Portugal (also available in Portuguese as "Previsões económicas de curto prazo para Portugal: uma síntese metodológica", Boletim Económico Outono 2012, 143-155, Banco de Portugal).

6) Rua, A. (2012) "Wavelets in Economics", Economic Bulletin, Summer 2012, 71-79, Banco de Portugal (also available in Portuguese as "Wavelets em Economia", Boletim Económico Verão 2012, 77-86, Banco de Portugal).

5) Cardoso, F. and Rua, A. (2011) "The quarterly national accounts in real-time: an analysis of the revisions over the last decade", Economic Bulletin, Autumn 2011, 137-154, Banco de Portugal (also available in Portuguese as "As contas nacionais trimestrais em tempo real: uma análise das revisões na última década", Boletim Económico Outono 2011, 147-164, Banco de Portugal).

4) Dias, F., Duarte, C. and Rua, A. (2009) "Inflation perceptions and expectations in the euro area and Portugal", Economic Bulletin, Spring 2009, 167-180, Banco de Portugal (also available in Portuguese as "Percepção e expectativas de inflação na área do euro e Portugal", Boletim Económico Primavera 2009, 179-193, Banco de Portugal).

3) Rua, A. (2005) "A new coincident indicator for the Portuguese private consumption", Economic Bulletin, Autumn 2005, 65-72, Banco de Portugal (also available in Portuguese as "Um novo indicador coincidente para o consumo privado em Portugal", Boletim Económico Outono 2005, 69-76, Banco de Portugal).

2) Rua, A. (2004) "A new coincident indicator for the Portuguese economy", Economic Bulletin June 2004, 21-28, Banco de Portugal (also available in Portuguese as "Um novo indicador coincidente para a economia portuguesa", Boletim Económico Junho 2004, 21-29, Banco de Portugal).

1) Rua, A. (2002) "Composite indicators for the euro area economic activity", Economic Bulletin September 2002, 87-100, Banco de Portugal (also available in Portuguese as "Indicadores compósitos para a actividade económica na área do euro", Boletim Económico Setembro 2002, 95-109, Banco de Portugal).

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