

**YIRU WANG**

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## **UNIVERSITAT POMPEU FABRA**

Placement Director:

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### **Office Contact Information**

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### **Personal Information:**

Citizenship: Chinese

Date of Birth: Sep 1991

### **Education:**

Master of Research in Economics, **Universitat Pompeu Fabra (UPF)**, Spain 2015-2016

Master of Science in Economics, **Barcelona Graduate School of Economics (BGSE)**, Spain 2014-2015

Bachelor of Art in Finance, **Shanghai Jiao Tong University (SJTU)**, China 2009-2013

### **Graduate Studies:**

**Universitat Pompeu Fabra**, Spain

Ph.D. candidate in Economics, 2016-present

Expected Completion: July 2020

### **References:**

Professor Barbara Rossi (advisor)

CREi, Universitat Pompeu Fabra and BGSE

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Professor Geert Mesters

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Professor Christian Brownlees

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### **Teaching and Research Fields:**

Primary fields: Econometrics, Macroeconometrics, Forecasting, Time Series Econometrics

Secondary fields: Empirical Macroeconomics, Financial Econometrics

**Teaching Experiences:**

## Graduate:

2018, 2019	Advanced Techniques in Macroeconomics II, UPF, TA for Professor Barbara Rossi
2018	MATLAB preparatory course, BGSE, course instructor
2016	Advanced Econometrics Method III, BGSE, TA for Professor Geert Mesters
2015, 2016	Advanced Econometrics Method I, BGSE, TA for Professor Majid Al Sadoon and Geert Mesters

## Undergraduate:

2016	Mathematics I, UPF, TA for Professor Piotr Zwiernik
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**Research Experiences:**

2017-present	UPF, Research Assistant for Professor Barbara Rossi
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**Professional Activities:**

<i>Seminars,</i>	EEA-ESEM, Manchester, 2019
<i>Conferences</i>	North American Summer Meeting of the Econometric Society, Seattle, 2019
<i>&amp; Workshops</i>	Belgrade Young Economists Conference, Belgrade, 2019
	Asian Meeting of the Econometric Society, Xiamen, 2019
	China Meeting of the Econometric Society, Guangzhou, 2019
	The 4th Vienna Workshop on High Dimensional Time Series in Macroeconomics and Finance, Vienna, 2019
	BigNOMICS Workshop on Big Data and Economic Forecasting, JRC, Ispra, 2019
	The IXt Workshop in Time Series Econometrics, Zaragoza, 2019
	Barcelona GSE Summer Forum, Barcelona, 2017, 2018
	UPF Econometrics Seminar, Barcelona, 2016,2017,2018

**Honors, Scholarships, and Fellowships:**

2017 - present	FPI fellowship, Universitat Pompeu Fabra
2015 - present	Teaching fellowship, Universitat Pompeu Fabra
2014 - 2015	Merit based tuition waiver, Barcelona GSE

**Languages and Programming Skills:**

Languages	Mandarin/Chinese (Native), English (Fluent), Spanish (Conversational)
Programming	Matlab, Stata, LaTeX, Gephi.

**Publications:**

*"VAR-based Granger-causality test in the presence of instabilities" with Barbara Rossi, Stata Journal, forthcoming.*

**Research Papers:**

### *“Detecting Density Forecast Breakdowns”*

Awarded the IV Marcelo Reyes Award in the IXt Workshop in Time Series Econometrics, Zaragoza, 2019

Presented at the EEA-ESEM, Manchester, 2019

the North American Summer Meeting of the Econometric Society, Seattle, 2019

the Belgrade Young Economists Conference, Belgrade, 2019

the BigNOMICS Workshop on Big Data and Economic Forecasting, JRC, Ispra, 2019

the IXt Workshop in Time Series Econometrics, Zaragoza, 2019

the UPF Econometrics Seminar, Barcelona, 2018

**Abstract** This paper proposes a new method for evaluating models’ density forecasts: it develops a formal test to capture the density forecast breakdown (DFB), a situation in which the out-of-sample density forecast performance is significantly worse than its anticipated performance. ‘Model’ is understood in a wide sense, including both parametric and non-parametric models. In parametric models, the proposed test allows for model misspecification and takes into account parameter estimation uncertainty. In non-parametric models, conditions under which the estimation uncertainty is asymptotically irrelevant are provided. The proposed test accommodates evaluating conditional density forecast models, which nest unconditional density forecast models, and robust versions of this test are provided for practical use. Monte Carlo results indicate that the test has good size properties in moderately large samples and has power against changes in mean and variance, as well as changes in distribution type. The empirical study finds that: (i) a DFB tends to occur in the left tails when constructing the one-quarter-ahead and the one-year-ahead density forecasts for real GDP growth in the US with current financial and economic conditions, as well as generalised skewed-t distributed errors; and (ii) a DFB occurs in both GARCH(1,1) and GARCH-t(1,1) models when constructing the one-day-ahead density forecasts for S&P500.

### *“Identification and Estimation of Parameter Instability in a High Dimensional Approximate Factor Model”*

Presented at the EEA-ESEM, Manchester, 2019

the Asian Meeting of the Econometric Society, Xiamen, 2019

the China Meeting of the Econometric Society, Guangzhou, 2019

the 4th Vienna Workshop on High Dimensional Time Series in Macroeconomics and Finance, Vienna, 2019

the Barcelona GSE Summer Forum, Barcelona, 2017, 2018

**Abstract** In modeling large panels of data, ignoring parameter instabilities may lead to severe consequences, such as inconsistent estimation and poor forecasting performance. This paper develops a new method for identifying and estimating structural breaks that occur at unknown common dates in the factor loadings in a high dimensional factor model that has an unknown number of latent factors. The methodology is based on the fact that the sum of the number of pseudo factors in the pre- and post-split subsamples will be minimal if the sample is split at the structural break. It is then shown that the appropriate transformation of such criteria, which is based on the eigenvalue ratios of the covariance matrices of the pre- and post-split subsamples, provides consistent estimations of structural breaks in large panels. Importantly, the new method is robust to structural changes in the volatility of factors (i.e., the second moment of factors), and it can be easily extended to estimate multiple structural breaks. The results of the simulation study show that the new method works well in estimating moderately large breaks under different data-generating processes, and it compares favorably to an existing method (Baltagi et al. (2017)). In the empirical study, the new method is applied to a large panel of sectoral inflation rates. The results indicate two structural breaks in the factor loadings, which corresponded to the 1973 oil price shock and the 2008 financial crisis, respectively. In addition, combining this new method with the existing methods in the literature, a structural change in the volatility of factors is identified as occurring in January 1991.

### **Research Papers in Progress:**

*“Heteroskedasticity and Autocorrelation Robust Inference in High Dimensional Linear Models” with Geert Mesters (UPF, BGSE, and VU Amsterdam).*

*“Financial Cycle Measurement with Mixed Frequency Data”*