CURRICULUM VITAE
Astrid Loretta Ayala Castellanos

PERSONAL DATA

Place of birth: Guatemala City, Guatemala
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EMPLOYMENT

2014 -   School of Business, **Francisco Marroquin University**, Guatemala
- Full Professor
- Director of the Legal Master (LL.M.) in Finance program
- Co-director of the Guatemalan Econometric Study Group (GESG)

STUDIES

PhD in Economics (Summa Cum Laude), University of Navarra, Pamplona, Spain
- Thesis title: *Three Essays on Real and Nominal Macroeconomic Variables in Latin America*
- Supervisors: Luis Albériko Gil-Alana (University of Navarra) and Juncal Cuñado (University of Navarra)

Master of Economics and Finance (MEF), University of Navarra, Pamplona, Spain
- Thesis title: *The relationship between the economic value added and the market value of the equity*
- Supervisor: Rocío Sánchez Mangas (Universidad Autónoma de Madrid)

Master of Economics and Finance (Magna Cum Laude)**,** Francisco Marroquin University, Guatemala
- Thesis title: Genesis and crisis of moral principles in contemporaneous Western society from a Freudian psychoanalytic perspective.
- Supervisor: Wenceslao Giménez-Bonet (Francisco Marroquin University)

Master in Business Administration (Summa Cum Laude)**,** Francisco Marroquin University, Guatemala

Public Accountant and Auditor (Summa Cum Laude), Francisco Marroquin University, Guatemala

RESEARCH INTERESTS
- **Quantitative Macroeconomics** (economic growth, trade cycle, public finances, economic convergence, unemployment, currency exchange rate, comparative economics, capital markets and the real economy).
- **Financial Econometrics** (distribution of returns, volatility models).
- Specific topics of applied econometrics (dynamic conditional score models, copulas, state space models, non-stationary time series, structural breaks, unit root tests, fractional integration).

PUBLICATIONS
- Several contributions to the literature on **dynamic conditional score models (DCS)**. See the following web page: http://www.gasmodel.com/gaspapers.htm (please search "Ayala" on this website).

- (P17) Ayala, A., Blazsek, S., and Escribano, A. (2022) Anticipating extreme losses using score-driven shape filters. **Studies in Nonlinear Dynamics & Econometrics**, https://doi.org/10.1515/snde-2021-0102
- (P16) Ayala, A., Blazsek, S., and Licht, A. (2022) Signal Smoothing for Score-Driven Models: A Linear Approach, **Communications in Statistics – Simulation and Computation**, https://doi.org/10.1080/03610918.2022.2032165
- (P15) Ayala, A., Blazsek, S., and Licht, A. (2021) Score-driven stochastic seasonality of the Russian rouble: An application case study for the period of 1999 to 2020, **Empirical Economics**, http://link.springer.com/article/10.1007/s00181-021-02103-6
- (P14) Ayala, A., and Blazsek, S. (2020) Score-driven panel data models of the capital structure of US firms. **Applied Economics Letters**, 28(19): 1666-1670. https://doi.org/10.1080/13504851.2020.1845293
- (P13) Ayala, A., and Blazsek, S. (2019) Score-driven models of stochastic seasonality in location and scale: An application case study of the Indian rupee to USD exchange rate. **Applied Economics**, 51(37): 4083–4103. https://doi.org/10.1080/00036846.2019.1588952
- (P12) Ayala, A., and Blazsek, S. (2019) Score-driven currency exchange rate seasonality as applied to the Guatemalan Quetzal/US Dollar. **Journal of the Spanish Economic Association (SERIEs)**. 10 (1): 65–92. https://doi.org/10.1007/s13209-018-0186-0
- (P11) Ayala, A., and Blazsek, S. (2018) Score-driven copula models for portfolios of two risky assets, **The European Journal of Finance** 24 (18): 1861–1884. Paper: https://doi.org/10.1080/1351847X.2018.1464488
- (P10) Ayala, A. and Blazsek, S. (2018) Equity market neutral hedge funds and the stock market: an application of score-driven copula models. **Applied Economics**. https://doi.org/10.1080/00036846.2018.1440062
- (P9) Ayala, A., Blazsek, S., Cuñado, J., Gil-Alana, L. (2016). Regime-switching purchasing power parity in Latin America: Monte Carlo unit root tests with dynamic conditional score, **Applied Economics**, 48 (29): 2675–2696. http://dx.doi.org/10.1080/00036846.2015.1128076
- (P8) Ayala, A. and Blazsek, S. (2014). Fiscal sustainability of Eurozone governments: An empirical review of the past decade, **Review of European Studies**, 6 (1): 143–150. http://dx.doi.org/10.5539/res.v6n1p143
- (P7) Ayala, A. and Blazsek, S. (2014). Contagion of sovereign debt in the Eurozone, **Theoretical Economics Letters**, 4 (1): 98–109. http://dx.doi.org/10.4236/tel.2014.41016
- (P6) Ayala, A. and Blazsek, S.A. (2013). Structural breaks in public finances in Central and Eastern European countries, **Economic Systems**, 37 (1): 45–60. http://dx.doi.org/10.1016/j.ecosys.2012.06.004
- (P5) Ayala, A., Cuñado, J. and Gil-Alana, L. (2013). Real Convergence: Empirical Evidence for Latin America, **Applied Economics**, Vol. 22, pg. 3220-3229. https://doi.org/10.1080/00036846.2012.703317
- (P4) Ayala, A., Cuñado, J. and Gil-Alana, L. (2012). Real convergence in Latin America: a fractionally integrated approach, **Applied Financial Economics**, Vol. 22 Issue 20, pg. 1713-1717. https://doi.org/10.1080/09603107.2012.674204
- (P3) Ayala, A., Cuñado, J. and Gil-Alana, L. (2012). Unemployment Hysteresis: Empirical Evidence for Latin America, **Journal of Applied Economics**, Vol 15 Issue 2, pg. 213-233. https://doi.org/10.1016/S1514-0326(12)60010-5
- (P2) Ayala, A. and Blazsek, S. (2012). How has the financial crisis affected the fiscal convergence of Central and Eastern Europe to the Eurozone?, **Applied Economics Letters**, 19 (5): 471–476. http://dx.doi.org/10.1080/13504851.2011.583212
- (P1) Ibargüen, G. and Ayala, A. (2006). A market proposal for auditing the financial statements of public companies, **Journal of Management for Value**, 1, 2.

BOOKS, BOOKS CHAPTERS
- (C1) Ayala, A., Blazsek, S., and González, R. B. (2015). Default risk of sovereign debt in Central America. In: Nigel Finch (Ed.), **Emerging Markets and Sovereign Risk** (pp. 18–44). ISBN 978-1-137-45065-4, Palgrave Macmillan.
- (B1) Ayala, Astrid (2011). **Génesis y crisis de los principios morales de la sociedad occidental contemporánea desde la perspectiva del psicoanálisis freudiano**. ISBN 978-3-8465-6329-8, Editorial Académica Española.

WORKING PAPERS

- Score-driven equity plus gold portfolios before and during the COVID-19 pandemic models (with S. Blazsek and A. Licht). Guatemalan Econometric Study Group Discussion Paper 1/2022, **Francisco Marroquin University**, School of Business, 2022. https://en.ufm.edu/wp-content/uploads/2017/04/AYALA-BLAZSEK-LICHT-2022-GESG-WP.pdf
- A short note on the scaling parameter in score-driven filters (with S. Blazsek and A. Licht). Guatemalan Econometric Study Group Discussion Paper 3/2022, **Francisco Marroquin University**, School of Business, 2022. https://en.ufm.edu/wp-content/uploads/2017/04/AYALA-BLAZSEK-LICHT-2022-GESG-WP-3-2022.pdf
- Optimal Choice of the Scaling Parameters in Score-Driven Filters (with S. Blazsek and A. Licht). Guatemalan Econometric Study Group Discussion Paper 4/2022, **Francisco Marroquin University**, School of Business, https://en.ufm.edu/wp-content/uploads/2017/04/BLAZSEK-AYALA-LICHT-2022-GESG-WP-04-2022.pdf
- Volatility forecasting for the coronavirus pandemic using quasi-score-driven models (with S. Blazsek and A. Licht). Guatemalan Econometric Study Group Discussion Paper 2/2021, **Francisco Marroquin University**, School of Business, 2021. https://en.ufm.edu/wp-content/uploads/2021/01/AYALA-BLAZSEK-LICHT-2021-GESG-WP-2-2021.pdf
- Optimal signal extraction for score-driven models (with S. Blazsek and A. Licht). Guatemalan Econometric Study Group Discussion Paper 1/2021, **Francisco Marroquin University**, School of Business, 2021. https://en.ufm.edu/wp-content/uploads/2021/01/AYALA-BLAZSEK-LICHT-2021-GESG-WP-2021-01.pdf
- Dynamic analysis of the capital structure of S&P 500 firms under unconventional monetary policy using score-driven panel data models (with S. Blazsek). Guatemalan Econometric Study Group Discussion Paper 3/2020, **Francisco Marroquin University**, School of Business, 2020. https://en.ufm.edu/wp-content/uploads/2020/06/AYALA-BLAZSEK-2020-GESG-WP-1.pdf
- Maximum likelihood estimation of score-driven models with dynamic shape parameters: an application to Monte Carlo value-at-risk (with S. Blazsek and A. Escribano). Working Paper 19-12, **University Carlos III of Madrid**, Department of Economics, 2019. https://e-archivo.uc3m.es/handle/10016/28638
- Score-driven time series models with dynamic shape: an application to the Standard & Poor's 500 index (with S. Blazsek and A. Escribano). Working Paper 19-05, **University Carlos III of Madrid**, Department of Economics, 2019. http://hdl.handle.net/10016/28133
- (P13) Score-driven models of local level, seasonality and volatility: an application to the currency exchange rate of Indian rupee to USD (with S. Blazsek), Guatemalan Econometric Study Group Discussion Paper 1/2018, **Francisco Marroquin University**, School of Business, 2018. https://en.ufm.edu/wp-content/uploads/2017/04/AYALA-BLAZSEK-2018-GESG-WP.pdf
- (P12) New score-driven models for trimming and Winsorizing: an application for Guatemalan Quetzal to US Dollar (with S. Blazsek), Guatemalan Econometric Study Group Discussion Paper 2/2017, **Francisco Marroquin University**, School of Business, 2017. https://en.ufm.edu/wp-content/uploads/2017/04/AYALA-BLAZSEK-2017-UFM-WP.pdf

CONFERENCES, WORKSHOPS, RESEARCH SEMINARS
- **Guatemalan Econometric Study Group (GESG)** research seminar presentations at **Francisco Marroquin University** since 2014. See at the link: https://en.ufm.edu/gesg/research-seminars/, or in the next section.
- Volatility forecasting for the coronavirus pandemic using quasi-score-driven models (with S. Blazsek and A. Licht), **World Finance Banking Symposium**, Budapest, December 2021 (online).
- Volatility forecasting for the coronavirus pandemic using quasi-score-driven models (with S. Blazsek and A. Licht), 2021 **Vietnam Symposium in Banking and Finance**, Hanoi, October 2021 (online).
- Volatility forecasting for the coronavirus pandemic using quasi-score-driven models (with S. Blazsek and A. Licht), 24th **Dynamic Econometrics Conference**, Timberlake, September 2021 (online).
- Optimal signal extraction for score-driven models (with S. Blazsek and A. Licht), 23rd **Dynamic Econometrics Conference**, Timberlake, March 2021 (online).
- (P12, P13) Score-driven models with stochastic seasonality for currency exchange rates (with S. Blazsek), Research Seminar, University of Istmo, Guatemala City, July 2019.

- (P10, P11) Score-driven copula models for financial portfolios (with S. Blazsek), Research Seminar, University of Istmo, Guatemala City, November 2018.
- (P12) New score-driven models for trimming and Winsorizing: An application for Guatemalan Quetzal to US Dollar, **Annual Economic Research Conference (SIEG)**, **Bank of Guatemala**, Guatemala City, October 2018.
- Endogenous switching vector autoregression: stock market and economic growth dynamics in China, Financial Forecasting, **Oxford-Man Institute - Society for Financial Econometrics (OMI-SoFiE)** Financial Econometrics Summer School, **University of Oxford**, Oxford, July 2013.
- (P7) A dynamic latent-factor panel data model for public debt in the Eurozone, **Hungarian Economic Society Annual Conference**, Budapest, December 2011.
- (P7) A dynamic latent-factor panel data model for public debt in the Eurozone, **Macro-Finance Workshop**, **University of Navarra**, Pamplona, November 2011.

GUATEMALAN ECONOMETRIC STUDY GROUP (GESG) RESEARCH SEMINARS
- Score-driven time series models with dynamic shape: an application to the Standard & Poor's 500 index, March 2019.
- (P13) Score-driven models of local level, seasonality and volatility: an application to the currency exchange rate of Indian rupee to USD, June 2018.
- (P12) New score-driven models for trimming and Winsorizing: an application for Guatemalan Quetzal to US Dollar, September 2017.
- (P10) Equity market neutral hedge funds and the stock market: an application of score-driven copula models, Agosto 2017.
- (P11) Forecast performance of dynamic conditional score copula models, June 2016.
- (P9) Regime-switching purchasing power parity in Latin America: Monte Carlo unit root tests with dynamic conditional score, January 2016.
- (C1) Default risk of sovereign debt in Central America, November 2014.
- (P6) Structural breaks in public finances in Central and Eastern European countries, June 2014.

TEACHING
Francisco Marroquin University (Guatemala and Panama), School of Business and Faculty of Economics
2006 – present:
- Microeconomics (MBA, LLM, MAPI)
- Macroeconomics (MBA, LLM, MAPI, MFIN)
- Valuation (MBA)
- Value Based Management (LLM)
- Corporate Finance (LLM)
- Financial Analysis (MBA)
- Budgeting (MBA)
- MBA Challenge (MBA)
- Competition and Entrepreneurship (ME)
- Financial Accounting (MFIN)
- Managerial Accounting (MBA, LLM)
- Valuation in an M&A Context (LLM)
- Wealth Management (MBA)
- Working Capital Management (MBA)
- Financial Statement Analysis in different Industries (MBA)
- Economic Value Added (M.Sc. in Economics and Business)
- Financial Principles (Undergraduate program in Law)

Centro de Estudios Superiores Online de Madrid Manuel Ayau (OMMA) www.ommayau.com
- Financial Statement Analysis (Master in Value Investing)

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- Accounting and Financial Analysis (Master in Design and Entrepreneurial Development of Cities)
- Introduction to Accounting (Master in Value Investing)

RESEARCH VISITS

1/2012   Postgraduate Research Visit, University of Navarra, Pamplona

8/2010   Visiting researcher (fiscal convergence of CEE countries), Central Bank of Hungary, Budapest

RESEARCH PROJECTS

- 2010: Convergence of CEE countries to the Eurozone in the presence of structural changes. Members of the project: Jerome Vandenbussche (Deputy Division Chief, IMF), Szabolcs Blazsek (University of Navarra) and Astrid Ayala (Francisco Marroquin University). Financing organization: Central Bank of Hungary.

RESEARCH TRAINING COURSES

- "Forecast Pro". Francisco Marroquin University, December 2016, lecturer: Szabolcs Blazsek.
- "Gauss Training Course". Francisco Marroquin University, December 2016, lecturer: Szabolcs Blazsek.
- "Macroeconomic Density Forecasting and Nowcasting". New Horizons, Computer Learning Centre, New York, Timberlake, 31st October to 2nd November 2016, lecturer: Andrea Carriero.
- "Time Series Analysis and Modelling". Clare College, **University of Cambridge**, Cambridge, Timberlake, 20th to 22nd July 2015, lecturer: **Andrew Harvey**.
- "Stata Training Course". Francisco Marroquin University, from 9th June to 16th July 2015, lecturer: Diego Aycinena.
- "Dynamic Models for Volatility & Heavy Tails". **Cass Business School**, **London**, Timberlake, 16th December 2014, lecturer: **Andrew Harvey**.
- "2013 Summer School at the University of Cambridge". **University of Cambridge**, Cambridge, Timberlake, from 21st to 28th July 2013, lecturers: **Andrew Harvey, Sean Holly, and Melvyn Weeks**.
- "International program in finance and managerial economics". School of Management, **Boston University**, 2008.

MEMBERSHIPS

- Guatemalan Econometric Study Group (2014-present) (https://en.ufm.edu/gesg/)
- The Society for Financial Econometrics (2013-2015) (http://sofie.stern.nyu.edu/)

REFEREE FOR JOURNALS

- Domain Social Sciences and Humanities of the Netherlands Organisation for Scientific Research (NWO, the Dutch research council)
- National Tax Journal
- Applied Financial Economics
- Technological and Economic Development of Economy
- Applied Economics
- Applied Economic Letters
- Latin American Economic Review

EDITORIAL BOARD MEMBERSHIP

- Journal of New Finance

LANGUAGES

- Spanish: Native
- English: Full professional proficiency

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