



UNIVERSITAT DE  
BARCELONA

## ***Hedge Funds: Inferencia del riesgo en un escenario real de estrés severo***

Raül Martínez Buixeda

**ADVERTIMENT.** La consulta d'aquesta tesi queda condicionada a l'acceptació de les següents condicions d'ús: La difusió d'aquesta tesi per mitjà del servei TDX ([www.tdx.cat](http://www.tdx.cat)) i a través del Dipòsit Digital de la UB ([diposit.ub.edu](http://diposit.ub.edu)) ha estat autoritzada pels titulars dels drets de propietat intel·lectual únicament per a usos privats emmarcats en activitats d'investigació i docència. No s'autoritza la seva reproducció amb finalitats de lucre ni la seva difusió i posada a disposició des d'un lloc aliè al servei TDX ni al Dipòsit Digital de la UB. No s'autoritza la presentació del seu contingut en una finestra o marc aliè a TDX o al Dipòsit Digital de la UB (framing). Aquesta reserva de drets afecta tant al resum de presentació de la tesi com als seus continguts. En la utilització o cita de parts de la tesi és obligat indicar el nom de la persona autora.

**ADVERTENCIA.** La consulta de esta tesis queda condicionada a la aceptación de las siguientes condiciones de uso: La difusión de esta tesis por medio del servicio TDR ([www.tdx.cat](http://www.tdx.cat)) y a través del Repositorio Digital de la UB ([diposit.ub.edu](http://diposit.ub.edu)) ha sido autorizada por los titulares de los derechos de propiedad intelectual únicamente para usos privados enmarcados en actividades de investigación y docencia. No se autoriza su reproducción con finalidades de lucro ni su difusión y puesta a disposición desde un sitio ajeno al servicio TDR o al Repositorio Digital de la UB. No se autoriza la presentación de su contenido en una ventana o marco ajeno a TDR o al Repositorio Digital de la UB (framing). Esta reserva de derechos afecta tanto al resumen de presentación de la tesis como a sus contenidos. En la utilización o cita de partes de la tesis es obligado indicar el nombre de la persona autora.

**WARNING.** On having consulted this thesis you're accepting the following use conditions: Spreading this thesis by the TDX ([www.tdx.cat](http://www.tdx.cat)) service and by the UB Digital Repository ([diposit.ub.edu](http://diposit.ub.edu)) has been authorized by the titular of the intellectual property rights only for private uses placed in investigation and teaching activities. Reproduction with lucrative aims is not authorized nor its spreading and availability from a site foreign to the TDX service or to the UB Digital Repository. Introducing its content in a window or frame foreign to the TDX service or to the UB Digital Repository is not authorized (framing). Those rights affect to the presentation summary of the thesis as well as to its contents. In the using or citation of parts of the thesis it's obliged to indicate the name of the author.

## Bibliografía

Abbasi Narges, "On Limiting Distributions of UMVUE of Central Moments", World Applied Sciences Journal 4 (5) (2008), pp. 691-695, ISSN: 1818-4952.

Alexander, Carol, "Value-at-Risk Models", John Wiley & Sons, Vol. IV, (2008), ISBN: 978-0-470-99788-8 (H/B).

Anandkumar, Animashree, et al., "A Method of Moments for Mixture Models and Hidden Markov Models", Department of EECS, University of California, Irvine Microsoft Research New England, (Sep, 2012).

Anson, Mark J. P., "Handbook of Alternative Assets", John Willey & Sons, (2006), ISBN-13: 978-0-471-98020-9, ISBN-10: 0-471-98020-X.

Bacon, Carl, "Practical portfolio performance measurement and attribution", John Wiley & Sons, (2004), ISBN 0-470-85679-3.

Black, H. Black, "Managing a Hedge Fund: A Complete Guide to Trading, Business Strategies, Risk Management, and Regulations", McGraw-Hill, (2004), ISBN: 0-07-143481-X.

Cohen, Clifford A., "Estimation in Mixtures of Two Normal Distributions", *Technometrics*, Vol. 9, No. 1 (Feb., 1967), pp. 15-28.

Cramér, Harald, "Mathematical Methods of Statistics", Princeton University Press, (1946).

Day, N. E., "Estimating the Components of a Mixture of Normal Distributions", *Biometrika*, Vol. 56, No. 3 (Dec., 1969), pp. 463-474.

Douglas, Peter, "The Evolving Hedge Fund Industry", Chartered Alternative Investment Analyst Association (2014).

Dwyer, Paul S., "Moments of Any Rational Integral Isobaric Sample Moment Function", *Ann. Math. Statist.* 8 (1937), no. 1, pp. 21-65.

Klemens, Ben, "Modeling with data : tools and techniques for scientific computing", "Apendix M: Notes on Moments" Princeton University Press, (Oct., 2008), ISBN: 9781400828746.

Lhabitant, Françoise-Serge, "Hedge Funds: Myths and Limits", John Willey & Sons, (2002), ISBN: 0-470-844777-9.

Lhabitant, Françoise-Serge, "Hedge Funds: Quantitative Insights", John Willey & Sons, (2010), ISBN: 978-0-470-68777-2.

Lindsay, Bruce G., "Moment Matrices: Applications in Mixtures", *The Annals of Statistics*, Vol. 17, No. 2 (Jun., 1989), pp. 722-740.

Lindsay, Bruce G.; Basak, Prasanta, “*Multivariate Normal Mixtures: A Fast Consistent Method of Moments*”, *Journal of the American Statistical Association*, Vol. 88, No. 422 (Jun, 1993), pp.468-476.

Mathworks, “*Choosing a solver*”, <http://es.mathworks.com/help/optim/ug/choosing-a-solver.html>.

Martínez Buixeda, Raül, “*Análisis del TED spread: la trascendencia del riesgo de liquidez*”, *Observatori de Divulgació Financera*, No. 1 (Nov, 2009).

Pearson, Karl, “*Contributions to the Mathematical Theory of Evolution*”, *Philosophical Transactions of the Royal Society of London*, Vol. 185, (1894), pp. 71-110.

Quandt, Richard E., “*Estimating Mixtures of Normal Distributions and Switching Regressions*”, *Econometric Research Program*, Princeton University, Research Memorandum #190 (Nov., 1975).

Rao, C. Radhakrishna, “*The Utilization of Multiple Measurements in Problems of Biological Classification*”, *Journal of the Royal Statistical Society. Series B (Methodological)* Vol. 10, No. 2 (1948), pp. 159-203.

Ruiz, Mariano E., et al., “*Optimal unbiased estimation of some population central moments*”, *METRON* 71 (2013) pp. 39-62, DOI 10.1007/s40300-013-0006-z.

Schoonbroodt, Alice, “*Small Sample Bias Using Maximum Likelihood versus Moments: The Case of a Simple Search Model of the Labor Market*”, University of Minnesota, MN (Mar. 2004).

## **Referencias a artículos financieros**

European Central Bank, “*Verbatim of the remarks made by Mario Draghi at the Global Investment Conference in London 26 July 2012*”, (2012), [www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html](http://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html).

European Stability Mechanism, “*European Stability Mechanism (ESM) is inaugurated*”, (2012), [www.esm.europa.eu/press/releases/20121008\\_esm-is-inaugurated.htm](http://www.esm.europa.eu/press/releases/20121008_esm-is-inaugurated.htm).

FINalternatives, “*Credit Suisse Index Socked By Madoff-Hit Funds*”, (2008), [www.finalternatives.com/node/6383](http://www.finalternatives.com/node/6383).

Financial Times, “*Madoff arrest forces hedge fund index shake-up*”, (2008), [www.ft.com/intl/cms/s/0/e697789e-cf84-11dd-abf9000077b07658.html#axzz3l2qYJ6zz](http://www.ft.com/intl/cms/s/0/e697789e-cf84-11dd-abf9000077b07658.html#axzz3l2qYJ6zz).

Reuters, “*BNP freezes \$2.2 bln of funds over subprime*”, (2007), [www.reuters.com/article/2007/08/09/us-bnpparibas-subprime-funds-idUSWEB612920070809](http://www.reuters.com/article/2007/08/09/us-bnpparibas-subprime-funds-idUSWEB612920070809).

Reuters, “*European Central Bank Injects Funds To Calm Credit Jitters*”, (2007), [www.cnbc.com/id/20195365](http://www.cnbc.com/id/20195365).

Reuters, “*JPMorgan to buy Bear Stearns for \$2 a share*”, (2008), [www.reuters.com/article/2008/03/17/us-bearstearns-idUSN1438968020080317](http://www.reuters.com/article/2008/03/17/us-bearstearns-idUSN1438968020080317).

Reuters, “*Lehman files for bankruptcy, plans to sell units*”, (2008), [www.reuters.com/article/2008/09/16/us-lehman-idUSN0927996520080916](http://www.reuters.com/article/2008/09/16/us-lehman-idUSN0927996520080916).

The Federal Reserve of St. Louis, “*The Financial Crisis Full Timeline*”, (2011), [www.stlouisfed.org/financial-crisis/full-timeline](http://www.stlouisfed.org/financial-crisis/full-timeline).

The Guardian, “*Greece approves sweeping austerity measures*”, (2010), [www.theguardian.com/world/2010/may/06/greece-crisis-approves-austerity-measures](http://www.theguardian.com/world/2010/may/06/greece-crisis-approves-austerity-measures).

The Telegraph, “*Debt crisis: Angela Merkel and Francois Hollande pledge to back euro*”, (2012), [www.telegraph.co.uk/finance/financialcrisis/9433140/Debt-crisis-Angela-Merkel-and-Francois-Hollande-pledge-to-back-euro.html](http://www.telegraph.co.uk/finance/financialcrisis/9433140/Debt-crisis-Angela-Merkel-and-Francois-Hollande-pledge-to-back-euro.html).

The Telegraph, “*Greece crisis: three bank workers killed in street protests*”, (2010), [www.telegraph.co.uk/travel/destinations/europe/greece/7682628/Greece-crisis-three-bank-workers-killed-in-street-protests.html](http://www.telegraph.co.uk/travel/destinations/europe/greece/7682628/Greece-crisis-three-bank-workers-killed-in-street-protests.html).

The Wall Street Journal, “*Syriza Win in Greek Election Sets Up New Europe Clash*”, (2015), [www.wsj.com/articles/syriza-win-in-greek-election-sets-up-new-europe-clash-1422168982](http://www.wsj.com/articles/syriza-win-in-greek-election-sets-up-new-europe-clash-1422168982).

The Wall Street Journal, “*U.S. to Take Over AIG in \$85 Billion Bailout; Central Banks Inject Cash as Credit Dries Up*”, (2008), [www.wsj.com/articles/SB122156561931242905](http://www.wsj.com/articles/SB122156561931242905).

U.S. Securities and Exchange Commission, “*SEC Halts Short Selling of Financial Stocks to Protect Investors and Markets*” (2008), [www.sec.gov/news/press/2008/2008-211.htm](http://www.sec.gov/news/press/2008/2008-211.htm).