

Optimal collective financial decision making

CAROLE BERNARD¹, LUCA DE GENNARO AQUINO²,
STEVEN VANDUFFEL³

¹ *Department of Accounting, Law and Finance, France.*

E-mail address: `carole.bernard@grenoble-em.com`

URL: <http://www.carole.bernard.free.fr/>

² *Department of Accounting, Law and Finance, France.*

E-mail address: `carole.bernard@grenoble-em.com`

URL: <http://luca-dga.github.io/-/>

³ *Faculty of Economics, Belgium.*

E-mail address: `steven.vanduffel@vub.be`

URL: <http://www.stevenvanduffel.com/>

In this paper, we study optimal portfolio choice for an agent (e.g., a social planner) who aims to maximize a multivariate objective (e.g., an expected multivariate utility). We first relate this problem to a problem of cost-efficient allocation, which consists in finding the cheapest multidimensional payoff achieving a given joint distribution. We then characterize the optimal portfolio in a general setting, provide a numerical procedure to obtain an optimal allocation, and derive explicit expressions in the Gaussian case. We discuss desired properties for the multivariate objective function in order to ensure that optimal portfolios are not comonotonic. Important potential applications, such as reducing systemic risk or estimating the cost of “constrained diversification”, are also examined.

Acknowledgments: C. Bernard and S. Vanduffel thank FWO research funding. We thank participants of online seminars at UNSW business school, OWARS seminar series, and at the University of Waterloo for valuable comments.