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Portfolio Selection – A Technical Note

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ABSTRACT

This note develops the solutions of the static portfolio optimization problem in explicit matrix form. Three cases are contemplated and connected, with the derivation of relevant corner solutions: the unconstrained problem in the presence of risky assets only, the constrained one, and the presence of a risk-free asset. The use of a generalised form for the budget constraint allows us to use the structure to study the behaviour of a complete borrower – subject or not to liquidity constraints – and infer the price of pure risk. Some properties of the several solutions are highlighted. The rationale for a linear relation between the standard deviation and the expected return of the unitary application in an efficient portfolio is derived. Requirements for useful existence in the market of any given security are established. Additionally, we infer the expected co-movement properties of efficient and the global market – or any other – portfolio.

JEL Classification: G11, G12, G24, C61, D81.
Keywords: Portfolio Choice, Mean Variance, CAPM, Quadratic Programming, Price of Risk.

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