A Dynamic Model for Cash Flow at Risk

Luca Gentili
Dipartimento di Scienze Economiche - DSE, Università degli Studi di Verona
luca.gentili@univr.it

Bruno Giacomello
Dipartimento di Scienze Economiche - DSE, Università degli Studi di Verona,
and Polo Universitario di Studi sull'Impresa, Vicenza
bruno.giacomello@univr.it

Dario Girardi
Dipartimento di Scienze Economiche - DSE, Università degli Studi di Verona
dario.girardi@univr.it

Martino Grasselli
Dipartimento di Matematica, Università degli Studi di Padova and Léonard de Vinci Pôle Universitaire, Research Center, Finance Group, 92 916 Paris La Défense, France
martino.grassell@unipd.it

Extended Abstract

In this paper we define a new dynamic approach for measuring the Cash-Flow-at-Risk of a firm. Starting from the assumption that the balance sheet evolves according to a system of difference equations involving the most important accounting records, we define a new risk measure, tailored on our dynamic approach, which takes full advantage of its focus on the liquidity process. A numerical example based on a real case study shows the flexibility of our approach in describing cash flow dynamics and cash distress events. In order to reach this goal we proceed following three steps. First, we define a mathematical model for describing the evolution of the firm's balance sheet, by taking into account the relevant economic dynamics of the company, with special regard to the cash flows. In the second step, we define a new risk measure, based on the CFaR concept, which takes full advantage of our formalism for the balance sheet representation. Finally, in the third step we give a concrete application of our approach through a case study based on real data, in which we illustrate the potentials of this new quantitative tool in providing risk management information. We now describe each step of the procedure and review the related literature. Our CFaR methodology consists in performing a balance sheet quantitative analysis that allows us to select the exogenous variables having the greatest impact on company assets and liabilities. Then, using market data on large time series, we insert in our model...
dynamic model the evolution of such variables, so determining the probability
distribution of a cash flow item at a given point in time, usually one, two or
more years. Our approach attempts to overcome the shortcomings of the
bottom-up methodology, as it does not deal only with pro-forma cash flow
statements, and at the same time it tries to overcome the top-down approaches
because it does not rely on pure statistical models, taking into account the
relevant economic dynamics of all the balance sheet components. Finally, as a
third step, we apply the new CFaR methodology that we have just presented to
a real case study. We investigate the case of NTV Spa and we discuss the
descriptive capability of our approach in terms of providing information on the
risk position of the firm and generating realistic and unbiased cash flows.

Keywords
Cash flow; difference equation; sensitivity analysis; Cash Flow at Risk.

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