

Applications of simultaneous equations in finance research: methods and empirical results

Cheng-Few Lee, Woan-lih Liang, Fu-Lai Lin, Yating Yang

E-mail: flin@mail.dyu.edu.tw

ABSTRACT

The main purposes of this paper are: (1) to review finance literature using simultaneous equations method, (2) to discuss the difference among two-stage least squares (2SLS), three-stage least squares (3SLS) and generalized method of moments (GMM) methods under different assumptions, and (3) to investigate the interrelationship among investment, financing, and dividend decisions as an example to demonstrate the discussion. We review studies that apply the simultaneous equations estimation on capital structure, corporate investment, payout decisions, ownership structure, corporate governance, stock return, firm performance and/or other corporate issues. In addition to these three methods, we also present Pagan and Hall 's (Econ Rev 2:159 – 218, 1983) test of heteroskedasticity and weak instruments test for selecting the applicable method and testing the validity of instruments. Finally, we investigate the interrelationship among investment, financing and dividend decisions using 2SLS, 3SLS, and GMM methods based on the US listed firm annual data between 1965 and 2012. Our results show that these three corporate decisions are co-determined and the interaction among them should be taken into account in a simultaneous equations framework.

Keywords: 2SLS,3SLS,GMM,Investment decision,Financing decision,Dividend decision

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