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Cash flow and investment decision: an application on the Romanian agriculture sector

Matei Tămășilă[a], Șerban Miclea[a], Mihaela Vartolomei[a], Dan Pascu[a], Claudiu Tiberiu Albulescu[ab]*

aPolitehnica University of Timisoara, Management Department, 2, P-ta. Victoriei, 300006 Timisoara, Romania
bUniversity of Poitiers, CRIEF, 2 rue Jean Carbonnier, 86022 Poitiers, France

Abstract

This paper tests the relationship between cash flow and the investment decision of firms from the Romanian agriculture sector. Although the role of cash flow in influencing the investment decision is explained by the financial frictions theory, the investment – cash flow nexus is controversial in empirical investigations. However, only few studies address the bidirectional relationship between the investment decision and the cash flow level. Using a large data set of 739 firms and a panel VAR approach for the period 2006 to 2014, we report a bidirectional causality between investment and cash flow. We find that firm's cash flow positively influences the level of investment in the next period, and we show therefore that the access to liquidity is important for the investment decision. At the same time, investment in fixed assets enhances the cash flow level only for the subsequent period, but it does not generate a series of cash flows as expected. The results are less conclusive if we use investment dynamics instead of investment level in our empirical analysis.

Keywords: Investment decision; cash flow; firm-level data; agriculture sector; panel VAR.

1. Introduction

The neo-classical theory of investment argues that firm's investment is determined by economic fundamentals, and not by financial variables such as cash flow (Melander et al., 2017). New developments of this theory show that,

* Corresponding author. Tel.: +4-074-308-9759; Fax: +4-025-640-3021.
 E-mail address: claudiu.albulescu@upt.ro

in the presence of financial frictions and asymmetry of information, investment is *inter-alia* a function of cash flow (see for example the Hayashi's (1982) neoclassical investment model). However, the interpretation of the investment – cash flow nexus is controversial (Carpenter and Guariglia, 2008). This relationship is influenced on the one hand by financial constraints and, on the other hand, by investment opportunities. A common solution for the second problem in the early literature was to include the Tobin's Q (the ratio between the market value and the replacement value of a physical asset) in the empirical regressions explaining the investment determinants.

From a theoretical point of view, it is expected that the cash flow have a positive influence on the investment decision, as it represents an internal funding source. However, noteworthy empirical findings report a negative relationship between investment and cash flow. Therefore, researchers try to explain the puzzling empirical findings on investment – cash flow sensitivities, underlining the role of firm's asset liquidity (Flor and Hirth, 2013), of firm's financial constraints (Kim, 2014), and of monetary transmission channels (Chatelain et al., 2003).

We contribute to the existing literature in several ways. First, using firm-level data, we test the bidirectional causality between investment and cash flow. Previous studies do not focus on the role of investment on cash flow, although the endogeneity issue is sometimes addressed in empirical papers (i.e. Bond and Meghir, 1994). It is well known that investment should be made if and only if the present value of future revenues equals the opportunity cost of capital. Accordingly, an investment should generates a stream of cash flows during the next periods. It is surprising that the empirical literature does not focus on the bidirectional causality between investment and cash flow, which might explain the divergent results reported so far. To show this, we use a panel data vector auto-regression method (pVAR) and we investigate the bidirectional Granger causality between investment (the ratio between fixed assets and total assets) and the cash flow level (as percentage of operational revenues) for 739 companies from the agriculture field in Romania (a similar empirical approach is used by Melander et al., 2017). We also search how shocks in cash flow/investment are transmitted to investment/cash flow, using impulse response functions.

Although several investigations are conducted on firm-level data (Bond and Meghir, 1994; Carpenter and Guariglia, 2008; Mulier et al., 2016; Melander et al., 2017), none of the existing works address the case of the agriculture sector. Agriculture is considered a sector where the value added is reduced as compared with industrial production or service domain, and where a considerable amount of time is needed so as the expected revenues to cover the initial investment cost. Further, cash flow might fluctuate more in this sector as compared to other sectors, one of the favouring element in this line being the climate conditions. Therefore, analysing the investment – cash flow nexus for agriculture firms is particularly interesting and represents another contribution of this paper to the existing literature. For this purpose, we use AMADEUS statistics from 2006 to 2014 for 739 firms located in Romania (NACE code: 01 – Crop and animal production, hunting and related service activities). Romanian agriculture is an interesting case study per se, as Romania is ranked as the second country of the European Union (EU) with the highest contribution of agriculture to the output, according to Eurostat data from 2014 (Fig. 1a). The same database shows that Romania is ranked as the eighth country of the EU in terms of agriculture output (Fig. 1b). Further, no specialized bank addresses the need of the agriculture sector in Romania, fact that makes the agriculture firms' investment largely dependent on internal funds (i.e. free cash flow).

(a) Agriculture as % of GDP (current prices)   (b) Agriculture output (mil. Euro)
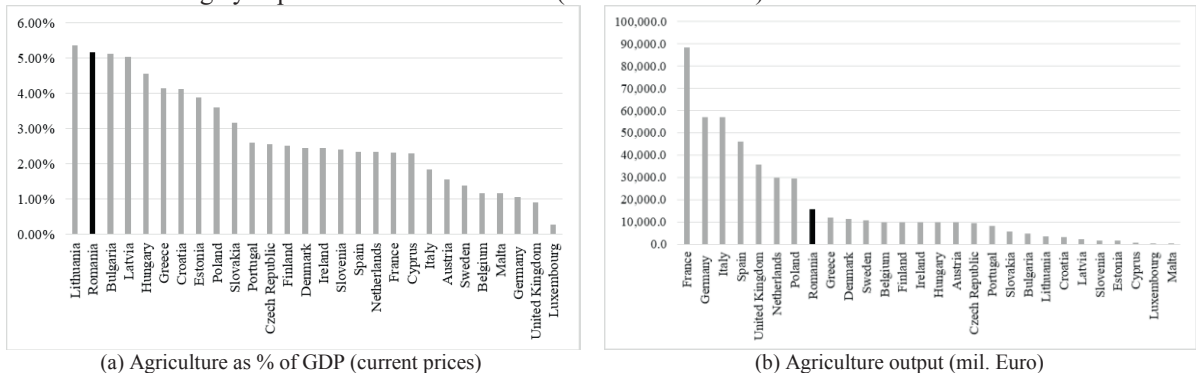
Source: Eurostat statistics

Fig. 1. Agriculture output in Romania and EU countries