

NEW FRAMEWORK IN LIQUIDITY MANAGEMENT: EFFECTIVE WORKING CAPITAL INVESTMENT - GERMAN FIRMS CASE

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Abstract

Effectiveness of working capital investments is only one from possible explanations of working capital levels in firms. Too small working capital leads some firms to negative changes in their sale levels. Destruction of cash revenues creation possibilities is dangerous for them and is hard to rebuild possibilities to create cash revenues. Financial liquidity investment efficiency model (FLIEM) predicts that before the crisis, during the crisis and after the crisis phases are connected with higher levels of working capital in processing enterprises. Investments in working capital levels are a hedging instrument against individual risk sensitivity that is higher in crisis affected times. The paper aim is to compare real economy data with FLIEM predictions. The FLIEM model expected that working capital to total assets indicator should be treated as forecasting indicator about future risk sensitivity of the entities. It could be also suitable as forewarning impulse of future standing of whole processing part of economy.

***Keywords:** working capital management, entrepreneurial liquidity, business environment, current assets, risk management*

***JEL Classification:** D92, E44, G00, G01, Q14*

***AMS Classification:** 91G50*

1 INTRODUCTION

German economy is believed as driver for economic results in nearest region in which are also V4 countries. For such reason here is used data from manufacturing firms that operate in Germany. Levels of working capital from investment point of view are maintained in entities for hedging purposes against the risk of breaking production fluency and risk of lack final offer for the clients (Bates, Kahle, & Stulz, 2009; Faulkender, & Wang, 2006; Dluhosova,

Richtarova, & Culik, 2011). Such kind of investments have also value of option of American type from holding more liquid working capital and value of option of European type from holding less liquid working capital components like inventories and accounts receivables (Michalski 2014; Soltes, & Rusnakova, 2013; Michalski, 2013). There is believed that, both cash and inventory levels should be as small as possible (Ferreira & Vilela, 2004; Kim, Mauer, & Sherman, 1998; Miller & Orr, 1966). How we can point the “as small as possible” level? If financial management decision should be done in context of future cash flows generated by the firm in the risk and uncertainty context, then truth is that the risk is higher, the working capital levels have higher utility (Belas, J., Cipovova, E., Novak, P., & Polach, J., 2012 Polak, 2009; Zmeskal & Dluhosova, 2009; Uzik & Soltes, 2009). There exists very few firms not suffering from that risk, and they do not suffer in the same way always (Opler, Pinkowitz, Stulz, & Williamson, 1999; Pinkowitz & Williamson, 2001; Dluhosova, 2004). Firms sensitivity on risk is different, and it depend on factors connected with its business environment, including before the crisis, during the crisis and after the crisis context (Kulhanek, 2012; Ozkan & Ozkan, 2004; Hudson & Orviska, 2013; Jajuga, 1986). That paper is about Financial Liquidity Investment Efficiency Model (FLIEM) predictions, and empirical data explanation of phenomenon of sensitivity on risk (Dluhosova, 2012; Dittmar & Mahrt-Smith, 2007;). We also try to suggest that working capital to total assets indicator serves as forecasting information and forewarning signal about whole manufacturing part of economy as firm environment (Horvatova, 2008; Kalcheva & Lins, 2007; Zmeskal & Dluhosova, 2010).

Working capital is a result of use active policy in attract the offer to clients by on time and full answer on the purchasers needs (Michalski 2014; Michalski, 2009). Scale of investment in working capital and capital involved in working capital levels is a result of enterprise position in economic environment (Kopa, D’Ecclesia, & Tichy, 2012; Pinkowitz, Stulz, & Williamson, 2006; Gazda, 2002). In effect there are entities that do not hold large levels of working capital. That strong in position firms have small financial vulnerability and lower sensitivity on risk and do not afraid of situation in which risk of too small level of working capital occur (Michalski, 2012d). It is because the cost of too small working capital levels for them is very small or even they have no such opportunity cost or is not linked with negative option value (Soltes, 2010; Glova & Sabol, 2011). But also, there are firms with large financial vulnerability and sensitivity on risk connected to small levels of working capital

(Michalski, 2012a). That entities need to keep larger working capital levels to hedge against costly risk of too small working capital levels (Michalski, 2012c). Too small working capital lead that kind of firms to negative changes in their sale levels. Destruction of cash revenues creation possibilities is dangerous for them and is hard to rebuild possibilities to create cash revenues. Free cash flows are generated in context of uncertainty and risk and depend also on working capital management policy of the firm (Michalski 2014; Michalski, 2012b). That risk and uncertainty are mirrored in cost of capital rate that could be used to evaluate current economic value of future free cash flows. The firm keeps larger levels of working capital, and does that, because its managing team has presumption that effect of that action will be firm value building factor. Strategic decision about level of investment in capital tied in working capital levels is made in context of all advantages and all disadvantages.

$$\Delta V = \Delta V_{TZ} + \Delta V_{BZ} = \Delta FF_{0(TZ)} + \frac{\Delta FF_{1.\infty(TZ)}}{C_{(TZ)}} + \Delta FF_{0(BZ)} + \frac{\Delta FF_{1.\infty(BZ)}}{C_{(BZ)}} \quad (1)$$

where: ΔV = enterprise value growth, ΔFF = free cash flows increase or decrease (could be positive when increase or negative when decrease), C = rate of cost of capital financing of the firm, indices: BZ = to small working capital levels consequences, TZ = consequences of holding of working capital levels.

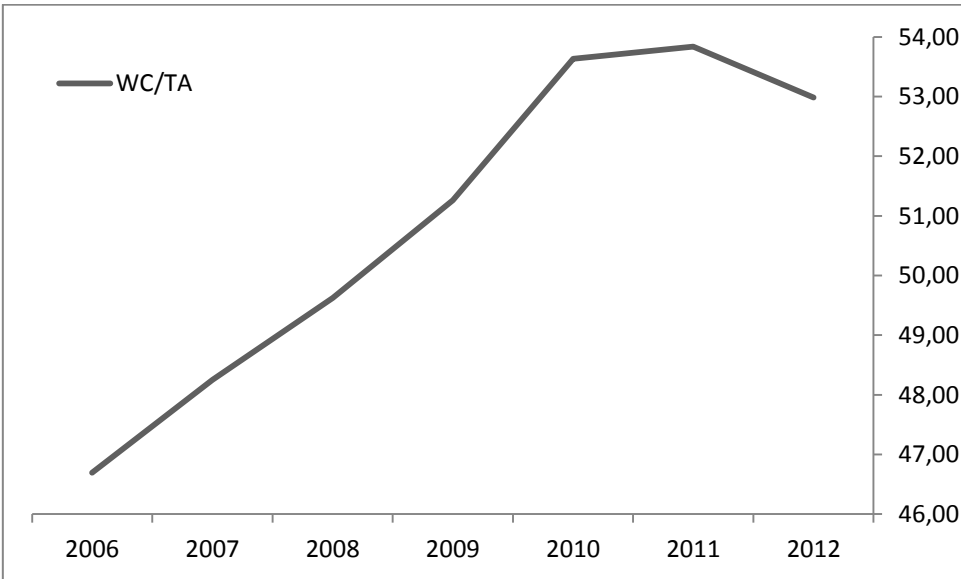
Depending on individual firm situation their individual financial vulnerability and sensitivity on risk, consequences in keeping higher levels of working capital depend on risk sensitivity reported by FLIEM model predictions.

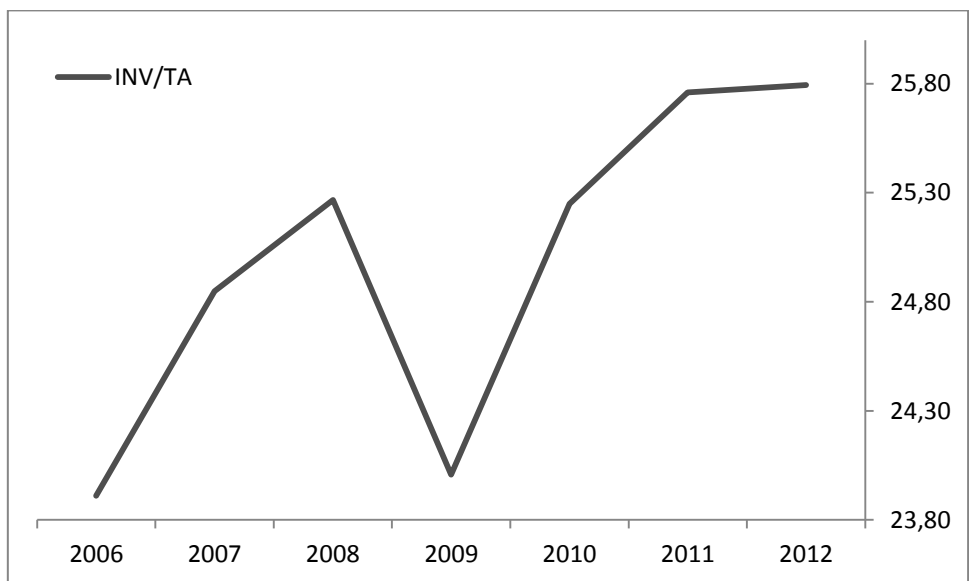
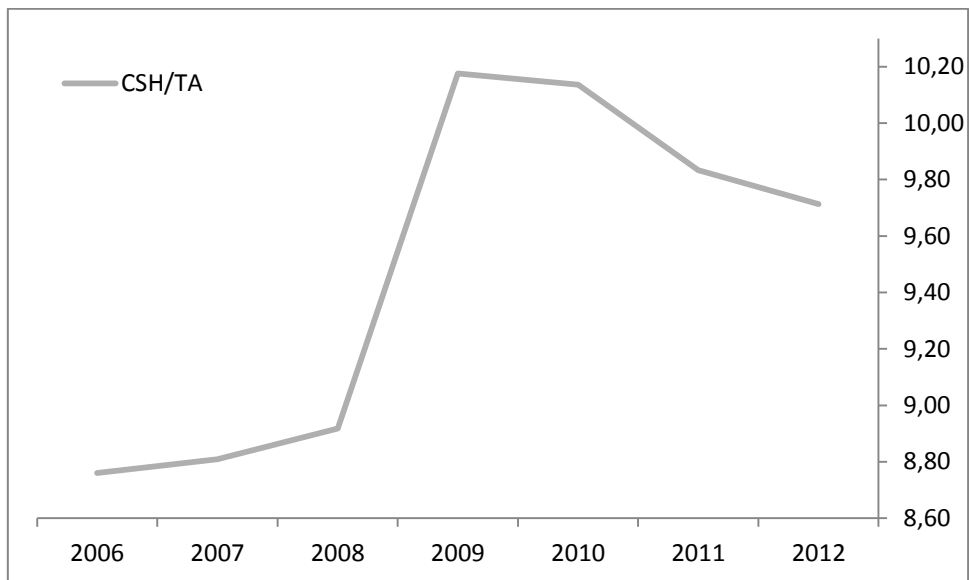
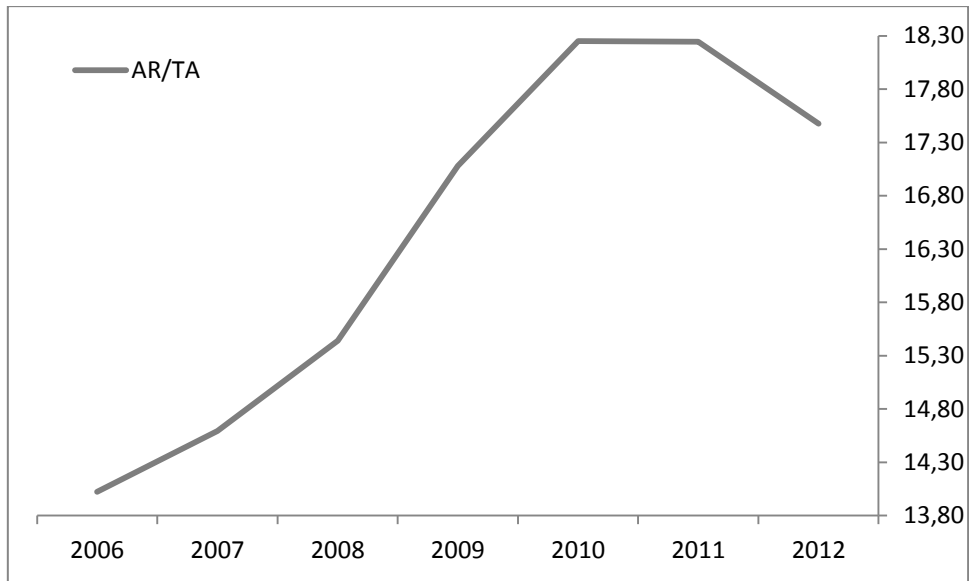
2 MODEL AND DATA

The WC/TA, working capital to total assets in manufacturing firms could serves as forewarning indicator about general economic condition of manufacturing part of real economy. Each firm tries to suit its working capital levels to its business environment. Individual risk sensitivity is a result of entity answer on changes in its internal economic health but also is response on general economic changes. Here we present working capital to total assets indicator in German manufacturing firms. That results are presented in three business environment conditions: 2006 period, named by us as „before the crisis“, 2007-2009 „during the crisis“, and 2010-2012 „after the crisis“. Empirical data confirms our projections derived from theory based on FLIEM model. FLIEM model was presented by Michalski

(Michalski 2012a, Michalski 2012b, Michalski 2012c, Michalski 2013). That is useful to describe expected relationship of working capital and total assets (WC/TA) and it depends on firm individual risk sensitivity level. Michalski and Mercik (Michalski & Mercik 2011) and Zietlow and Michalski (Zietlow & Michalski 2012) presented such sensitivity on risk relation on Polish nonprofit organizations. In that paper the relation of risk sensitivity with working capital levels is presented for manufacturing entities. In the context of risk sensitivity, the growth of risk sensitivity is a basis for increase of relation between working capital and total assets (INV/TA). In crisis context, according to FLIEM predictions, that relationship could be treated as an forewarning information of increasing probability of danger of financial difficulties in manufacturing branch. We expected that growing values of working capital levels to total assets (INV/TA) relationship is seen even earlier, before other economic indicators are a pretty decent. Figure 1 together with table 1 present relationship of average working capital levels to total assets (WC/TA) for data collected from manufacturing firms operating in Germany. Data was collected from manufacturing firms from 1 to 32 sectors that operated incessantly during such 7 years period.

Figure 1 The relationship between working capital and total assets (WC/TA) in manufacturing firms operating in Germany before the crisis (2006), during the crisis (2007-2009) and after the crisis (2010-2012) period. Source: own study based on data from 9004 manufacturing firms operating in Germany reported in Database Amadeus product of Bureau van Dijk, [date: 2014 MAR 15]





[%]	2012	2011	2010	2009	2008	2007	2006
WC/TA	52,98	53,84	53,64	51,26	49,63	48,25	46,69
SD (WC/TA)	22,73	22,70	22,94	23,00	22,89	22,89	23,31
CSH/TA	9,71	9,83	10,14	10,18	8,92	8,81	8,76
SD (CSH/TA)	13,37	13,46	13,68	13,88	12,74	12,46	12,70
AR/TA	17,48	18,24	18,25	17,08	15,44	14,59	14,02
SD (AR/TA)	12,86	13,19	13,32	12,97	13,89	14,31	14,77
INV/TA	25,79	25,76	25,25	24,01	25,27	24,85	23,91
SD (INV/TA)	17,11	17,10	16,92	16,52	16,82	16,64	16,47

Table 1. One year means and standard deviations of (WC/TA) in manufacturing firms operating in Germany before the crisis (2006), during the crisis (2007-2009) and after the crisis (2010-2012) period. Source: own study based on data from 9004 manufacturing firms operating in Germany reported in Database Amadeus product of Bureau van Dijk, [date: 2014 MAR 15]

3 CONCLUSIONS

Presented data from German manufacturing firms is with one accord with FLIEM model predictions. Forecasting of the FLIEM model is useful for make quick judgments about current and future condition of the general population of the manufacturing enterprises, that population risk sensitivity and as global effect of that. There is possible to guess future condition of the whole manufacturing part of economy as well. Next research should be concentrated on future control of overall fit of the FLIEM model and its predictions in after the crisis conditions, cross the countries and cross the sectors research, that could answer how the risk sensitivity characterize the firms from various business branches, and various countries.

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