

THE LEVEL AND STRUCTURE OF THE TANGIBLE CURRENT ASSETS OF THE POLISH BUSINESS SECTOR WITH RESPECT TO THE BUSINESS CYCLE

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I. Abstract

This paper researches the fluctuations in the aggregate level and the relative composition of the tangible current assets of the Polish business sector. The period from 2006 to 2010 is considered, enabling to study the impact of the global financial crisis, which started in 2007, on the aggregate inventory in the economy. To mitigate the effect of the inflation, the prices are converted to constant prices at the 2006 year base.

II. Keywords

Tangible current assets, aggregate inventory, Polish business sector, business cycle.

III. Introduction to the inventory in the Polish and International Accounting Standards

The business cycle is an output (economic activity) fluctuation over several years' period. There shall be considered the influence of the negative shock, the 2007-08 financial crisis, which led to the economic contraction globally [4].

Each business entity in order to exist and continue its operations in the unforeseen future requires the wealth (assets) and the sources of its financing (liabilities and equity), regardless of its type of the main operating activities (trade, production or services) [8].

The assets of a company are composed of the economic resources of a reliably estimated value, which are controlled by the enterprise as a result of past events and

will cause an inflow of economic benefits in the future [1]. The general classification of the wealth (assets) and the sources of its financing are shown in Table 1.

Table 1. Classification of the wealth of a company and the sources of its financing

The wealth of a company and sources of its financing			
Assets of a business entity	Sources of the wealth financing		
A	Non-current assets	A	Equity
I	Intangible assets and legal values	I	Share capital
II	Tangible fixed assets	II	Supplementary capital
II	Long-term receivables	II	Reserve capitals
I		I	
I	Long-term investments	I	Previous years' profit (loss)
V		V	
V	Long-term prepayments	V	Net profit (loss)
B	Current assets	B	Liabilities and provisions for liabilities
I	Tangible current assets (Inventory)	I	Provisions for liabilities
II	Short-term receivables	II	Long-term liabilities
II	Short-term investments	II	Short-term liabilities
I		I	
I	Short-term prepayments and accrued income	I	Accruals and deferred income
V		V	

Source: Own elaboration based on the Act of 29 Sept 1994 on Accounting [1].

The assets may be divided into two groups: current and non-current assets, depending on their function in the operating cycle.

The tangible current assets (inventory) are materials acquired for the entity's own use, finished goods (products and services) manufactured or processed by the entity which are ready for sale or work-in-progress, semi-finished goods, and goods acquired for resale in the unprocessed form [1].

The classification of the current assets of enterprises is presented in Table 2.

The tangible current assets (inventory) consist of:

1) materials acquired for the entity's own use, which are stored in the firm's warehouse, in storing or processing by a different entity, or a good-in-transport;

a) products manufactured or processed by the entity: finished products ready for sale, semi-finished products, work in progress;

2) the goods acquired for resale in the unprocessed form, which are in storage or at a retailer;

3) advances for deliveries of materials, products and goods paid out to second parties, which has not been realised by the reporting date [2].

Table 2. Classification of current assets of enterprises

B	Current assets			
I	Tangible current assets (Inventory)	1	Materials	Raw materials
				Ancillary materials
				Fuel
				Spare parts of technical devices and machinery
				Scraps
		2	Products	Finished products
				Unfinished products
3	Goods			
4	Advances for deliveries (<i>materials, products, goods</i>)			
II	Short-term receivables	1	Trade receivables from related parties	
		2	Receivables from other parties	
III	Short-term investments	1	Short-term financial assets	
		2	Other short-term investments	
IV	Short-term prepayments and accrued income			

Source: Own elaboration based on the Act of 29 Sept 1994 on Accounting [1] and Aleszczyk, Józef, *Rachunkowość finansowa od podstaw*, (5th edition, Poznań: Wydawnictwo Zysk i S-ka, 2011) [2].

The materials are objects or tools of work acquired from other parties for the entity's own use, which are consumed in the course of one normal operating cycle, passing its value to the processed product. In the process of manufacturing, the products are composed of:

1) the finished products, entered into storage with the purpose of sale;

2) the unfinished production, which includes products at the moment when the production cycle has not been finished. Considering the degree of advancement, the production is divided into semi-finished products (which have been partially process

and can be stored and sold) and work-in-progress (which is being processed and cannot be yet stored).

The goods are the tangible parts of current assets, which have been acquired by an entity with the purpose of resale. Therefore, these are neither manufactured nor further processed by the entity.

The advances for deliveries comprise of not yet realised amounts paid to the other parties on the delivery of some tangible current assets.

The classification and recognition of the inventory in the accounting regulations serve the function of presenting the assets-capital standing (in the Statement of Financial Position, previously the Balance Sheet), the financial standing (in the Income Statement, previously referred to as the Profit and Loss statement) and the economic standing (in the Statement of Cash Flows) [2].

The scope of information on the enterprises' inventory in the separate elements of financial statements is illustrated in Table 3. This is stated for the companies excluding banks, insurance companies and related, which the regulator required to report different accounting information [1].

Table 3. Inventory in the entity's financial statement

STATEMENT OF FINANCIAL POSITION			
B	Current assets	B	Liabilities and provisions for liabilities
I	Tangible current assets (Inventory)	III	Short term liabilities
1	Materials	1	To related parties:
2	Semi-finished products and work in	a)	trade liabilities
3	progress	2	To other entities:
4	Finished products	d)	trade liabilities
5	Goods	e)	received advances for deliveries
	Advances for deliveries		
II	Short term receivables		
1	Receivables from related parties:		
a)	trade receivables		
2	Receivables from other entities:		
a)	trade receivables		

INCOME STATEMENT			
No.	Comparative variant	Calculation variant	N o.
A	Net revenues from sales and equivalent, including revenues, including from related parties:	Net revenues from sales of products, goods and materials, including from related parties:	A
I	Net revenues from sales of products	Net revenues from sales of products	I
II			
III	Change in the balance of products Manufacturing cost of products for internal purposes		
IV	Net revenues from sales of goods and materials		II
B	Operating expenses	Cost of products, goods and materials, including to related parties	B
I	Amortisation and depreciation		
II	Consumption of materials and energy	Manufacturing cost of products sold	I
III	External services	Value of goods and materials sold	II
IV	Taxes and charges	Gross profit (loss) on sales ($A - B$)	C
V	Payroll	Selling costs	D
VI	Social security and other benefits	General and administrative costs	E
VII	Other costs by type		
VIII	Value of goods of materials sold		
C	$A - B$	Profit (loss) on sales	$C - D - E$

STATEMENT OF CASH FLOWS			
Direct method		Indirect method	
A	Cash flows from operating activities		
I	Inflows	Net profit (loss)	I
1	Sales	Total adjustments	I
2	Other inflows from operating activities	Amortisation and depreciation	1
		Exchange gains (losses)	2
II	Outflows	Interest and profit sharing (dividend)	3
1	Deliveries and services	Profit (loss) on investment activities	4
2	Net payroll	Change in provisions	5
3	Social security, medical insurance and other benefits	Change in inventory	6
4	Taxes and charges due to the State Treasury	Change in receivables	7
5	Other operating expenses	Change in short-term liabilities excluding credits and loans	8
		Change in prepayments and accruals	9
		Other adjustments	10
II	Net cash flows from operating activities ($I \pm II$)		
I			

Source: Own elaboration based on the Act of 29 Sept 1994 on Accounting [1].

The information presented in Table 3 defines the scope of information regarding the inventory reported by the enterprises in the micro scale. Once aggregated, these enable to generate the macroeconomic data provided by the state's statistical office.

IV. The tangible current assets in the economic statistics of Poland

In the Statistical Yearbooks of the Republic of Poland, the data is presented on entities keeping accounting books which employ at least 9 persons. The conveyed surveys exclude banks, insurance companies, brokerage houses, hedge and pension funds, credit unions, higher education institutions, cultural institutions with legal personality and private agricultural farms [11].

For this empirical study, the period from 2006 to 2010 is considered. The base year, 2006, is chosen such that the effects of the 2007-08 global financial crisis can be researched.

The level of the current assets in constant prices (base year: 2006) and its percentage composition of the economic entities in Poland between years 2006 to 2010 are included in Table 4 and Graph 1.

The data in Table 4 and Graph 1 shows that the composition of the current assets remains at a stabilised level. In particular:

- 1) the tangible current assets (inventory) constitute to approximately 26.0% of total current assets, among which;
- 2) the share of materials together with advances for delivery continues to add up to about 43.2% of the inventory;
- 3) the goods part of the storage oscillates closely around 41.0%;
- 4) the finished products share persists to stay, at the lowest level of all, at roughly 15.8%.

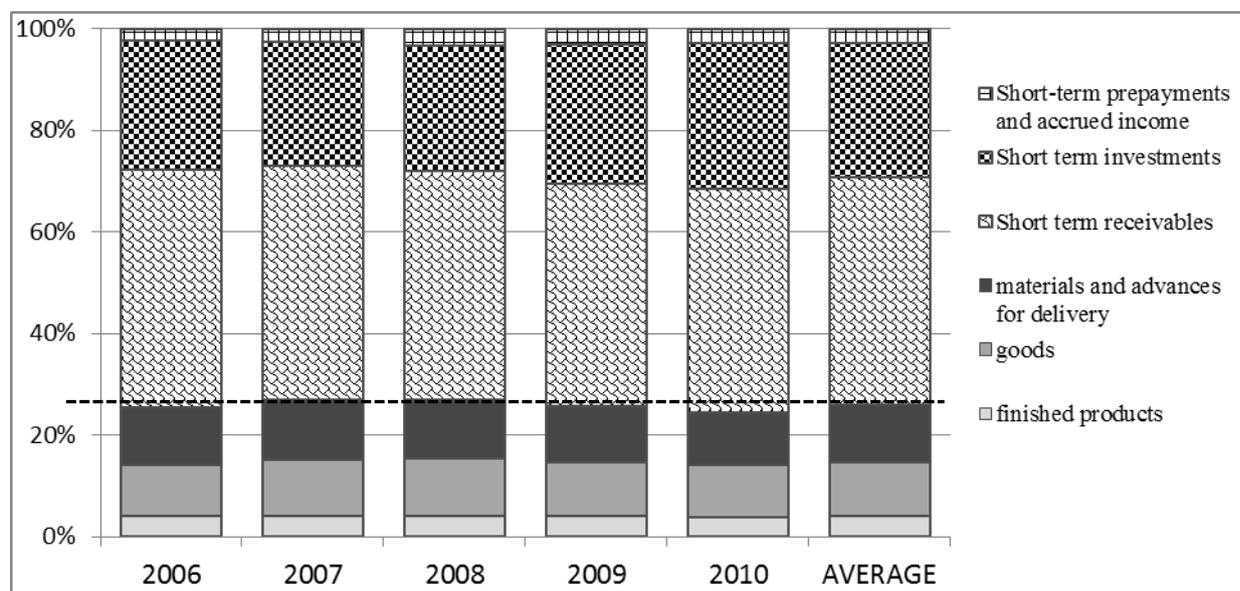
The level of revenue from the sales of the tangible current assets (products, goods and materials) and the cost (worth) of the inventory sold (products, goods and materials) allow to evaluate the productiveness of inventory held by the Polish enterprises.

Table 4. The level and structure of current assets of economic entities in years 2006-2010

No.	Position	2006	2007	2008	2009	2010	Average
The level of current assets (in million PLN)							
I	Current assets (total)	591 933	679 616	732 200	731 629	777 579	702 592
1	Inventory, including	151 244	184 429	198 446	188 080	191 785	182 797
a)	finished products	24 116	29 133	30 784	30 244	30 197	28 895
b)	goods	59 373	74 788	82 799	78 406	79 533	74 980
c)	materials and advances for delivery	67 755	80 507	84 862	79 430	82 056	78 922
2	Short term receivables	277 369	312 162	328 615	320 906	341 291	316 069
3	Short term investments	149 480	165 830	181 356	200 753	222 120	183 908
4	Short-term prepayments and accrued income	13 840	17 196	23 783	21 890	22 383	19 818
The structure of current assets (in %)							
II	Current assets (total)	100.00	100.00	100.00	100.00	100.00	100.00
1	Inventory, including	25.55	27.14	27.10	25.71	24.66	26.02
a)	finished products	15.95	15.80	15.51	16.08	15.75	15.81
b)	goods	39.26	40.55	41.72	41.69	41.47	41.02
c)	materials and advances for delivery	44.80	43.65	42.76	42.23	42.79	43.17
2	Short term receivables	46.86	45.93	44.88	43.86	43.89	44.99
3	Short term investments	25.25	24.40	24.77	27.44	28.57	26.18
4	Short-term prepayments and accrued income	2.34	2.53	3.25	2.99	2.88	2.82

Source: Own elaboration based on macroeconomic data in current prices from Central Statistical Office [11] adjusted for the inflation, using the Consumer Price Index at the January of each of the following year reported by the National Bank of Poland [9].

Graph 1: The structure of the aggregated current assets of the Polish business sector



Source: Own elaboration based on Table 4.

For the purpose of the inventory analysis, the following ratios [3, 6, 7, 10] shall be applied:

1) inventory rotation index – a ratio of net revenue from inventory sales to the average level of inventory, which shows the gross effectiveness of tangible current assets usage;

2) inventory turnover – a ratio of the cost of inventory sold to the average level of inventory, which shows the net effectiveness of tangible current assets usage;

3) inventory conversion period – a ratio of the average tangible current assets level multiplied times the number of days in the year to revenue from inventory sales, which gives an insight into the financial sources engaged by the inventory;

4) inventory holding period – a ratio of the average tangible current assets level multiplied by the number of days in the year to the cost of inventory sold, which allows to find the holding period of inventory, both in calendar days and in working days.

Table 5 contains macroeconomic data used for calculation of the efficiency ratios of the inventory. The values are reported for years 2006 to 2010 in constant prices (base year: 2006).

Table 5. Aggregate inventory effectiveness indexes for Polish enterprises in years 2006-2010

No.	Position	2006	2007	2008	2009	2010	Average
1	Net revenue from products' sale (in million PLN)	1064 878	1240 393	1400 769	1441 656	1601 052	1349 750
2	Net revenue from sale of goods and materials (in million PLN)	737 657	866 691	1017 303	1043 482	1171 991	967 425
3	Revenue from inventory sale (No.1+No.2)	1802 535	2041 603	2167 085	2106 738	2192 637	2062 119
4	Cost of sold products (in million PLN)	1071 458	1202 486	1285 317	1249 549	1295 664	1220 895
5	Cost of sold goods and materials (in million PLN)	636 234	722 601	769 160	749 540	784 262	732 359
6	Cost of sold inventory (No.4+No.5)	1707 692	1925 088	2054 477	1999 089	2079 926	1953 254
7	Inventory (in million PLN)	151 244	184 429	198 446	188 080	191 785	182 797
8	Calendar days	365	365	366	365	365	365.2
9	Working days	253	252	252	254	253	252.8
10	Inventory rotation index (No.3/No.7)	11.9	11.1	10.9	11.2	11.4	11.3
11	Inventory turnover (No.6/No.7)	11.3	10.4	10.4	10.6	10.8	10.7
12	Inventory conversion						
a)	in calendar days (No.7*No.8/No. 3)	30.6	33.0	33.5	32.6	31.9	32.4
b)	in working days (No.7*No.9/No. 3)	21.2	22.8	23.1	22.7	22.1	22.4
13	Inventory holding period						
a)	in calendar days (No.7*No.8/No. 6)	32.3	35.0	35.4	34.3	33.7	34.2
b)	in working days (No.7*No.9/No. 6)	22.4	24.1	24.3	23.9	23.3	23.7

Source: Own elaboration based on macroeconomic data in current prices from Central Statistical Office [11] adjusted for the inflation, using the Consumer Price Index at the January of each of the following year reported by the National Bank of Poland [9].

From the data and ratios presented in Table 5, the following conclusions regarding the aggregate tangible current assets may be drawn:

- 1) the inventory rotation index was stable at the level of 11.3 times,
- 2) the inventory turnover remained at an average level of 10.7 times,
- 3) the inventory conversion indexes shown the engagement of financial sources for 32.4 calendar days or equivalently 22.4 working days,
- 4) the average holding period of inventory was approximately 34.2 calendar days or equivalently 23.7 working days.

The inventory rotation index and the inventory turnover reflect the number of times the inventory is sold over a year relative to the sales and the costs respectively. A lower ratio may indicate problems with more deficiencies in the production or sales operations, or overstocking [12] due to falling demand. Interestingly, the troughs for these ratios occurred in year 2008, i.e. when the sub-prime mortgage crisis in the United States is considered to have turned into a global recession.

Similarly, the inventory conversion and the inventory holding period represent the average number of days of storage before the products, goods or materials are sold or the average number days the production inputs are held to protect against a shortage in supplies [10]. Therefore, an increase in the indexes may indicate a decrease in demand for goods being sold, but also more anxiety about the uncertainty of deliveries. [2] The level of tangible current assets stored as the buffer is referred to as the safe level of inventory or the safely stock [3]. However, regardless of the transactions or precautionary motives, an increased holding period results in more wealth being “frozen” at a negligible interest rate, in addition to the increased costs of storing. These negatively affect the net income and profitability *ceteris paribus*. Remarkably, in year 2008, the Polish economy encountered the peaks in the inventory conversion and holding period ratios.

Nonetheless, the aggregated enterprises adjusted their tangible current assets level with respect to the fluctuations in revenues in absolute terms. However, the approximately constant level of all ratios presented in Table 5 suggests the existence of a persistent general rule of the inventory management on the macroeconomic level.

Especially, as an unchanging fraction of wealth continues to be held aside of the current consumption for the particular period.

V. Conclusion and evaluation

At the microeconomic level, every company requires a healthy level of liquid assets to continue its current operations. The accounting information, to the extent presented in section IV, of each entity is reported to the state. When the entities are added up in the market, there is a certain aggregate level of assets held. This level, in the macroeconomic perspective, fluctuates, together with the demand and output. Additionally, to exclude the influence of inflation, the data in this paper is adjusted to reflect the constant prices.

Interestingly, the Polish enterprises cumulatively demonstrate an approximately stable (roughly 26%) level of tangible current assets relative to current assets. Moreover, the composition of the aggregate inventory held does not represent much volatility in the economy. In particular, there is about 16%, 41% and 43% of finished products, goods and materials (together with advances for delivery) respectively, held in the economy.

Arguably, the amount, net worth or composition of assets in storage may differ between entities. However, considering the macroeconomic perspective, it is not relevant which entity specifically keeps the inventory. Conversely, the fact of the specific amount being held in store in the economy is important. To illustrate, an entity may choose to store its production inputs and outputs for the transactions or precautionary motives. The firm may choose to keep the inventory in its own warehouse, at a sales distribution centre or outsource it to a specialised warehouse company. In the microeconomy, the choice would only affect the structure of the own costs (holding cost, utilities, insurance or fee paid etc.) and revenues to the subcontracting company. On the other hand, the difference between the companies profile vanishes when taking into account the macroeconomy, as all assets are aggregated.

Therefore, the efficiency ratios for the tangible current assets have been analysed. Remarkably, both groups: the inventory turnover and the holding period, exhibit a similar pattern. The inventory is on average turned 11 times over a year, and is

held for slightly over a calendar month per year. The magnitude in the ratios' variations is marginal and their levels remain approximately constant. Most notably, in 2008 for both groups, the values reach their extremes.

This pattern of maintained stability throughout the time is consistent with the consumption smoothing of market participants in the micro perspective, thus the production smoothing in the aggregate macroeconomy is expected as well [4, 5]. In addition, the presented data support the rational adjustments of the economy, such as in case of the 2008 output cutback.

Concluding, market participants may reflect different strategies regarding the tangible current assets being held. The supply-chain policies, such as "Just-In-Time", suggest to reduce the amount of inventory held to a minimum and enhance the production process. Indeed, the managers face the trade-off between assuring a smooth production, meeting demand for products and operating at a satisfying profit margin. Consequently, individual companies make attempts to optimise the logistics process. However, from the macro point of view, there is a stable inventory management. Interestingly, the empirical data shows that the level of the tangible current assets in absolute terms is endogenously adaptive. On the other hand, the relative worth of inventory in the economy to the total current assets, its composition and the holding period reveal some degree of exogeneity.

This paper contributes to the literature on the inventory behaviour held in the economy under the business cycles. There is one country, the European Union member since 2004, studied. However, a further research could be carried for multiple states to facilitate an analysis of possible dissimilarities between the developed and developing countries, or with differing industry-focuses. Furthermore, the paper mostly considers the tangible current assets, while further inference about the particular components of the inventory could be undertaken. Additionally, the covered period of the last five years could be extended to account for the long-run changes in the economy. Moreover, should there be sufficient monthly data, the seasonality might be also taken into consideration.

VI. Literature

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