FINANCIAL DIAGNOSIS OF STOCKS

SUCIU GHEORGHE
*ASSOCIATE PROFESSOR "DIMITRIE CANTEMIR" CHRISTIAN UNIVERSITY BRAŞOV,
ROMANIA, ucdc.suciu.g@gmail.com*
BÂRSAN PIPU-NICOLAE
*ASSOCIATE PROFESSOR "DIMITRIE CANTEMIR" CHRISTIAN UNIVERSITY BRAŞOV,
ROMANIA, nbarsan@gmail.com*

Summary: Financial diagnosis is a part of a company's general diagnosis. The role of the financial diagnosis is to establish the situation of the company at a given time, to see if it is viable, to help the decision-makers to take the best measures to continue or cease the activity, or to sell, buy or liquidate the company. Each entity is unique and arbitrarily applying some analysis models used by other companies can lead to significant errors. One cannot analyze in the same way a company that produces household products and a trade company. In the first one, the working capital must be positive, because permanent capitals must finance the fixed assets which have a high value, and the working capital will finance the operating cycle. In case of a trade company, a negative working capital might represent a positive activity, because the duration of the operating cycle is much shorter, and short term sources can also finance the company's tangible assets.

1. Introduction and context of the study

This article aims to provide new insights into the financial diagnosis of stocks. In each company there must be equilibrium between the resources and funding needs. Ideally, permanent sources should finance permanent needs, represented by fixed assets, and temporary sources should cover temporary needs. Stocks as current assets must be financed from temporary resources (operating debts and treasury loans). Because stocks represent immobilizations of financial resources, one must find an optimal level for them to ensure that the production activity takes place in efficient economic conditions. For a stock diagnosis, one must evaluate the cost of stocks, their financing and the components of the operating cycle.

This work is a result of scientific research, based on the analysis of literature regarding the management and financial diagnosis of a company.

2. The company's financial diagnosis

Diagnosis can be approached, on the one hand, as a phase that is part of the manager's role while carrying out his duty of control and evaluation; in this case it has an individual character, being operative and most often referring to elements from current activities. On the other hand, diagnosis can be used to examine a complex problem, as a method on its own.

The company's global diagnosis follows the analysis of the company's main functions (legal, commercial, technical, personnel-related, and financial-patrimony).

Financial diagnosis consists of a group of instruments and methods which allow assessing the company's financial situation and its performance. The financial diagnosis permits to asses the past and present financial situation, and based on them certain projections for the future can be made**.**

The information necessary for the financial diagnosis is taken from the financial statements (balance sheet, profit and loss account, cash flow situation, ownership equity changes, annotations on the financial statements).

A financial analyst will ask first of all for the financial statements for the last 5 years and the company's strategy for the future. He will corroborate the financial and economic data with the national and international economic situation, and also with the company's sector of activity. Then he/she will analyze each component of the financial statement: balance sheet, profit and loss account, ownership equity changes, cash flow, annotations to financial statements. Based on each component, the analyst will try to give diagnostics: of the financial equilibrium, of profitability, cash flow, risk, socks and financial assets.

3. The notion of stocks

Stocks represent the physical quantities of materials, products or goods necessary for each phase of the operating cycle (supply, production, distribution) to ensure that the operating cycle happens in a continuous and rhythmic pace. The International Accounting Standards defines stocks as:

➢ Kept in order to be sold while the activity unfolds normally;
➢ In production in order to be sold while the activity unfolds normally;
➢ As raw materials, other materials and consumables which will be used in the production process or in the provision of services/in the service delivery process.

The operating cycle represents the timeframe between the acquisition of raw materials which go into a transformation process and their conversion into cash or cash equivalents. For companies that are in the commerce sector, the operating cycle consists of buying goods that will subsequently be sold in the same condition.

Depending on the source of origin, stocks can be bought (raw materials, other materials, inventory items, encampments, temporary settlements, animals and plantations) or fabricated (ongoing production, semi-fabricated products, finished goods, waste products). Stocks that have **entered patrimony** are evaluated as follows:

a) stocks bought at the acquisition price;
b) stocks fabricated at the production costs;
c) stocks obtained on a free basis, at their fair value which represents the price that the client is most likely willing to accept during a commercial transaction, with the price determined in an objective manner;
d) stocks brought as contribution, at the contribution value established after the evaluation.

Multiple methods can be used when stocks **exit patrimony**: specific identification method, weighted average cost method (WAC), "first in – first out" method (FIFO) or "last in – first out" method (LIFO).

4. Cost of stocks and their financing

In order for the production process (operating cycle) to take place, the company must finance the current assets (raw material stocks, other materials, finished and unfinished goods, receivables-clients, products that are being produced, finished products, placement securities, cash in the registry and account), which in fact represents the **gross working capital**.

The company attracts, on a short term basis, because of the ongoing operating cycle, some temporary resources (operating debts) from the suppliers (through the payment of purchases at due date), from employees (payment of salaries in the following month), from the country (monthly or quarterly payment of taxes and duties), from shareholders (payment of dividends), which represent the company's **operating debts**.

Operating debts, together with bank loans, constitute the company's **current debts**. Subsequently, the company will only have to finance the difference between current assets and current debts. This is in fact the **net working capital**:

$$Net\ working\ capital = Current\ assets - Current\ debts \qquad (1)$$

This difference is actually the working capital, and the net working capital can also be calculated in the upper part of the financial balance sheet, according to the formula:

$$Net\ working\ capital = Permanent\ liabilities - Permanent\ assets \qquad (2)$$

If the net working capital is higher than zero, current assets are financed from short term and long term resources. If the working capital equals zero, the company is in perfect short term and long term equilibrium, because each financing covering the financing need. If the net working capital is lower than zero, permanent assets are financed by the short term resources. At a first glace one could say that there is financial disequilibrium because the current assets that will transform into cash throughout the year are not enough to reimburse the short term debts. In this case a comparative analysis of the due date of assets and liabilities is necessary, because a financial equilibrium can be ensured if the transformation of current assets into cash happens before the short term debts due date.

The **cost of stocks** contains all the expenses incurred by the company for the sold products, works and services. The stock related costs can be classified into 4 categories:

A) **holding costs**, they comprise the costs related to the fixed capital, depositing, physical and moral wear, insurance;
B) **ordering costs** which include the costs that occur in case of an order (transportation, telephone);
C) **shortage cost** refer to a loss of a goods delivery order, the extra cost due to the urgent supplies of stocks at a higher price;
D) **price of stocks**, represents the unit cost or direct unit cost, which can be modified in case the supplier offers a discount for large orders.

Companies can adopt multiple policies for **financing the stocks**: aggressive, relaxed and moderate.

The **aggressive policy for financing the stocks** implies that there is a negative working capital (net working capital) and the financing will be done through short term loans. The cost of these credits will be lower, the profitability will be higher, but the risks will also be the highest. The aggressive financing policy is shown in diagram 1:
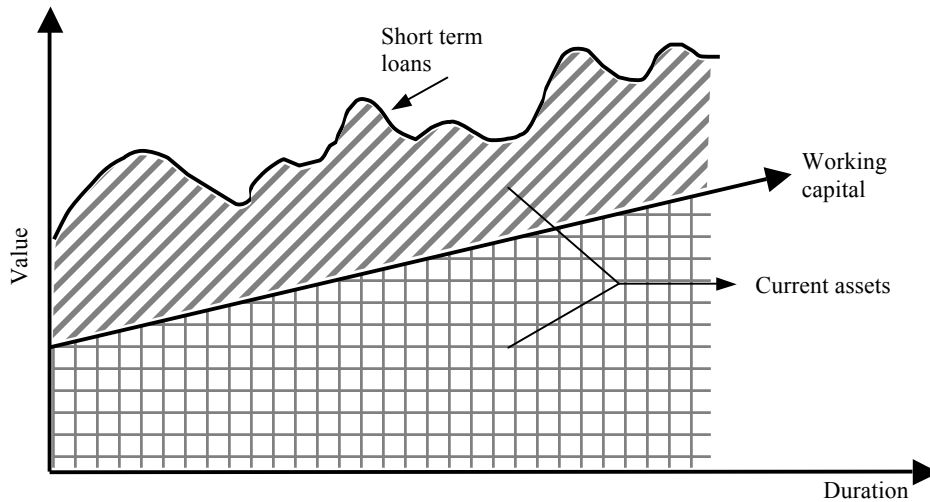

Diagram 1 - Financing the firm through an aggressive policy

The **relaxed policy for financing the stocks** is done through a positive working capital which covers the need for current assets. In this case short term credits are totally discarded, because the company will obtain liquidities from the working capital. The financing costs are the highest in this policy, but it guarantees the firm's stability. The profitability will be smaller because of the high financing costs. The relaxed financing policy is shown in diagram 2:
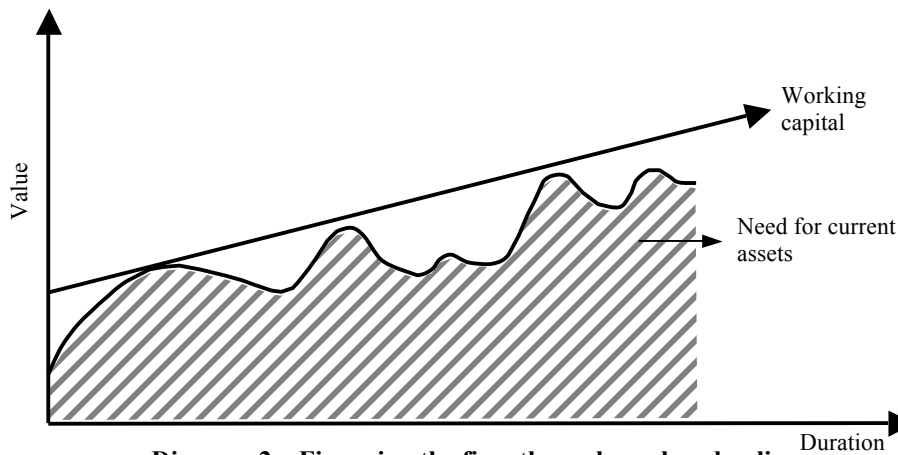

Diagram 2 – Financing the firm through a relaxed policy

The **moderate financing policy for stocks** means that the working capital can cover the average needs for current assets. Whenever the working capital cannot cover the financing needs for stocks, the firm will use short term loans.

When the company has a surplus of liquidities, these can be turned into short term investments, to make profit. Financing costs, profitability and operating risk in this policy have a medium value and companies can frequently use this option.

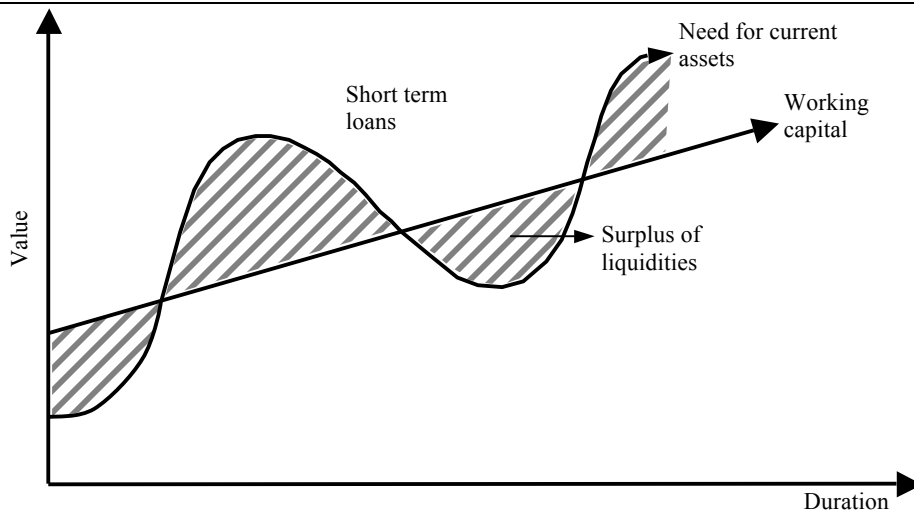The moderate financing policy for stocks is presented in diagram 3:

Diagram 3 – Financing the firm through a moderate policy

The operating cycle, when related to the assets, contains the stocks' conversion duration and the receivables' conversion duration:

$$\text{Operating cycle} = \text{Stocks' conversion duration} + \text{Liabilities' conversion duration} \qquad (3)$$

Stocks' conversion duration (Scd) or the time in which the stocks are stored, is given by the time necessary to buy the raw materials, produce and deliver the goods. It is calculated as:

$$\text{Scd} = \frac{\text{Average balance of raw and other materials and ongoing production}}{\text{Production costs}} \, x\, 365 \qquad (4)$$

The production cost has the following structure:
a) raw and direct material;
b) residual materials (they are subtracted);
c) direct salaries;
d) insurance and social protection contributions related to direct salaries;
e) expenses related to the maintenance and functioning of equipments;
f) general expenses of sections (indirect expenses related to the production process).
Production cost = a – b + c + d + e + f

Average balance of raw materials (Abrm) is established as an arithmetic average between the initial annual balance (Ai) and final annual balance (Af) of raw and other materials:

$$(\text{Abrm}) = \frac{\text{Ai} + \text{Af}}{2} \qquad (5)$$

To be more exact, the average balance of raw materials (Abrm) can be established by taking into account the average balance related to each month:

$$(\text{Abrm}) = \frac{\text{Average balance January} + \text{Avg. balance February}........ + \text{Avg. balance December}}{12} \qquad (6)$$

Average balance January represents the arithmetic average of the initial and final balance in January. If the average balance of raw materials is higher, it means that the stocks' conversion duration will be longer and implicitly the financing duration will be increased.

Example to establish the average balance of raw materials:
In a company there is an initial balance of stocks for January = 500, and the entry and exit of stocks during the whole year are presented in table 1:

Table 1 Entry and exit of stocks

Month	Entry	Exit
January	800	600
February	900	650
March	750	800
April	650	800
May	700	850
June	750	800
July	700	750
August	1.000	800
September	1.000	850
October	600	900
November	700	900
December	700	800
Total	**9,250**	**9,500**

Average balance of raw material (Abrm) can be established according to the data from table 2:

Month	Initial balance	Entry	Exit	Final balance	Monthly average balance
0	1	2	3	4 = (1 + 2 − 3)	5 = (1 + 4)/2
January	500	800	600	700	600
February	700	900	650	950	825
March	950	750	800	900	925
April	900	650	800	750	825
May	750	700	850	600	675
June	600	750	800	550	575
July	550	700	750	500	525
August	500	1,000	800	700	600
September	700	1,000	850	850	775
October	850	600	900	550	700
November	550	700	900	350	450
December	350	700	800	250	300
Total	**7,900**	**9,250**	**9,500**	**7,650**	**7,775**

Source: own calculations

In a simplified manner, the Abrm can be established like: Abrm = $\dfrac{500 + 250}{2}$ = 375

If one takes into account the monthly average balance, Abrm = $\dfrac{7,775}{12}$ = 648

The second variant is higher with 72.8% than the first value and is much more realistic because it takes into consideration all the months and not only the initial and final balance of the analyzed year.

The conversion duration of liabilities (Cdl) or the average duration of collection of liabilities represents the necessary timeframe to collect the revenues from selling of the delivered goods. It is determined as:

$$Cdl = \frac{\text{Average balance of liabilities account}}{\text{Turnover}} \times 365 \qquad (7)$$

The average balance of liabilities (Abl) can be determined through 2 formulas:
a) by taking into account the initial balance (from the 1st of January) and final (31st of December) of liabilities:

$$(Abl) = \frac{\text{Bi liabilities + Bf liabilities}}{2} \qquad (8)$$

b) monthly average balance of liabilities:

$$(Abl) = \frac{\text{Average balance January + Avg. balance February .... + Avg. balance December}}{12} \qquad (9)$$

When referring to **liabilities,** the operating cycle contains the duration of use of the attracted sources and the conversion cycle of liquidities:

$$\text{Operating cycle} = \text{Liquidities' conversion cycle} + \text{Duration of use of attracted sources} \qquad (10)$$

The duration of use of attracted sources (Duas) is the period of time between the moment of acquisition of different resources used in the production cycle (raw materials, labour force, taxes, contributions) and the moment of the actual payment of the undertaken commitments. It is calculated according to the following formula:

Duas=

$$\frac{\text{Avg. balance suppliers} + \text{Avg. balance salaries} + \text{Avg. balance duties and taxes}}{\text{Production - related operating expenses}} x365 \qquad (11)$$

The average balance of suppliers, salaries, duties and taxes can be established in two ways: by taking into account the initial and final annual balances or the monthly average balances.

The production-related operating expenses include all the operating expenses, except the ones from fines, compensations, penalties, expenses with the transferred assets. In fact, the production-related operating expenses include the production costs, to which indirect expenses are added, which have not been included in the production costs (sales and general management expenses).

The liquidities' conversion cycle (Lcc) represents the net time interval between the collection of revenues from the sold products and the payments done on account of different resource acquisitions. It is determined by subtracting from the duration of the operating cycle the duration of use of commercial debts (durations of use of attracted sources):

$$\text{Liquidities' conversion cycle} = \text{Operating cycle} - \text{Duration of use of attracted sources} \qquad (12)$$

In addition to the theoretical part, we present a model to establish the components of the operating cycle and its financing, starting from the data from the balance sheet and profit and loss account:

BALANCE SHEET

Thousands lei

ACTIVE	31.12. 2012	31.12. 2013	PASSIVE	31.12. 2012	31.12. 2013
Fixed assets	2,400	2,500	Company capital	1,350	1,350
Current assets from which:	2,250	2,300	Reserves, undistributed profit	500	560
- stocks	600	650	Debenture loans	360	300
- receivables	1,480	1,400	Bank credits for investments	1,110	1,250
- cash	170	250	Current operating debts, from which: - salaries - suppliers - duties and taxes	1,330 220 1,030 80	1,340 230 1,050 60
TOTAL	**4,650**	**4,800**		**4,650**	**4,800**

Stocks' monthly average balance from 2013 had the following values (thousands of lei): 560, 640, 720, 780, 620, 680, 700, 750, 730, 800, 710, 660.

Stocks' yearly average balance for 2013 had the following values (thousands of lei): 1,520, 1,600, 1,500, 1,460, 1,380, 1,450, 1,720, 1,550, 1,420, 1,580, 1,490, 1,470.

The monthly average balance for the current operating debts had the following values (thousands of lei): 1,300, 1,200, 1,380, 1,250, 1,280, 1,400, 1,260, 1,280, 1,350, 1,190, 1,210, 1,320.

Profit and loss account (thousands of lei):
Operating income = 10,400
Turnover = 9,850
Income from donations = 300
Income from selling fixed assets = 250
Financial income = 380
Operating expenses = 9,250
Material expenses = 4,700
Expenses with salaries and other related contributions = 3,820, from which 2,550 direct expenses and 1,320 indirect expenses
Expenses related to duties and taxes = 330
Amortization expenses = 250

Expenses related to transferred assets = 150

Interest related expenses = 210

Determine the following, taking into account the annual initial and final balances, and the monthly average balances:

   a) stocks' conversion duration;
   b) receivables' conversion duration;
   c) duration of use of attracted sources;
   d) liquidities' conversion cycle.

Solution:

A) We take into account the annual initial and final balances

a) Stocks' conversion duration (Scd):

$$Scd = \frac{\text{Average balance of raw, other materials and ongoing production}}{\text{Production costs}} x365$$

$$= \frac{\text{Stocks' average balance}}{\text{Production costs}} = \frac{\frac{600 + 650}{2}}{4,700 + 2,550 + 250} x365 = 30.4 \text{ days}$$

b) Receivables' conversion duration (Rcd):

$$Rcd = \frac{\text{Liabilities' average balance}}{\text{Turnover}} x365 = \frac{\frac{1,480 + 1,400}{2}}{9,850} x365 = 53.3 \text{ days}$$

Duration of the operating cycle = 30.4 + 53.3 = 83.7 days, represents the number of days from the acquisition of materials, obtaining the products, selling them and cashing in the receivables.

c) Duration of use of attracted sources (Duas):

$$Duas = \frac{\text{Average balance suppliers} + \text{Average balance employees} + \text{Average balance duties and taxes}}{\text{Production related operating costs}} x365$$

$$= \frac{\frac{1,030 + 1,050}{2} + \frac{220 + 250}{2} + \frac{80 + 60}{2}}{4,650 + 3,870 + 330 + 250 + 150} x \ 365 = \frac{1,335}{9,250} x365 = 52.6 \text{ days}$$

d) Liquidities' conversion duration (Lcd):

Lcd = 83.7 – 52.6 = 31.1 days

The financing duration through own or loaned resources of the operating cycle is 31.1 days.

B) We take into account the monthly average balances:

We calculate the average balances by taking into account the monthly average balances:

➢ stocks: Abs = (560 + 640 + 720 + 780 + 620 + 680 + 700 + 750 + 730 + 800 + 710 + 660)/ 12 = 8,350 / 12 = 696
➢ receivables: Abr = (1,520 + 1,600 + 1,500 + 1,460 + 1,380 + 1,450 + 1,720 + 1,550 + 1,420 + 1,580, + 1,490 + 1,470) = 18,140 / 12 = 1,512
➢ attracted sources: Duas = (1,300 + 1,200 + 1,380 + 1,250 + 1,280 + 1,400 + 1,260 + 1,280 + 1,350 + 1,190 + 1,210 + 1,320) / 12 = 15,420 / 12 = 1,285

a) Stocks' conversion duration (Scd):

$$Scd = \frac{696}{7,500} x365 = 33.8 \text{ days}$$

b) Receivables' conversion duration (Rcd):

$$Rcd = \frac{\text{Average balance receivables}}{\text{Turnover}} x365 = \frac{1,512}{9,850} x365 = 56 \text{ days}$$

Duration of the operating cycle = 33.8 + 56 = 89.8 days.

c) Duration of use of attracted sources (Duas):

$$Duas = \frac{1,285}{9,250} x365 = 50.7 \text{ days}$$

d) Liquidities' conversion duration (Lcd):

Lcd = 89.8 – 50.7 = 39.1 days

The financing duration through own or loaned resources of the operating cycle is 39.1 days.

If one uses the second way of calculating the average balances, the financing period through own or loaned sources is longer with 8 days, meaning 25.7%, which can mean a long time. In lei, the additional funding through own or loaned resources (Fol) will be:

$$\text{Fol} = \frac{\text{Turnover}}{365} \times \Delta \text{Lcc} = \frac{9,850,000}{365} x(39.1 - 31.1) = 215,890 \text{ lei}$$

The duration of the operating cycle and the duration of financing through own or loaned sources, by taking into account the two variants, are presented in diagram 1 and 2:
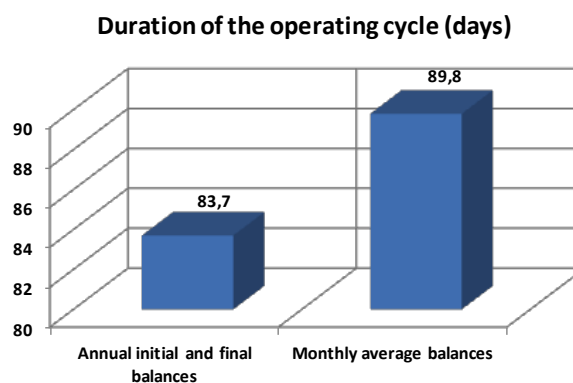
Duration of the operating cycle (days)

Diagram 1 Duration of the operating cycle

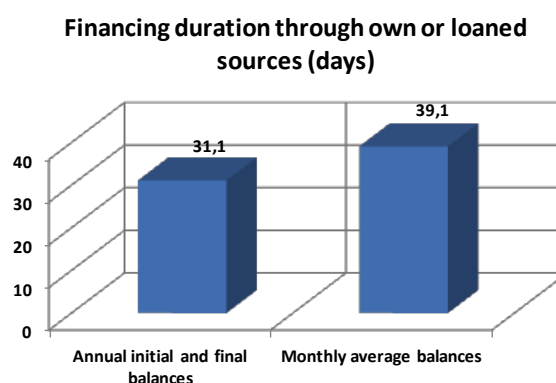**Financing duration through own or loaned sources (days)**

Diagram 2 Duration of financing through own or loaned resources

Conclusions

The financial diagnosis makes a complex analysis in a dynamic, extremely uncertain economic environment, where the value of certain elements can suffer great changes in a short period of time. For example, the value of stocks can decrease dramatically after the announcement of negative economic results. The inverse is also possible. The success of a company depends a lot on its capacity to adapt to the market's permanent demands. Stocks must have optimal values, meaning to be sufficient to continue the carrying out of the activities, but not too high because this would lead to a high price of products. The value of stocks and days inventory outstanding must be compared to the one from the business area in which the company activates. In order to establish the days inventory outstanding, days sales outstanding and days debt outstanding, it is advisable to take into consideration the monthly average balances and not the annual initial and final balances.

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