

# Financing Research and Development Activities in the Construction Materials Industry. Comparative Study

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## Abstract

*Financing the research and development activities is an essential issue nowadays. Even if it seems costly, this activity became very important on a market where competitors appear constantly, providing products adjusted both technically and economically. In order to maintain a high level, investments are of utmost importance, including for research and development. Our scientific undertaking presents on a lower scale the evolution of three construction materials manufacturers in the world, as well as their evolution both in the field of financing research and development activities, as well as their position in the world classification established based on the process of financing this activity.*

**Key words:** financing, research and development activity, turnover, number of employees

**J.E.L. classification:** G32,G39,O32,O39

## 1. Introduction

Our scientific undertaking aims at presenting the issue of financing research and development activities from internal sources for three construction materials manufacturers worldwide.

The comparative method was used in terms of methodology and for this reason, the data supporting the study are extended over 5 years, more exactly during 2010-2014.

The presented companies budgeted the financing of this activity all the more so because they realized that they cannot face competitors on their business markets without new products, considering also the fact that the amount of competitors is increasingly rising or strengthening on a certain market.

The financing of this activity becomes very important since, besides internal financing sources, more and more programs appear in relation to financing of this activity, such as, for example, Framework Programs and Horizon2020 Program in Europe.

Consequently, the following comparative study included three construction materials manufacturers on three different continents: Lafarge in France (Europe), Valspar in USA (North America) and China National Materials in China (Asia).

## 2. Comparative study

I used certain economic indicators as the foundation in this scientific undertaking for all three large manufacturers, such as: financing value of the research and development activity, turnover, number of employees and position in the world classification.

The financing value of the research and development activities during 2010-2014 for the three large manufacturers is displayed in the Table no. 1 (European Commission 2011, 2012, 2013, 2014, 2015):

Table no. 1. Financing value of the activity of research and development during 2010-2014

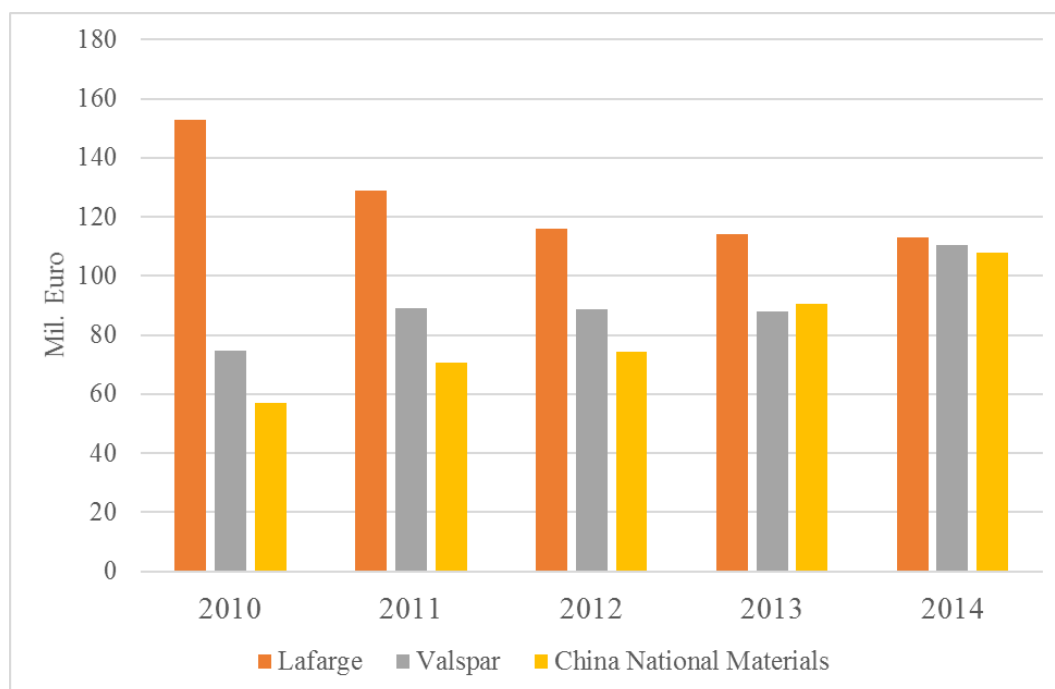
millions EUR

No.	Manufacturer	2010	2011	2012	2013	2014
1.	Lafarge	153	129	116	114	113
2.	Valspar	74,72	89,2	88,8	88,1	110,5
3.	China National Materials	57,06	70,7	74,2	90,7	107,9

Source (Author's adaptation based on European Commission 2011, 2012, 2013, 2014, 2015)

The data in the Table 1 are found in the Picture no. 1 as a chart:

Picture no. 1. Financing value of the activity of research and development during 2010-2014



Source (Author's adaptation based on European Commission 2011, 2012, 2013, 2014, 2015)

The information provided in Picture no. 1 determines that the French group decreased the amount assigned for research and development activities over the examined period of time that stands as the post-crisis time in Europe, whereas the American company assigned increasingly larger amounts for financing these activities, with a small gap in 2013; the Chinese company followed an ascending curve regarding the assignment of its amounts for these activities. This fact is displayed in the evolution of the turnover amount presented in Picture no. 2.

During the same time, the turnover of the three manufacturers displayed the values included in the Table 2 (European Commission 2011, 2012, 2013, 2014, 2015):

Table no. 2. Value of turnover during 2010-2014

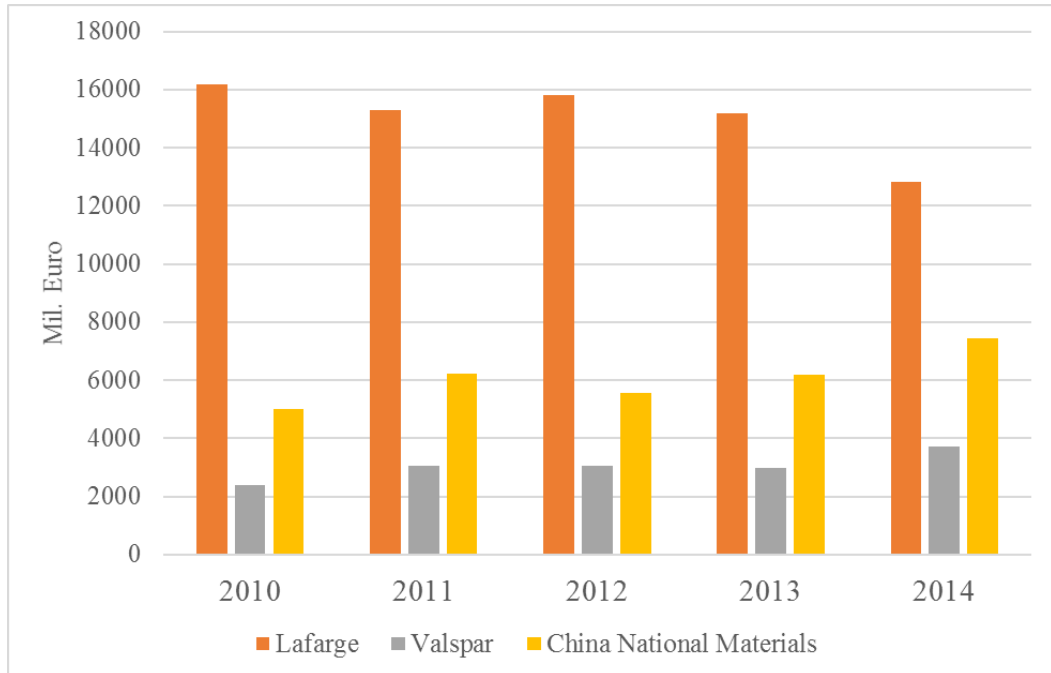
millions EUR

No.	Manufacturer	2010	2011	2012	2013	2014
1.	Lafarge	16.169	15.284	15.816	15.198	12.843
2.	Valspar	2.405	3.055,1	3.047,5	2.975,7	3.724,9
3.	China National Materials	5.005	6.219,1	5.576	6.188,5	7.441,7

Source (Author's adaptation based on European Commission 2011, 2012, 2013, 2014, 2015)

The data of the Table no. 2 are included in the Picture 2 as a chart:

Picture no. 2. Value of turnover during 2010-2014



Source (Author's adaptation based on European Commission 2011, 2012, 2013, 2014, 2015)

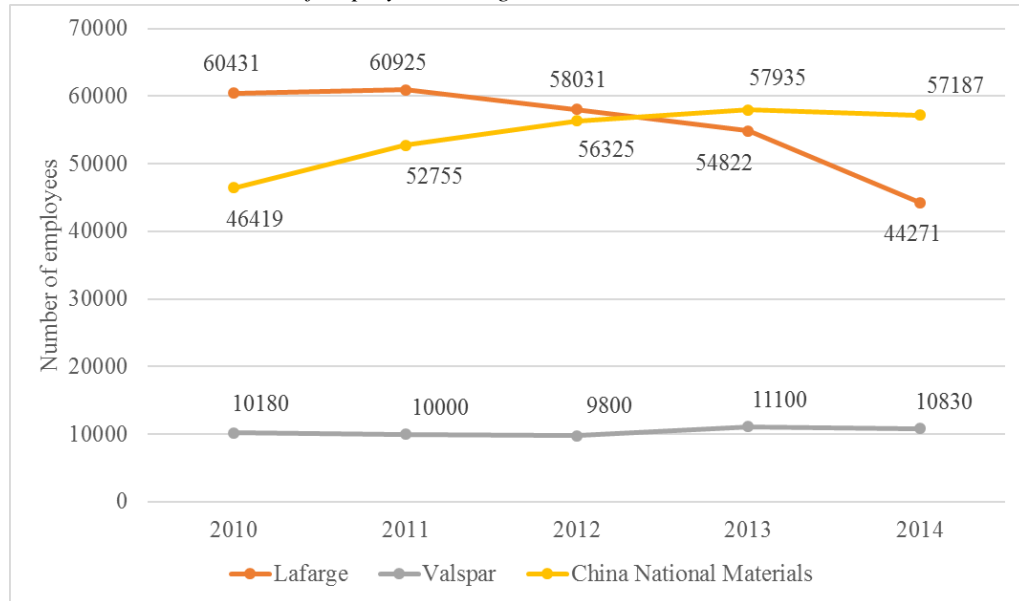
Analyzing the data included in Picture no. 2, we may assert that in Europe, as the continent of origin for Lafarge group, the economic crisis took its toll on its turnover that dropped from €16,169 million in 2010 to €12,843 million in 2014, a decrease by approximately 25.89%. Also, if in 2010 the amount assigned for research and development activities represented 0.95% of its turnover, this rate went as low as 0.88%.

Valspar, the American company, reached a €2,405 million in 2010, and in 2014 it rose to €3,724.9 million, therefore a 54.88% rise, a fact leading to the conclusion that the economic crisis in USA was not as intense as in Europe. The rate of financing research and development activities was 3.11% in 2010, and it dropped to 2.97% in 2014.

One cannot refer to an economic crisis in China, considering that during the time it affected Europe and other continents, China recorded an economic boom, as noted in its turnover rise from €5,005 million in 2010 to €7,441.7 million, therefore an increase of 48.68%, as well as in the assigned amount for research and development activities that grew from 1.14% in 2010 to 1.45% in 2014.

The evolution of the number of employees from the three manufacturers involved in our scientific undertaking is presented in the Picture 3(European Commission 2011, 2012, 2013, 2014, 2015) :

Picture no. 3. The number of employees during 2010-2014

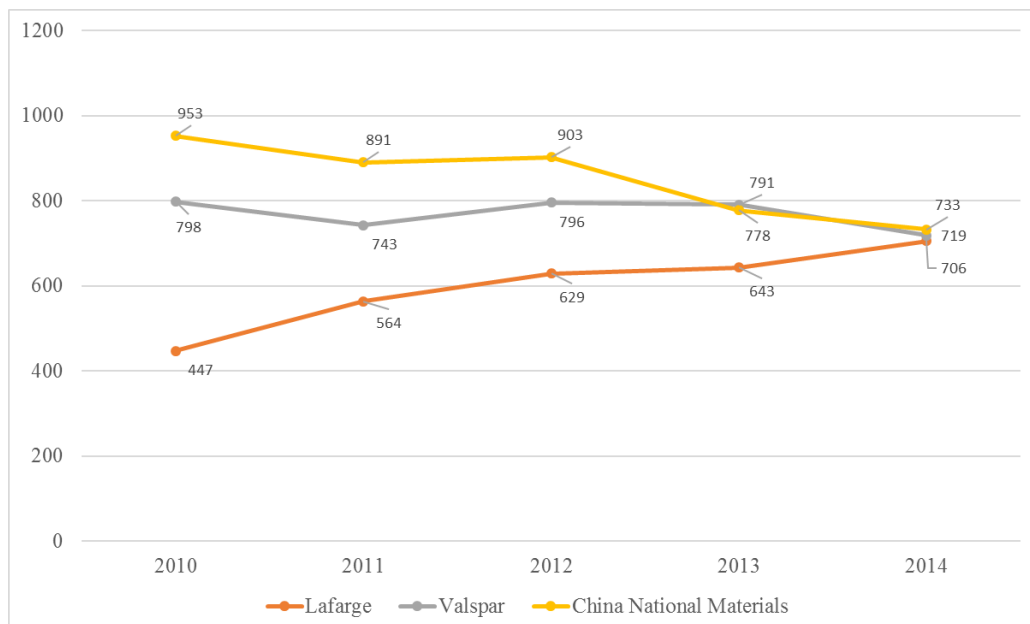


Source (Author's adaptation based on European Commission 2011, 2012, 2013, 2014, 2015)

The data in Picture no. 3 are another confirmation of the economic evolution of the three companies: thus, the European company dropped its employees' number during the economic crisis, the American company had small staff variation, and for the Chinese company we can say that the ascending curve is present on the level of the employees' number.

It is worth noting the position of the three construction materials manufacturers in the world classification of companies that include research and development activities (Picture no. 4) (European Commission 2011, 2012, 2013, 2014, 2015):

Picture no.4. Position in the world classification of companies that include research and development activities



Source (Author's adaptation based on European Commission 2011, 2012, 2013, 2014, 2015)

The analysis of the data in Picture no. 4 proves once more the above-mentioned data, meaning that Lafarge group was downgraded from number 447 to 706, the Americans upgraded from number 798 to 719, whereas the Chinese company had the most spectacular jump from number 953

to 733. Is it a little? Is it a lot? Hard to say, but the not-so-distant future will show us if China reaches number one also in the field of financing research and development activity.

### 3. Conclusions

In my scientific undertaking, I tried to present the evolution of certain results related to research and development activities within the three selected companies and, implicitly the financing of these activities.

A first conclusion would be that, except for the French Lafarge group, the other two companies, the American and the Chinese one, assigned constantly larger amounts of money to finance research and development activities as sales value increased.

A second conclusion is that, again except for Lafarge group, the sales value of the other two companies rose, which is not a surprise especially as far as China National Materials is concerned, considering the economic boom recorded in China during the past few years.

It is worth mentioning that the data presented in our scientific undertaking confirms two certainties: the first one is provided by Lafarge group displaying an evolution related to the economic crisis hitting Europe at the end of 2008 and through 2009 (turnover drop, decrease of the employees' number and reduction of the amount corresponding to financing research and development activities), and the second one by the Chinese company included on the path of the economic and, implicitly, the real estate boom characterizing China during the past few years. We may assert that the American company was included on a specifically economic path, with ups and downs, but, on the whole, its activity recorded an ascending curve both in terms of turnover, as well as financing research and development activities.

One thing is certain: first the companies intending to remain on the market and secondly the ones aiming at covering a business market as large as possible must assign constantly larger amounts for research and development activities, otherwise they diminish their market share with all its consequences (sales drop, decrease of the employees' number etc.), or they are taken over by other companies in order for the latter to strengthen their position on certain markets.

### 4. References

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