

Proactive and Reactive Attitude to Crisis: Evidence from European Firms

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ABSTRACT

Objective: The aim of this study is to investigate the behaviour of European firms in the time of the economic crisis in 2008-2009. We analyse the determinants of proactive strategies in the context of innovation and the range of products offered by every firm on the market.

Research Design & Methods: Based on a large and representative sample of 14 750 (EFIGE dataset) firms from Austria, Germany, France, Hungary, Italy, Spain and the UK, we estimate the logit model for two measures of proactive strategy: the investment behaviour and the introduction of new products on the market.

Findings: We find evidence that the experience of the former crisis by the company is associated with the adoption of proactive behaviour in the case of investments in innovation, and reactive behaviour in the case of the product offer range.

Implications & Recommendations: As the public support for innovative investments proved to be rather ineffective, the most promising direction for public policies in the times of crisis are those that facilitate the access to external financing.

Contribution & Value Added: Our paper contributes to the development of knowledge on the dynamics of company behaviour in the wake of the economic crisis in 2008, and to the better understanding of the determinants of proactive behaviour of enterprises within the context of rising uncertainty.

Article type: research paper

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INTRODUCTION

Economic crisis has usually a detrimental effect on firms' performance, employment and innovative activities. However, for some companies recession can be perceived as a chance to increase their competitiveness: while most of the rivals are cutting the expenditures on R&D, the firms "swimming against the stream" might get additional benefits, especially after the economy recovers from the crisis. Thus, proactive response to recession can be a key to the economic success in the long run. The results of the study carried out by Archibugi, Filippetti and Frenz (2013) in the UK clearly show that innovative firms in 2008 were usually those which were innovators before, but this group is complemented by recently-founded fast growing firms. Consequently, those gazelles in the times of the economic downturn tend to become more innovative in order to exploit their growing potential when the economic situation improves.

Still, what is missing in this picture is more general linkage between the economic crisis and an active search for an economic opportunity, especially in the international setting (Wach, 2015). This search for new opportunities can be understood in a broader sense as the widening of the product offer, the introduction of a new innovation, or an increase in the internationalisation process. For instance, the expansion to foreign markets is usually carried out in the times of the economic boom, as it requires substantial investments and costs. However, the fact of being already economically active on the international level during the economic downturn offers new perspectives not only for the firm survival, but also for its further development (Mainela, Puhakka & Servais, 2014).

The aim of this study is to investigate the behaviour of European firms in the time of the economic crisis in 2008-2009. We use quantitative methods for our research, namely the econometric analysis. Based on a large cross-sectional, representative sample (EFIGE dataset, cf. Altomonte & Aquilante, 2012) of European companies we analyse the determinants of proactive strategies in the context of innovation and the range of products offered by each firm on the market. Consequently, our analysis contributes to the growing literature on international entrepreneurship and opportunities by inspecting factors that contribute to the search and creation of international opportunities.

The structure of our paper is as follows: in the second section we summarise the theoretical discussion on firms' reaction to crisis and we build hypotheses for our study. In section three, we present methods and our dataset. In section four, we describe the results of empirical analyses. In the last section we summarise our findings and present some perspectives for further research.

LITERATURE REVIEW

The literature on firms' reaction to recession is dominated by financial research, and more precisely, by studies that evaluate the effect of different ownership and governance models on firms' performance (and value) during economic crises (Leung & Horwitz, 2010; Liu, Uchida & Yang, 2012). Surprisingly, there are only few papers (Smith & Elliott, 2007; Latham, 2009; Marsen, 2014) that investigate firms' reaction to crisis, by adopting the lens and paradigms of international business and entrepreneurial studies.

The first type of research describes the firm reaction to crisis within the uncertainty concept. Carbonara and Caiazza define uncertainty as “a situation in which operators have limited knowledge to exactly describe existing state or future outcome” (Carbonara & Caiazza, 2010, p. 38). As such, uncertainty is present at every stage of entrepreneurial activity, but increases substantially at the times of the economic turmoil and recession. When the uncertainty increases, the need for the firm to re-evaluate the existing strategies and ways of doing business also rises. In such a situation, proactive behaviour is welcome, as it might help the enterprise not only to survive, but also to grasp extraordinary opportunities which would remain hidden for passive actors. The authors propose a framework of financial firms (banks) based on the perception (high/low) and reaction (proactive/reactive) to uncertainty. Thus, they identify four types of banks:

- laggards, characterised by reactive behaviour and low perception of uncertainty. Those banks tend to gradually lose their market;
- consolidators – although those banks have low perception of uncertainty, they at least can adapt to a new situation by adopting proactive strategies, thus consolidating their position on the market;
- value-driven – these banks have high perception of uncertainty, but are only able to act reactively, by adapting the existent strategies to new events with the aim of creating value;
- champions – those banks in turn have not only high perception of uncertainty, but also the ability to adopt proactive behaviour, thus “building a clear vision for a valuable future” (Carbonara & Caiazza, 2010, p. 42).

Although this framework has limited potential for usage outside the financial sector, it offers an interesting perspective for the analyses of more general reaction of firms to crisis. Thus, we can have companies which adopt reactive or proactive strategies within various aspects of their activity in the wake of an economic crisis. The ones which are reactive tend to exploit the existing opportunities by keeping their activities on already penetrated markets, keeping the same range of products and services and reducing investment spending in innovation. Proactive companies in turn are those which are acting against the general pessimistic trend and which are actively searching for new opportunities whose future exploitation might help them not only in the firm survival, but which could also facilitate the expansion when the negative trend in economy is over. We further build upon the proactiveness-reactiveness dichotomy, providing solid grounds to formulate the hypotheses for our study. Thus, we adopt the following definitions of those two contrasting strategies. Proactive behaviour of the company is associated with more risky orientation, aimed at opportunity search and creation in the times of the economic downturn. It can be particularly demonstrated by maintaining the investments in innovative processes and products, or by the expansion of the existing range of products or services. Reactive behaviour in turn is manifested through more passive, conservative and careful approaches – the reactive firm in the wake of crisis cuts down the investments in innovative activities, maintains or even reduces the existing offer of goods and products, by getting rid of the activities that bring losses, and focusing on those which seem to be a safer source of income in the short run.

Proactive and reactive strategies towards the crisis can be particularly visible in decision-making on the innovation processes within companies. Filippetti and Archibugi

(2010) show that in economic literature two contrasting hypotheses on the relation between the innovation and business cycles have been formulated. The proponents of cyclical hypothesis argue that investments in innovations are increased in the periods of prosperity and reduced when crises hit the economy. This is caused by low profit margins and the overall pessimistic view on the economic possibilities by potential investors during the downturn, while in the period of economic expansion new possibilities arise for the introduction of new ideas, technologies and products (Freeman et al., 1982) A similar way of argumentation is present in the theoretical research on the demand impact on innovation (Geroski & Walters, 1995): the rising demand during the economic boom provides more fertile ground for the product absorption than during the recession. Moreover, as firms have only a limited period of advantage over the competition (cf. Schumpeter, 1939) during which they reap their returns to investments, it is safer for them to come up with such activities when the economy is growing. On the other hand, Mensch (1979) claims that innovations tend to be rather counter-cyclical instead, as most of enterprises tend to “play safe” in the periods of economic expansion, by exploiting the existing rents. However, during the recession the value of such rents falls and then the firms are somehow forced to innovate (Filippetti & Archibugi, 2010). To conclude, the existing theoretical literature suggests heterogeneous (or even contrasting) responses and strategies towards crisis. Therefore, we can formulate the following hypotheses:

- H1:** The adoption of the proactive strategy by the firm depends on the magnitude of external shock, demonstrated by the size of the economic recession.

Moreover, we are aware of the potential endogeneity problem, i.e. while proactive behaviour can clearly improve the performance of the company hit by a crisis, still at a given point of time (especially in the first year of a crisis, in our case: 2008) a decrease in revenues limits the potential of proactive behaviour of the firm. Moreover, this potential of proactive behaviour varies across the categories of actions available to the company: while the cuts in expenditures are needed, in the first place they might probably affect the innovations, whose benefits to the company materialise in the longer run, rather than, for instance, the widening of the product range. Thus, we can formulate the next hypotheses:

- H2:** A decrease in the company revenues will increase the likelihood of the reactive behaviour of the company during the crisis.

and

- H3:** The likelihood of reactive behaviour of the company due to the revenue reduction will be greater in the case of innovation investment than in the case of the product range widening.

An important field of the study which also needs to be addressed is the one which proposes the concept of organisational adaptation and organisational learning within the crisis reaction framework (Cucculelli & Bettinelli, 2015). The proponents of organisational learning claim that former events and experiences affect the company governance, and this in turn influences the decision-making in the company. Consequently, if the company has been already hit by a crisis before, this should have an impact on the current behaviour and in the adoption of proactive and reactive strategies in various areas of the

company activity, based on the previous experience of the company in such situations as the direction of this linkage is uncertain. This enables us to build the following hypothesis:

- H4:** The experience of the former crisis by the company matters for the adoption of the proactive or reactive behavior.

MATERIAL AND METHODS

In our study we use the data on European firms collected within the EFIGE project (European Firms in a Global Economy: internal policies for external competitiveness, henceforth: EFIGE dataset). This data-set includes the results of a representative survey carried among 14 750 companies having at least 10 employees in seven European countries (Germany, France, Italy, Spain, the United Kingdom, Austria, Hungary). The survey was made in 2010 and it includes a rich variety of information on firms' organisational, R&D and innovative behaviour for the period of 2007-2009 (Altomonte & Aquilante, 2012). This initial, cross-sectional data-set has been enriched by panel dimension, including information on sales, finances and employment for the 2001-2009 period. The panel dimension of the data enables us to include the information on former performance of

Table 1. Descriptive statistics

Variable name	No. Obs.	%
<i>Countries</i>		
Austria	443	3
France	2973	20.14
Germany	2935	18.89
Hungary	448	3.31
Italy	3021	20.47
Spain	2832	19.19
UK	2067	14.01
<i>Age</i>		
Less than 6 years	1043	7.07
Between 6 and 20 years	5194	35.19
More than 20 years	8552	57.74
<i>Turnover in 2008</i>		
Less than 1 million Euros	1856	12.69
1-2 million Euros	3264	22.32
2-10 million Euros	6336	43.33
10-15 million Euros	921	6.3
15-50 million Euros	1346	9.2
50-250 million Euros	716	4.9
more than 250 million Euros	185	1.27
<i>Number of employees in 2008</i>		
10-49	10779	73.03
50-249	2970	20.12
over 250	1010	6.84

Source: own elaboration.

the companies before the 2008-2009 crisis, including the 2002-2003 recession. The descriptive statistics, including information on the firms' geographical location, age and employment size, as well as turnover are provided in Table 1. The most represented in the sample are the companies from Italy, which account for ca. 20% of the total. The majority of the sample (57.7%) is composed by well-established companies which have been operating on the European market for more than 20 years. Moreover, most of the companies belong to the SME category, with the turnover below 50 million EUR in 2008 and fewer than 250 employees in the same year.

We adopt two measures of proactive behaviour: investments in innovation continued in 2009 (dummy) and product offer expanded in 2009 (dummy). The operationalisation of those variables is based on the responses to questions c29¹ and Ea² taken from the EFIGE questionnaire. Therefore, we estimate two equations for two different dependent variables. As our dependent variables are binary, we adopt binomial logit regression models. The results of the estimation are presented and discussed in the following section.

RESULTS AND DISCUSSION

The results of the estimation of two models accounting for proactive behaviour (i.e. investments in innovation continued and product offer expanded) are presented in Table 2. Due to some missing observations for several independent variables included, the number of observations for both models has dropped to 13 439. We first describe the model in which the dependent variable is the investments in innovation continued. For this model, the most important determinant were the proxy variables for external shock for the companies, represented by country dummies³ and dummies for international activities. The likelihood of keeping the investments in innovations was lowest in Spanish and Italian companies, and in the case of exporting firms. Size matters for decisions on innovation, but not the age of the company: the firms with higher turnover were more able to keep the innovative investments than the smaller ones. According to our expectations, the percentage of the company's turnover reduction had a strong negative impact on the dependent variable: in the critical situation, the cuts in innovations – which should bring advantages only in the mid and long run – were the most pronounced. Interestingly, family-owned and family-managed companies were more likely to reduce such investments, other things being equal. Any change in decision-making in the company was associated with the reduction in investments: in the case of more centralised decision-making in 2008 the effect was much stronger than in the decentralised one.

An important finding is about the impact of former innovative activities on current ones in the wake of crisis. Surprisingly, we have found the companies that have invested in processes, market or organisational innovations in the years 2007-2008 were more likely to cut investments in innovations in 2009, which is the opposite result to findings

¹"During 2009, did your firm decide to postpone investments in product or process innovation?" – the answer "no" accounts for proactive behavior (value 1), while yes for reactive one (value 0).

²"Always referring to the last year the product range offered by your firm has been..." - the answer "widened" accounts for proactive behavior (value 1), while other (remained the same/has decreased) for reactive one (value 0).

³In the case of country dummies, the UK was the reference category.

Table 2. Results of binomial logit regression on proactive behaviour

Independent variables	Dependent variable: investments in innova- tion continued		Dependent variable: product offer expanded	
Age of the company	0.013	0.032	-0.082**	0.032
Turnover reduction in 2008 (%)	-0.364***	0.018	-0.147***	0.018
Exporter (dummy)	-0.145***	0.051	0.205***	0.050
Importer of materials (dummy)	-0.066	0.044	0.236***	0.043
Importer of services (dummy)	-0.148***	0.049	-0.027	0.049
Passive outsourcer (dummy)	-0.074	0.046	0.041	0.046
CEO in the family firm (dummy)	-0.094**	0.043	0.068	0.042
CEO is male (dummy)	0.080	0.072	-0.054	0.071
Age of the CEO	0.013	0.019	-0.007	0.019
Decentralised management (dummy)	-0.027	0.046	0.167***	0.045
Decision-making became more centralised in 2008 (dummy)	-0.429***	0.049	0.090*	0.050
Decision-making became more decentralised in 2008 (dummy)	-0.246***	0.076	0.160**	0.078
Austria (dummy)	0.025	0.137	-0.359***	0.133
France (dummy)	-0.176**	0.080	-0.345***	0.079
Germany (dummy)	-0.122	0.081	-0.254***	0.078
Hungary (dummy)	-0.023	0.121	-0.334***	0.120
Italy (dummy)	-0.233***	0.083	-0.124	0.082
Spain (dummy)	-0.557***	0.084	-0.384***	0.085
Specialised industry (dummy; traditional industry reference)	-0.082	0.053	-0.002	0.053
Economies of scale industry (dummy)	-0.076	0.047	-0.000	0.047
High-tech industry (dummy)	0.097	0.100	0.368***	0.099
Employment level 2008	-0.001*	0.000	-0.001***	0.000
Turnover in 2008	0.194***	0.023	-0.020	0.022
Share of sales in 2008 made by core product/business (%)	0.002*	0.001	-0.001	0.001
Share of ownership of main owner (%)	0.003***	0.001	-0.001**	0.001
Share of turnover invested in 2007 (%)	-0.003**	0.001	-0.001	0.001
Firm benefited from public support for investment in the period 2007-2009 (dummy)	-0.020	0.055	0.094*	0.056
Firm invested in product innovation before (dummy)	-0.067	0.054	0.988***	0.052
Firm invested in process innovation before (dummy)	-0.227***	0.045	0.309***	0.045
Firm introduced market innovation before (dummy)	-0.145**	0.057	0.354***	0.056
Firm introduced organizational innovation before (dummy)	-0.317***	0.048	0.191***	0.048
Firm requested new credit in 2008 (dummy)	-0.765***	0.096	0.018	0.097
Firm obtained credit in 2008 (dummy)	0.551***	0.108	0.296***	0.110
Self assessment of the industry from external financing	-0.098***	0.016	0.004	0.016
Self assessment of the quality of provided products and services	0.003**	0.001	-0.002	0.001
Firm went through quality certification in 2008 (dummy)	-0.085**	0.042	-0.053	0.041
Firm was hit by crisis in 2002-2003	0.126**	0.051	-0.087*	0.051
Share of the employees with permanent contracts in 2008 (%)	-0.001	0.001	-0.000	0.001
Managers are rewarded with bonus (dummy)	-0.139***	0.044	0.100**	0.043
Foreign work experience of executives (dummy)	-0.118**	0.051	0.086*	0.051
_cons	1.257***	0.224	-0.106	0.221
R2	0.0817		0.1188	
N.obs.	13439		13439	

note: *** p<0.01, ** p<0.05, * p<0.1

Source: own study.

of Archibugi, Filippetti and Frenz (2013). Still, the explication of such reactive behaviour can be quite simple: such firms might have decided that as the competition is cutting such expenditures, their competitive advantage gained in 2007-2008 period is more than

enough to survive during the recession. Another interesting discovery is the one on former experience during the 2002-2003 crisis. The firms that were negatively affected by the crisis in the past periods were actually more likely to invest in innovation in 2009. Finally, the access to external financing is obviously important: when the firm was able to obtain a credit in 2008, it is definitely more likely to invest in innovative activities.

In the case of the second model - with the dependent variable product offer expanded - the age of the company is negatively associated with proactive behaviour, but the level of turnover in 2008 (proxy variable for size) is not significant, while the impact of the employment size in 2008 (another proxy variable for size) is significant, but of marginal importance. According to our expectations, the size of the turnover reduction in 2008 has a negative impact on product range widening (i.e. the second model), but to a lesser extent than on the investments in innovation (the first model). Also the internationalisation of the company plays a different role in this regard. Exporting and importing companies were actually more likely to expand the product offer in 2009, as opposed to decisions on innovative investments for the same period.

The sector of the industry in which the firm operates matters for the decision on product range widening: high-tech firms are more likely to adopt proactive behaviour in this regard. The former innovators in the 2007-2008 period also exhibit higher proactive propensity for the product offer expansion. Still, the former crisis experience for the 2002-2003 period is in this case associated with more reactive behaviour (i.e. negative impact on the propensity to expand product offer). Consequently, these empirical results allow us to verify the hypotheses in the following section.

CONCLUSIONS

Based on the results presented above, we can now turn to our hypotheses. We have formulated 4 hypotheses for this study, namely:

- H1:** The adoption of the proactive strategy by the firm depends on the magnitude of external shock, demonstrated by the size of the economic recession.
- H2:** The decrease of the company's revenues will increase the likelihood of the reactive behaviour of the company during the crisis.
- H3:** The likelihood of reactive behaviour of the company due to revenue reduction will be greater in the case of innovation investment than in the case of the product range widening.
- H4:** The experience of the former crisis by the company matters for the adoption of proactive or reactive behaviour.

We have found some support for hypothesis 1 on the significant impact of the external shock for the adoption of proactive strategy. Still, this evidence is somehow limited by the nature of our dataset, in which the identity of firms is hidden: we could only identify the economic environment of the company by its domestic economy and the four large types of industries (traditional, specialised, economies of scale and high-tech – based on taxonomy developed by Pavitt et al., 1989). Therefore, we see a need for further investigations in this direction.

The magnitude of the company's decrease in revenues is positively associated with the likelihood of reactive behaviour: both in the case of investment and in the product offer. Therefore, we have found support for hypothesis 2. Moreover, we have demonstrated that the companies react more reactively motivated by the turnover reduction in the case of innovative investments than in the case of product offer, which supports our hypothesis 3.

Finally, we have found that former crisis experience, measured as the turnover reduction in the 2002-2003 period, matters for the adoption of proactive or reactive behaviour. However, this effect is different for two models: while for the innovative innovation it is positive – the firms affected by recession tend to continue investments in innovation in 2009 – it is negative for the product widening. Consequently, we have found support for our hypothesis 4.

Yet, our study suffers from a number of limitations which need to be addressed in subsequent research on this topic. We have already mentioned the very general information on specific sectors in which the companies operate. This means that we can just try to measure the proxy impact of the shock with dummy variables, and not the actual magnitude of the shock with continuous variables. Moreover, the knowledge of specific sectors would enable to look deeper for the opportunity seekers and more effective usage of the information on internationalisation activities. In the EFIGE dataset we have for instance information on the new international markets which some companies entered in 2009. It would be extremely interesting to look for those companies which rightly identified the fast-growing markets, even when most of the global economy was hit by recession. In this regard, the panel extension of the data-set beyond the 2009 period would be also welcome. Our story still remains somehow unfinished: it would be extremely interesting to check whether the proactive behaviour really paid off during the period of further economic growth and whether the proactive companies fared better than reactive ones.

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