Behavioural models for manufacturing firms: an analysis based on ISAE survey data

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Abstract

ISAE survey data on manufacturing firms are usually analysed on an aggregate basis, calculating for each survey question the so-called “balance” among the shares of positive and negative replies. A confidence indicator is also usually calculated as the simple average of selected balances. The balance and the confidence indicator provide an easy-to-compute, easy-to-understand quantification of survey results, and as such are considered as useful tools to analyse the cyclical situation of the sector. However, cyclical analysis based on the balance and the confidence indicator alone does not fully exploits the information content of the survey: more specifically, in computing the balance statistic, “neutral” answers to survey questions are ignored, nor any attention is given to the possible relationship among different answers of the same firms to the various questions contained in the questionnaire. Indeed, a more careful study of this information can provide interesting insight into firms’ opinions on the economic situation. In this respect, in a recent study Calabresi (2010) and Crosilla (2010) propose a new method, based on cluster analysis techniques, to study behavioural models (from now on behavioural groups) of response at the firm level; the method has already been used in ISAE (2009, 2010) in order to make a first assessment on the impact of the crisis on Italian firms’ opinion and behaviour. In this contribution, we will present the main features of the new methodology and then we will make use of the new method in order to assess similarities and differences among the recent crisis, and the ongoing recovery, with respect to other main cyclical episodes of the past, namely the major recession of the period 1992-1993 and the following recovery of the period 1993-1995. The paper will be structured as follows: after an introduction on the main scope of the analysis, section 2 will present the methodology adopted to analyse the data, with a more formal introduction of the behavioural groups chosen for identifying firms’ replies. Section 3 will then apply the new method to both the current recession and recovery and some of the main cyclical episodes of the past. Some consideration on the results obtained and hints for possible future works will conclude.

Key Words: business cycles, business survey data, cluster analysis

JEL Classification: C32, E32

* ISAE
1. Introduction

ISAE survey data on manufacturing firms are usually analysed on an aggregate basis, calculating for each question the so-called “balance” among the shares of positive and negative replies. A confidence indicator is also usually calculated as the simple average of selected balances. The balance and the confidence indicator provide an easy-to-compute, easy-to-understand quantification of survey results, and as such are considered as useful tools to analyse business cycles. However, balances and the confidence indicator do not fully exploit the information content of the survey: in fact “neutral” answers to survey questions are not considered in the calculation, nor any attention is given to the possible relationship among different answers to the various questions at the firm level. Indeed, a more careful study of this information can provide interesting insight into firms’ opinions on the economic situation. In this respect, in a recent study Calabresi (2010) and Crosilla (2010) propose a new method, based on cluster analysis techniques, to study behavioural groups of response at the firm level; the method has already been used (ISAE, 2009; 2010) in order to provide a first evaluation of the impact of the crisis on Italian firms’ behaviour. In this contribution, we will present the main features of the new methodology and then we will make use of the new method in order to assess similarities and differences among the recent crisis, and the ongoing recovery, with respect to other main cyclical episodes of the past, namely the major recession of the period 1992-1993 and the following recovery of the period 1993-1995.

More specifically, in our paper cluster analysis will be used in order to identify various “behavioural groups” according to which individual responses may be classified. The identification of the groups, and the study of their evolution over time, will allow an analysis of survey data that may well complement the more usual one based on the calculation of the balances and confidence indicator. Moreover, this kind of analysis may be particularly useful in times characterised by high volatility, as those in the proximity of possible turning points in economic activity, when the variability of individual replies is potentially high and hence the aggregated analysis may imply missing relevant information at the firm level. The dataset used is represented by individual responses to a selected number of qualitative questions contained in the questionnaire. The paper is structured as follows: section 2 introduces the new methodology, while section 3 presents the results obtained applying it to the 2007-2009 recession and the ongoing recovery and confronting the results with those obtained for the major recession of the early nineties. Some consideration on the results obtained concludes the paper.

2. Methodology

2.1 Determination of the theoretical groups

Cluster analysis techniques can be used in order study firm level information on the economic situation and to identify behavioural groups able to track patterns of firms’ replies (Calabresi, 2010). As a first step, in order to appropriately cluster individual data, we have to choose the survey variables on which to perform the analysis. In this respect, the ISAE monthly questionnaire is divided in two parts, the first containing assessments on the current situation of the firms, and the second short term forecasts on both the firms’ and the general economic situation. More specifically, in the first part of
the questionnaire firms have to report about the current level of orders (considering both total demand and its internal and foreign components), the level of production, the relationship among inventories stocks and their desired level and the current level of liquidity. As for the forecasts, firms have to indicate whether they expect their level of orders, production, prices, liquidity and employment to go up, stay the same or go down in the next three months; moreover they also have to express their forecast about the expected economic situation of the country\(^3\).

In the following, we will concentrate on information on the firm, excluding expectations on the general economic situation. Moreover, we will not consider all the information pertaining to the current or expected financial situation: in fact, financial variables are usually considered to possibly show different cyclical patterns with respect to those pertaining to the real activity; in this sense, we will exclude from the analysis information concerning the current and expected level of liquidity, together with expectations on firms’ own prices; we will also exclude from the analysis information on the current level of inventories, that usually show an erratic relationship with respect to current industrial activity. Finally, we will also exclude on the expected level of employment, because the variable is available on a monthly basis only since June 2002, not allowing us to make useful comparison between the current recession and other relevant cyclical episodes of the past. Hence, all in all we consider the replies to four questions concerning assessments on the current situation (total, internal and foreign orders; production) and two expectations on three months ahead (about production and orders). As expected, the replies to total order books assessments are highly correlated with both internal and foreign demand\(^4\); in turn, replies to assessments on order books are also highly correlated with those on production levels. As for expectations, replies to orders and production are also highly mutually correlated; on the other hand, replies to two expectations variables show a low correlation with replies to each of the assessments considered in the analysis: in this sense, correlation analysis points out that assessments on the main firms’ variables are by and large closely linked to each other; the same applies for expectations on orders and production, whilst assessments and expectations seem to provide complementary information on the situation of the firm.

Considering the 6 variables selected for the analysis, we chose to concentrate on the most economically significant behavioural groups possibly emerging from the data\(^5\): this choice allows us an easier interpretation of the results, making also possible the comparison of groups over time. Table 1 shows the 9 theoretical groups we have selected a priori and imposed in the clustering procedure. In the table, the number one indicates that all the given replies in that group of that variable fall in that slot (the number indicates the percentage of the reply), while the number zero indicates that nobody answered\(^6\).

\(^3\) The questionnaire harmonised at the European level does not contain the questions on the current level of foreign orders and liquidity and on the expected level of liquidity and the expected general economic situation three months ahead.

\(^4\) Results of correlation analysis are not shown here but are available with the authors upon request.

\(^5\) The number of all the possible associations is 729. They are the dispositions with repetition of 3 elements (the three possible replies to a question) selected 6 by 6 (the chosen variables or questions) and it is equal to \(3^6\). In this analysis, only nine associations were chosen. They represent the most common associations between the replies for a firm. Also this choice is a logical consequence of the results obtained by correlation analysis.

\(^6\) When these theoretic groups are surveyed in the data we can obtain other values very close to one and zero. This is because all the units in the same group have not answered in the same way (the nine models do not represent all the reality). Also see footnote no. 12.
Tab. 1 – Theoretical behavioural groups

<table>
<thead>
<tr>
<th>Questions and replies considered to specify the groups</th>
<th>Behavioural groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1  2  3  4  5  6  7  8  9</td>
</tr>
<tr>
<td>Total order books</td>
<td>A 1 1 1 0 0 0 0 0 0</td>
</tr>
<tr>
<td></td>
<td>N 0 0 0 1 1 1 0 0 0</td>
</tr>
<tr>
<td></td>
<td>B 0 0 0 0 0 0 1 1 1</td>
</tr>
<tr>
<td>Domestic order books</td>
<td>A 1 1 1 0 0 0 0 0 0</td>
</tr>
<tr>
<td></td>
<td>N 0 0 0 1 1 1 0 0 0</td>
</tr>
<tr>
<td></td>
<td>B 0 0 0 0 0 0 1 1 1</td>
</tr>
<tr>
<td>Export order books</td>
<td>A 1 1 1 0 0 0 0 0 0</td>
</tr>
<tr>
<td></td>
<td>N 0 0 0 1 1 1 0 0 0</td>
</tr>
<tr>
<td></td>
<td>B 0 0 0 0 0 0 1 1 1</td>
</tr>
<tr>
<td>Production level</td>
<td>A 1 1 1 0 0 0 0 0 0</td>
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<tr>
<td></td>
<td>N 0 0 0 1 1 1 0 0 0</td>
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<tr>
<td></td>
<td>B 0 0 0 0 0 0 1 1 1</td>
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<tr>
<td>Order books</td>
<td>A 1 0 0 1 0 0 1 0 0</td>
</tr>
<tr>
<td></td>
<td>N 0 1 0 0 1 0 0 1 0</td>
</tr>
<tr>
<td></td>
<td>B 0 0 1 0 0 1 0 0 1</td>
</tr>
<tr>
<td>Expectations</td>
<td>A 1 0 0 1 0 0 1 0 0</td>
</tr>
<tr>
<td></td>
<td>N 0 1 0 0 1 0 0 1 0</td>
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<tr>
<td></td>
<td>B 0 0 1 0 0 1 0 0 1</td>
</tr>
</tbody>
</table>

Looking at tab.1, the first three theoretical groups present positive indications for all the assessments while expectations alternate between “Positive”, “Neutral” and “Negative” respectively; in groups 4, 5 and 6 the assessments are positioned to Neutral while expectations go from Positive to Negative; finally, the last 3 groups are characterised by negative assessments associated with the three possible replies for expectations. The groups can also be identified with letters: if the Positive reply is shortened with letter P, the Neutral one with N and the Negative one with NE, the groups can be indicated as in the following table, where assessments and expectations are represented in that order:
The interpretation of the table is straightforward: the group PP represents a very positive stance expressed by the firms for both the current situation and that expected for three months ahead; at the opposite side of the spectrum, when group NENE do prevails, firms are expressing negative assessments and expectations on the six variables on which the analysis is performed.

2.2 Clustering the microdata

In order to perform the clustering, microdata should be expressed in binary form\(^7\). From this set of microdata, groups can be formed in such a way that objects in the same group are similar to each other, whereas objects in different groups are as dissimilar as possible: identified groups correspond to the behavioural groups presented in tables 1-2. Cluster analysis groups together the original behaviours on the basis of the selection of the minimum distance measurement. In particular, a nonhierarchical clustering method was used, the so called k-medoids\(^8\). This method searches for k representative objects, called medoids, which minimize the sum of dissimilarity of all objects of the data set to the nearest medoid. A cluster is then defined with the set of objects which have been assigned to the same medoid. The k-medoid method minimizes the sum of dissimilarity of the objects to the representative objects they are assigned to. In many branches of univariate and multivariate statistics, it is known that methods based on the minimization of sums of dissimilarity are much more robust than methods based on sums of squares\(^9\). Furthermore, these methods are less sensitive to the effect of one or more outliers.

The clustering algorithm\(^10\) can run both with representative objects (the “centres” of groups) indicated among the input parameters (binding form) and without indication about representative objects\(^11\) (free form). In the first case, the user has to know the “centres” of the groups (the behavioural groups must be known). In the second case (free form), it is the algorithm that finds the

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\(^7\) Each categorical variable with \(N\) possible answers may be transformed in a series of \(N\) binary variables equal to 1 if the corresponding categorical variable assumes a value different from 0, and equal to zero otherwise.

\(^8\) The nonhierarchical methods construct \(k\) clusters. That is, it classifies the data into \(k\) groups, which together satisfy the requirements of a partition: 1)each group must contain at least one object, 2)each object must belong to exactly one group. It is important to note that \(k\) is given by the user. On the contrary, hierarchical methods do not construct a single partition with \(k\) clusters, but they deal with all values of \(k\) in the same run. That is, the partition with \(k=1\) (all objects are in the same cluster) is part of the output, and also \(k=n\) (each object forms a separate cluster with only a single element). All values of \(k=2,3,\ldots\), are covered in a kind of gradual transition. See Kaufman,L., Rousseeuw, J. (1987) e Kaufman,L., Rousseeuw J. (1990).

\(^9\) For example, the k-mean method is based on the sum of squares.

\(^10\) The k-medoid method was applied by PAM (Partition Around Medoids - software R).

\(^11\) Among the input parameters which have to be indicated, the algorithm requires \(n\) number of groups. The indication of the centres is not compulsory.
representative objects in the data set. It points out that the user must not know the type of groups but has to know the number of groups that he wants to obtain. That allows you to explore the typology of the existing groups in the data set. In fact, it is possible to search for the optimal number of groups for the data set by calculating quality indicators on the clusterings for each n (n=number of groups). The optim value of n corresponds to the highest value of the indicators (see Kaufman and Rousseeuw,1990). Both in free and binding form, the degree of dispersion of the units within groups will be evaluated. That is, not all the included units in a group could have all the features of that group. To get valid results the dispersion of the units should be low in regards to the selected structure of clusters. In the analysis described in the following sections, the algorithm was applied in a binding form, using as centres the “a priori” theoretical groups specified in the previous section. Indeed, in experiments carried out until now, the two different applications (free and binding form) of the algorithm led to similar results because the imposed groups came from a preliminary search of the representative objects, free from any constraint. Finally, for a proper interpretation of results, the single units clustered together are weighted by the relative importance of the firm in terms of the number of its employees, in order to take into account the economic significance of each behavioural group.

3. An application to recent recessions and recoveries

In this section, we apply the methodology described above to two of the major cyclical episodes of the recent past, namely the major recession of 1992-1993, followed by a recovery and expansion of the economic activity in 1993-1995, and the recent recession started in August 2007 and ended, according to a preliminary chronology elaborated by ISAE, in May 2009; the analysis will be also extended to the ongoing recovery, with data spanning from June 2009 to May 2010. The comparison of the results for the 1992-93 and the 2007-09 allows a first evaluation of possible similarities and differences among the two cyclical phases; most importantly, the analysis of the data for the period 2009-2010, seen in comparison with the expansion of the period 1993-95 may help shed some light on the sustainability of the ongoing recovery, as it is seen from the point of view of manufacturing firms.

3.1 The 1992-93 recession and the following recovery and expansion

According to the cyclical chronology proposed by ISAE, the Italian economy entered a major recession in March 1992; the recession lasted 16 months, ending in July 1993, and was followed by a very long recovery and expansion, lasting until the end of 1995 (November). Survey data about the Confidence Indicator are usually elaborated by ISAE on a seasonally adjusted basis only starting from the year 2000. However, fig. 1 depicts the raw confidence indicator obtained as the average of the balances for the questions on the current level of orders and inventories (the latter entering with a negative sign) and for that on production expectations. According to the indicator, the manufacturing

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12 The dispersion of units, that is to say the mistakes made when you put the microdata together in homogeneous groups, is usually present in the aggregation processes. The aim of clustering is to combine together units minimizing the dispersion.

13 A measure of the dispersion of the units for a clustering is the average Silhouette width (see Kaufman and Rousseeuw,1990). This measure was calculated to evaluate the quality of clusterings obtained in the third paragraph of this paper.

14 The recent recession has not historical counterparts in the recent history of Italian economy; however, the 1992-1993 recession has been rather similar to the most recent one in terms of duration (16 against 21 months), albeit not in intensity. Moreover the 1992-1993 recession may be taken as a possible benchmark also because the data are methodologically homogenous with the current ones; this is not the case, for instance, for 1974-75 recession, when the survey was conducted with different methods.
sector reached a peak well before the official dates, at the beginning of 1989; however, in Spring 1992
Confidence was rather stable around the average levels of the last two years. As the crisis started, the
indicator declined again, reaching a trough in the Spring 1993, in keeping with the chronology
proposed by ISAE. The following recovery was rather intense, and ended only at the beginning of
1995, when the indicator was almost back to its level of the end of the eighties.

Figure 3 – The ISAE confidence indicator (average of the balances)

The “official” ISAE starting date for the recession coincides with the peak of
activity in March 1992. According to the behavioural groups identified using the methodology
described above (see fig. 2), at that time firms were mostly (on the 50% of the cases) on a “neutral”
stance with respect to both current and expected conditions of the firms. Almost 5.9% of them were
expressing both positive assessments and expectations, while a 15% was pessimistic on the current
conditions and neutral on short term perspectives. The situation tended to deteriorate slowly in the first
months of the recession, with those expressing positive evaluation equal to only 2.4% of the sample in
May 1992, and further down to 1.9% in September. Accordingly, during the summer the share of those
showing negative opinions on both the current and expected situation started to increase, reaching the
12.4% of the sample in September. The financial turmoil of the fall 1992 (with a severe budgetary
restriction and the exit of the Lira from the Exchange Rate Agreements) determined a faster
deterioration of the situation: the total share of those expressing negative opinions on the current
situation (regardless of their expectations) was equal to 32.3% in September and raised to 36% in
December and then further to 50-52% in March-July 1993. Hence, at the trough in economic activity
the relative (weighted) majority of firms expressed negative opinions on the current conditions, with a
mere 3.6% expressing positive evaluations and expectations.
The recovery, the expansion and approaching the next turning point. During the summer 1993, economy as a whole started to rebound. The recovery in the manufacturing sector was favoured by the devaluation of the Lira, which boosted exports and production; a recovery in internal demand slowly followed. The confidence indicator calculated by ISAE for the manufacturing sector also started to grow during the summer of 1993, quickly returning on its pre-crisis levels and eventually approaching the previous peak by mid-1995, when a new phase of contraction of economic activity was in sight. Behavioural groups of manufacturing firms gradually changed accordingly (fig. 3); more specifically, on the basis of the available evidence, it is possible to roughly identified four main phases for the recovery and subsequent expansion:

1) During a first period (August-December 1993), behavioural groups gradually shifted from the bad/neutral (i.e. a situation where firms expressed negative opinions on the current situation and neutral expectations for three months ahead) to the neutral/neutral modality, with the rest of the distribution remaining broadly unchanged. In other words, firms were less negative on current conditions but were still very cautious on short term prospects.

2) Since the beginning of 1994, those with a positive assessment on the current situation (whether expressing a neutral or a positive stance on the situation three months ahead) started to grow at a faster pace, with a contemporaneous fall of the relative frequency of those declaring to be pessimistic or neutral on present conditions; a gradual decrease of negative expectations also occurred, with opinions gradually moving towards a neutral or even a positive stance. All in all, in the Spring-early Summer 1994, those expressing a favourable opinion on the current situation were roughly up to a (weighted) 15% of sample, well above the levels of the previous Summer (below 10%) and also on higher level with respect to those characterising the distribution at the beginning of the recession.

3) In the second half of 2004 and in the first three months of 1995 firms’ opinion continued to get better, with those reporting a positive opinion concerning both assessments and expectations reaching a peak at 28.2% of the sample in March 1995. In this period, that may be characterised as one of expansion of economic activity, negative opinions also
dropped significantly, confirming that the recovery was rather widespread in the Italian manufacturing sector

4) Starting from the early Summer 1995, the large (weighted) majority of firms’ opinions stabilised around a neutral/neutral opinion; however, positive opinion regressed with respect to the high levels of the previous months, while expectations started to slowly move towards a neutral stance. Indeed, according to the official chronology provided by ISAE, the peak of economic activity was touched in November 1995; a mild and short recession followed (November 1995-November 1996).

Figure 3 – Behavioural groups during the 1993-1995 recovery and expansion

3.1. The recent recession and the ongoing recovery

In this section, the analysis is repeated for the period comprised among the most recent peak of economic activity, which according to the ISAE data occurred in August 2007, and the most recent data referred to May 2010; according to the ISAE chronology, a trough in economic activity was reached in May 2009, followed by the ongoing recovery. Similarly to what happened in the 1992-1993 cycle, on the basis of the standard indicator (see fig. 4) Confidence in the manufacturing sector reached a peak earlier, in March 2007, and started to moderately decline until the end of that year. The indicator then started to fall abruptly since the beginning of 2008, loosing almost 10 points in the first half of 2008 and 20 points more until the end of the year: in December 2008, the ISAE Confidence indicator was equal to 76.9 – its lowest level of the decade, touching its historical lows at 71.1 in March, two months before the “official” trough in economic activity. After that, Confidence started to
recover: it was up to 78 in June, coming back to 92 by the end of the year. In the first half of 2010, the recovery continued, albeit at a slower pace: in May 2010, Confidence indicator was equal to 96.2, back on the levels of July 2008, having indeed recovered the fall registered as a consequence of the Lehman Brothers’ financial turmoil, being however still 12 points below the peak of early 2007.

The recession. Indeed, the confidence decline registered starting from Spring 2007 was also matched by a change in the underlying behaviours of firms (fig. 5): similarly to the situation at the beginning of the 1992-93 recession, in March 2007 the relative majority of firms (41.8%) clustered around a neutral stance, both with respect to current assessments and short term expectations; however, the share of firms with both positive assessments and expectations was rather high (20.4%), higher than in March 1992, whilst those with negative opinions represented a minor part of the sample (the sum of those having a negative opinion either referring to the current situation and/or short term expectations was slightly above the 10% of the sample). The situation did not change much until August: the mode of the distribution was still well centred on the “neutral” stance (with a weighted average of 43% of firms reporting both neutral assessments and expectations) and still almost 22% of firms reported a positive attitude both towards the current situation and the expectations on three months ahead. The effect of the crisis started however to be visible towards the end of the year: in December, the percentage of firms reporting positive assessments and expectations was down to 5.2%; on the other hand those deeming the current situation was negative (albeit still with neutral expectations) was up to 7.3%.

Things got worst at the beginning of 2008 and firms with a positive stance on the current situation of orders books and production went further down. Until the summer, however, firms mostly moved towards a “neutral” stance, which in August represented almost 60% of the weighted answers (with only 8% of the sample reporting a negative opinion on the current situation and a neutral forecast for three months ahead). Situation deteriorated further after the summer, in keeping with the financial turmoil that followed the Lehman crisis: between August 2008 and March 2009, the (weighted) percentage of firms reporting neutral opinions fell from 60 to 21.8%, while the frequency of negative opinions on the current situation (and neutral expectations for the future) went up dramatically, from
8.4% (August 2008) to 39% (March 2009): in March 2009, the mode of the distribution had indeed shifted to the Bad/Neutral modality for the first time during the crisis. Moreover, in the same month even the negative/negative stance reached an historical peak at 21%, resulting as the second most important group emerging from the data; on the other hand, those reporting positive assessments and/or expectations were respectively down to 0.6% (positive/positive), 0.7 (positive/neutral) and 0.04 (positive/negative), testifying the widespread effects of the crisis on the opinions of manufacturing firms. Indeed, in the Spring 2009 the distribution of replies was rather similar to that characterising firms’ opinion in the trough of July 1993 (see again fig. 2). To sum up, firms’ behaviour during the recession may be divided in two distinct phases:

1) In a first moment (March 2007-December 2007), firms became less optimistic about the current situation and moved towards a more neutral stance both regarding the present conditions of the market and its future developments

2) From the beginning to the summer 2008 the situation deteriorated further, with a major shift from positive assessments to a (mostly) neutral or (to a minor extent) negative stance on the current conditions; expectations for three months ahead remained mostly neutral

Starting from August-September 2008 (in relation with the worsening of the financial situation on international markets) firms started to express growing concerns about current conditions, with the share of those deeming them as “negative” reaching an historical high, whether in combination with a neutral or even negative stance on future prospects; the peak in those showing a negative opinion on the current economic conditions was reached in March 2009, two months ahead the trough in economic activity identified by ISAE in May of the same year.

**Figure 5 – Behavioural groups during the 2007-2009 recession**

The recovery. After the trough in March 2009, Confidence of Italian firms started to recover, growing quite at a fast pace until the end of the year. Indeed, looking at the behavioural groups of firms (fig. 6), initially (March-September 2009) the recovery was mainly driven by a progressive fall of those deeming that both the current and expected situation was “negative” and a contemporaneous increase of those on a “neutral” stance (with respect to both assessments and expectations). Starting from December 2009, those on a “neutral” stance were again the relative (weighted) majority of the respondents, with a contemporaneous fall of those expressing negative opinions on the current situation. Situation continued to get better in the first five months of 2010, even if some element of uncertainty do emerge: indeed, the share of those expressing both negative assessments and expectations rises again in March 2010, eventually returning on the level of the end of 2009 in May; on
the other end, the decrease in the share of those reporting negative opinions on the present situation and neutral expectations for three months ahead decreases in March, but rises again in May. Finally, the share of those being optimistic both on current situation and short term prospects gradually increase, being however – at 6.5% - well below the levels of the first part of 2007 (indeed, the current level is similar to that of the end of 2007, i.e. a level still characterising a period of recession for the Italian manufacturing sector). To sum up, the ongoing recovery may be divided up to now in two major phases:

1) Since March 2009 the share of those expressing negative opinions starts to decline, in favour of a more neutral stance both on the current and expected situation
2) Since the end of 2009, the share of those expressing positive evaluations starts to grow again, albeit the share is still well below the peak of the beginning of 007; at the same time, firms still express concerns in their evaluation on current conditions, even if they are progressively moving their expectations from a negative or neutral to a positive stance.

Hence, at the moment the recovery seems still to be mainly driven by more favourable expectations for the situation to come, rather than by an effective increase in the current level of orders and demand. In this sense, firms’ expectations should be confirmed by the effective affluence of new orders and demand in order for the recovery to be sustainable in the medium and long term.

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4. Conclusions

Results from business surveys are usually synthesised calculating the balance statistic, i.e. the difference among the share of positive and negative replies to each question contained in the survey questionnaire. The balance is easy to compute, and is usually thought as a useful cyclical indicator of economic activity; however, it does not fully exploit the information content of the survey, ignoring the answers of those reporting a “neutral” stance and also any possible link among the answers given to different questions in the same questionnaire. In this paper, we have presented a new method trying to overcome these problems: the method make use of cluster analysis techniques in order to identify relevant behaviour groups in firms’ patterns of response. In order to test the ability of the groups to provide an adequate representation of firms’ behaviour, we have used them to analyse the recession of the year 1992-93 and the subsequent recovery, trying also to make some comparison with respect to what happened in the recent recession and the ongoing recovery. The analysis may also allow...
First results obtained seem quite promising: looking over the complete cycle going from March 1992 (peak) to November 1995 (next peak), the evolution of the cyclical situation is closely monitored by that of firms’ opinions. During the first months of the recession, firms gradually moved from neutral to negative opinions on both the current and future situation; after the shock of the fall 1992 (fiscal adjustment, devaluation of the Lira), opinions deteriorated more rapidly, with a negative peak reached in July 1993, almost one year and a half after the starting of the crisis. A similar development of opinions is found also in the 2007-2009 downturn: in the period March – December 2007 firms’ opinions gradually moved from a positive to a more “neutral” stance; situation started to get worse at the beginning of 2008, and went further down since the fall of that year, with a brisk movement toward a negative stance, both concerning current opinions and short term expectations. In this case, the complete negative adjustment took almost two years, longer than in the 1992-93 episode, confirming that this recession has indeed been longer (and deeper) than the previous one. Similarly to the 1992-1993 recession, however, the worsening of the situation, after an initial phase of movement from positive to neutral opinions, was linked to an external shock, the fiscal adjustment and devaluation of the lira in 1992, and the exploding of the financial crisis in 2008.

The comparison of the two cyclical episodes also provides interesting insight into the current period of recovery: in 1993-95, a gradual recovery followed the trough of the Summer 1993, initially characterised by a movement towards a neutral stance (in the period August-December 1993), and then followed by a more rapid increase of positive opinions, that reached a peak in March 1995, after a long expansion lasting 19 months. According to ISAE chronology, we are now (with the data referring to May 2010) into the 12th month of the recovery. In this sense it is possible to draw some comparison with the situation characterising firms’ opinions 12 months after the start of the 1993 recovery, in August 1994 (see fig. 8). Situation looks rather different: in May 2010, a modest share of opinions concentrates on both the positive/positive and negative/negative modalities (as in August 1994); however, in August 1994 the group characterised by neutral assessment but positive expectations was almost as important as that with both opinions settled on “neutral”. On the other hand, currently the share of firms’ deeming that the market conditions are still “bad” is still quite high, while expectations – albeit not being negative anymore – are still mostly on a neutral stance, with only a minor share of the sample being optimistic about short term prospects. In other words, the recovery seems now much slower and weaker than in 1994, and should find confirmation in the future in a gradual shift towards more favourable opinions on market conditions and on the prospects for the months ahead.
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Figure 8 – Behavioural groups 12 months into the recovery, 1994/2010

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