Report

New Design of the ISAE Manufacturing Survey

Marco Malgarini, Patrizia Margani and Bianca Maria Martelli*

Abstract

This paper describes the new ISAE manufacturing survey design and its recent re-engineering process. Three important goals have been reached: First, the underlying industrial structure for the aggregation of survey results is now based on the up-to-date NACE Rev. 1.1 classification (at the 3-digit level), adapted to take into consideration the structure of the Italian economy. Second, weights used in the aggregation have now been updated to the year 1999. Third, the weighting scheme is now based on a coherent system of firm-size weights, based on a four-stage method in which the firms' employees are used as weights to aggregate the firms' results for the balance of a question in each strata; then results for each strata are aggregated to calculate the total manufacturing, using updated value added weights (coming from an external source, ISTAT). As a consequence, the general quality of the ISAE survey data has strongly improved: Results are now more reliable at an international level and a full comparability between national, regional and firm-size level data is also ensured. Finally, historical data up to 1991 have been re-calculated according to the new aggregation scheme, in order to ensure intertemporal comparability of the data.

Key Words: Survey methods, Aggregation, Weights

JEL Classification: C42, C82, E32

* ISAE (Institute for Studies and Economic Analyses), Rome, Italy. Corresponding author: Marco Malgarini, ISAE Survey Unit; m.malgarini@isae.it

The authors wish to thank Raffaella Sonego and all the other ISAE researchers, technologists and technicians that have been involved in various stages of the project. All the remaining errors are as always of exclusive responsibility of the authors.

Résumé

Le présent article expose les modifications dernièrement apportées à la conception de l'enquête de l'ISAE sur les industries manufacturières. Celles-ci ont permis d'atteindre trois objectifs importants : premièrement, la classification sectorielle sous-tendant l'agrégation des résultats de l'enquête se fonde désormais sur la toute récente NACE Rev. 1.1 (rubriques à 3 chiffres), ajustée pour tenir compte de la structure de l'économie italienne. Deuxièmement, les pondérations utilisées pour l'agrégation ont été actualisées et renvoient maintenant à l'année 1999. Troisièmement, la procédure de pondération repose désormais sur un système cohérent de poids et s'appuie sur une méthode en quatre étape dans laquelle le nombre de salariés des entreprises sert de pondération pour l'agrégation au niveau des strates, puis les chiffres concernant l'ensemble des industries manufacturières sont calculés à partir des résultats obtenus pour les strates au moyen de pondérations actualisées renvoyant à la valeur ajoutée (fournies par une source extérieure, l'ISTAT). La qualité générale des données issues de l'enquête de l'ISAE s'en est trouvée nettement améliorée : les résultats sont maintenant plus fiables au niveau international et une totale comparabilité est assurée entre les données nationales, par région et par taille de l'entreprise. Enfin, les données passées ont été révisées, en remontant jusqu'en 1991, et recalculées au moyen du nouveau système de pondération afin de permettre les comparaisons dans le temps.

1 Introduction and Overview

The survey on the manufacturing sector in Italy has been performed by ISAE (Institute for Studies and Economic Analyses) since 1959, at first on a quarterly basis; later in 1962 the survey became monthly as part of the Joint Harmonised Business and Consumers Survey (BCS) Programme of the European Commission (see, European Commission, 1997). In general, business tendency surveys ask for entrepreneurs' and managers' opinions on current trends and expectations for the near future, regarding their own business. The information is of a qualitative type: respondents are not asked for quantitative data about some variables (say, the amount of production in one month), but for qualitative multiple-choice assessments on the behaviour of that variable (say, if production has increased, decreased or remained the same in a given month with respect to the previous one). BCS data are widely used in business cycle analysis and as a supporting tool for forecasting exercises.[1] It is therefore very important that institutes conducting surveys ensure a high quality of their data; as recently defined in a Handbook on BCS by the OECD, quality of survey data is measured in terms of reliability, timeliness of release, comparability over time, transparency and accessibility to the users (OECD, 2003).

With the project described in this paper, ISAE manages to increase the overall quality of the manufacturing survey data, in particular with respect to reliability, comparability and transparency of the results. Along these lines, the industrial classification of responding firms has been updated and a new system of weights is now adopted in order to ensure full comparability of data at national, regional and firm-size level. In addition, the reconstruction of survey data since 1991 ensures intertemporal comparability and avoids possible bias emerging from structural breaks in the series. In what follows, Section 2 presents the new survey design, whilst Section 3 describes the new methods adopted for processing survey results. Section 4 concludes the paper.

[1] See for instance the OECD System of Composite Leading Indicators and the Conference Board Business Cycle Indicators. For Italy, a similar indicator is proposed in Altissimo, Marchetti and Oneto (2000). CIRET Conferences have been historically devoted to the study of the role of BCS for cyclical analysis and forecasting; see for instance Oppenländer and Poser (1984; 1986; 1988; 1996; 2000) and Oppenländer, Poser and Nerb (1995). In Italy, BCS data have also been widely used in short term macroeconomic analysis (Bovi, Lupi and Pappalardo, 2000; Bruno and Lupi, 2001 and 2003; Carnazza and Parigi, 2003) and have also been used to investigate the strategic behaviour of manufacturing firms (Carnazza, 2001).

2 Survey Design

Generally speaking, implementation of the BCS can be broken down into 5 major steps (OECD, 2003): laying down of the questionnaire, sample selection, realisation of the interviews, processing of the results and their dissemination to the public.[2]

2.1 Questionnaire, sample selection, realisation of the interviews

In the case of the ISAE manufacturing survey, the design of the questionnaire is harmonised at the European level; the version used by ISAE is an Italian translation of the European one, with some additional questions specific to the Italian case. The enterprise is selected as sampling and reporting unit;[3] the target universe is represented by firms with 10 employees or more, stemming from the official archive of active firms (ASIA), provided by the Italian National Institute of Statistics (ISTAT). Sample selection is based on the Optimal Allocation to Strata method (OAS, see Cochran, 1977), according to which the number of firms selected in each stratum is chosen by taking into account the corresponding universe size and the variability of the firms belonging to that stratum. Along these lines, a greater heterogeneity of the firms corresponds to a larger size of the stratum; however in strata where firms are relatively similar, only a lower number of firms is needed to reach the desired precision of the results.[4] Once the sample is defined, the same set of firms is surveyed each month, substituting non-answering firms with others extracted from the same stratum. The sample is then updated almost every year on the basis of the availability of new official releases of ASIA archives.

According to the EU prescription, the sample size for the survey has been predetermined as equal to about 4,100 statistical units[5], giving a sample coverage of about 4.4%. The sample is stratified upon firm-size (small, medium and large firms), sectors (21 sectors of economic activity) and regions (19 administrative regions, aggregating *Piemonte* and *Val d'Aosta*), for a total of 3x21x19=1,197 strata. The choice of the region as a stratification variable allows the elaboration of the data at a local level, responding to a growing demand in Italy for more disaggregated and up-to-date cyclical indicators. As a rule

2 For an extensive overview of the history of the ISAE Manufacturing Survey, see Malgarini, Margani and Martelli (2005).

3 The sampling unit is the statistical unit used to select survey participants; the reporting unit is the part of the enterprise for which data are collected and the response unit is the unit to whom the questionnaire is sent. For these definitions, see OECD (2003).

4 The variable selected for evaluating the variability inside each stratum is the number of employees of each firm reported in the ASIA archive. For a more careful description of the sampling method adopted by ISAE, see also Cicchitelli, Herzel and Montanari (1992).

5 More precisely, the Commission suggests a sample size of 4.000 units. The precise size of the ISAE theoretical sample (4.140 units) stems from the "oversampling" in some strata, due to the aim of maintaining all the "loyal" firms responding over the years, even if in excess. This choice better guarantees the stability of the panel (see Martelli, 1998).

of thumb, OECD (2003) states that around 30 reporting units per strata are sufficient to obtain an acceptable level of precision for each strata; if this rule of thumb should literally be applied, ISAE should interview up to 36,000 firms per month to have reliable results for each stratum. However, the choice of maintaining this very detailed sampling grid is based on the willingness to adopt a coherent sampling design that first may be theoretically disaggregated in a similar way at the industry, regional and firm-size level and then may be appropriately processed to weight data at the aggregate level.

As is well known, all the assumptions on estimates stemming from sample surveys can only be expressed within a predetermined confidence interval and with a certain degree of uncertainty. In particular, the qualitative estimate of the percentage of answers p for a generic question i can differ (in absolute value) from the true value P *(*relative to the whole universe) for a quantity larger than d, with a confidence level $1-\alpha$ (with α for instance equal 5%):

$$\Pr\left\{\left|p-P\right|\geq d\right\}=\alpha \tag{1}$$

Assuming that *p* is normally distributed, it follows that $d=z_{\alpha/2}s_p$, where $z_{\alpha/2}$ is the value of the normal deviate for a predetermined value of α (e.g. for α=5%, $z_{\alpha/2}$=1.96) and s_p is the standard error of the qualitative variable p given by:

$$s_p=\left(\frac{(\sum_k W_k\sqrt{p_kq_k})^2}{n}-\sum_{hk}W_kp_kq_k\right)^{1/2} \tag{2}$$

with k as the generic stratum, N as the universe size, N_k as the number of universe firms belonging to the generic stratum k, $W_k=N_k/N$ as the weight of the stratum k and p_kq_k the estimated qualitative variance of p in the stratum k. An important property of OAS is to minimise the variance of the estimates (increasing therefore the precision of the estimates) in respect to other sampling designs, being the size *n* constant. Setting α=5% and calculating the standard errors s_p on the effective sample for the main questions building the confidence indicator (order level, stocks of finished products and production expectations), an average sampling error of about ±0.48% is obtained.[6] In other terms, in the period considered and given the sample design and the sample size, the true parameter may have been about half a percentage point larger or smaller than the sample estimates.

All the 4,100 monthly interviews are now realised with the C.A.T.I. methodology (Computer Aided Telephone Interview), allowing a closer and more personal contact with the respondents and increasing survey response rates; each month non-answering enterprises are replaced by new ones, randomly extracted from the target universe.

6 Calculations are referred to the months of April, May and June 2004.

2.2 Processing and disseminating the results

The answers to the multiple-choice questions of qualitative surveys are generally elaborated in the form of multiple percentages, according to the number of reply options. In the case of the ISAE manufacturing survey, Reporting Units (RUs) are generally asked to choose between three options, i.e. a positive/neutral/negative answer to each of the questions.

Processing the results implies the following steps:

1. Classification of the Reporting Unit (RU) according to its main industrial activity;
2. Weighting RU-level results to obtain data aggregated at the industry level;
3. Calculation of time-series as a synthesis of the multiple-choice survey information;
4. Seasonal adjustment of aggregated survey results;
5. Calculation of Sentiment Index by way of aggregation of some of the (seasonally adjusted) balances of the survey.

The methodology used by ISAE for the first two steps is the object of the section below. Step 3 is usually performed calculating net balances for each question by subtracting the negative percentage from the positive one, excluding neutral answers.[7] ISAE survey data are subsequently seasonally adjusted with Tramo/Seats and the Sentiment Index is calculated according to the Commission methodology. Finally, survey results are disseminated to the public through Internet, together with information on survey methodology (metadata).

3 Re-engineering the ISAE Manufacturing Survey

In 2003 ISAE began an important project of survey updating, involving the whole phase of processing the results (especially steps 1 and 2 described above). The major issues at stake concerned a classification of reporting units based on an old classification of economic activity, an old system of weights and an inconsistency between regional/firm-size data and national data.

3.1 A new classification of industrial activity

As said above, the first aim of the restructuring process is the updating of the ISAE classification, which should be based on the NACE Rev. 1.1 adopted at the European level, trying to maintain as strong as possible a focus on the Italian industrial specialisation. Along

7 Alternative methods are proposed by Carlson and Parkin (1975) and, more recently, by Dahl and Xia (2004). A comparison between the "balance" method and alternative ways of quantifying qualitative data is in D'Elia (1991): the study reveals a high correlation between balances and alternative methods in the case of three-option replies, as is the case of the ISAE manufacturing survey.

these lines, each RU is mapped according to the new industrial classification; survey series are reconstructed since 1991, working directly on micro-data, to be precise on the original answers provided by the Reporting Units.

The EC requests that institutes participating in the Joint Harmonised Programme use a 2-digit level detail of the NACE Rev. 1.1, going deeper at the 3-digit level when relevant for the construction of the Main Industrial Groupings (MIG). The NACE sectors to be covered from the Joint Harmonised Survey go from NACE 15 to NACE 36; considering the 3-digit sub-sectors, the total number of sectors amounts to 75 (excluding the 2-digit aggregation of the 3-digit sub-sectors). Along these lines, ISAE decided to slightly simplify the official European Commission request, according to the peculiar characteristics of the Italian manufacturing sector. The sectoral disaggregation proposed by the Commission is indeed common to all the European countries participating in the Joint Harmonised Programme: some of these sectors may have a negligible weight in Italy, while other ones that are not "officially" requested may have a role in the Italian manufacturing structure. Information on Italian industry value added – provided by the National Institute of Statistics (ISTAT) for the year 1999 – is used to evaluate the economic significance of the proposed industry classification. As a rule of thumb, all the 3-digit sectors with a national value added weight ≤ 0.5% are aggregated to the 2-digit level detail or in some cases by constructing an ad hoc aggregation of two (or more) 3-digit sectors. The resulting industry classification is composed of 56 industries (see Appendix, Table A). Among the 3-digit sectors ad hoc aggregated by ISAE, we have: food products, beverages and tobacco (NACE 15 and 16), textiles (NACE 17), electrical machinery and apparatus n.e.c. (NACE 31, n.e.c.=not elsewere classified), medical, precision and optical instruments (NACE 33), other transportation equipment (NACE 35), manufacturing industries n.e.c. (NACE 36). NACE 23.1 and 23.3 (manufacture of coke and nuclear fuel) are excluded for their negligible (if any) relevance in the structure of the Italian manufacturing industry; refined petroleum products (NACE 23.2) are instead considered, but not included in any MIG according to the official definition. In addition, we add sectors 28.2 and 28.3 (metal containers, central heating and boilers, steam generators) – that were not previously considered by ISAE – and sectors 29.2, 29.6 and 29.7 (other machinery and equipment n.e.c.) that are not requested by the Commission, but are officially considered as investment goods. The resulting classification maintains a sufficiently detailed description of the manufacturing sector in Italy. All the differences with respect to the official EC request were authorised by the Commission.

3.2 The new weights and the structure of the Italian manufacturing sector

In weighting survey results, 3-dimensional information on value added (at sectoral, geographical and firm-size level) is needed. Data on market-price industry value added for each Italian region and for small (10–99 employees), medium (100-249) and large (>250)

firms are currently available at the 2-digit level;[8] for the same year, official ISTAT regional and firm-size-specific data at the 3-digit level are available only for employees. Furthermore, 3-digit industry, regional and firm-size-specific value added is estimated on the basis of the information on industry employees, to be precise the 2-digit value added share is reported to the 3-digit level on the basis of the composition of the 2-digit industry in terms of employees. The resulting weighting array has the dimension of 56 (industries) x 19 (regions) x 3 (firm-size groups) = 3,192. However, this very detailed weight grid is only needed as a starting point from which to elaborate data at regional and firm-size level consistent with national ones: actual data will be produced according to the level of aggregation described in Table B in the Appendix.

Table 1 compares the updated industry weights with the ones previously adopted by ISAE (relative to 1986); it also shows the new industry specific weights broken down by geographical partition (from 15 to 36 in the 2-digit NACE Rev. 1 classification). Some relevant changes in the Italian manufacturing structure emerge: the weight of the textile, leather and footwear sector declines from 17.8% in 1986 to 12.8% in 1999; by contrast the weight of machinery and equipment rises from 17.3 to 23.3%, mainly because of an increasing specialisation in machinery and equipment n.e.c. (+4.4%) and in electrical machinery (+2.4%). Table 1 also shows a decline in the shares of the transportation equipment and other manufacturing n.e.c. sectors (-2.2% and -1.5% respectively) and an increase in those of the basic metals and metal products (+2.6%) and rubber and plastic products (+1.2%). More generally, the structure of the Italian manufacturing sector is characterised in 1999 by a relevant role of "traditional" sectors such as food, beverages and tobacco (9.65% of the total), metal products (12.22%), machinery and equipment (13.66%) and by a small or negligible weight of sectors such as office machinery and computers (that accounts for only 0.81% of the total manufacturing value added), radio, TV and communication equipment (1.9%; among others, industries of new electronics goods for consumers are included here) and other transportation equipment (such as naval industry and aviospace, 2.07% as a whole).

The relative specialisation of the Italian industry in the more "traditional" sectors of the so-called "made in Italy" is also confirmed by an international comparison of value added composition at the industry level (Appendix, Table C); data are measured at basic prices. Differences between basic prices and market prices data are negligible, allowing a direct comparison between the industry structure used for Italy by ISAE and that of some of the other main industrial countries, the EU and the OECD as a whole (for aggregated zones, data are converted to a common unit using the Purchasing Power Parities for total GDP). In particular, the weight of textiles, leather, footwear industries (NACE 17-19) is in Italy more than double the European average; also for sectors 26 (other non metallic products), 28 (metal products) and 36-37 (manufacturing n.e.c. and recycling) the Italian weight is significantly higher than that of the other main industrial countries. By contrast, the Italian manufacturing sector seems to be relatively de-specialised in high-technology industries such

8 The latest value added data available when ISAE started the restructuring of the survey were referred to the year 1999; more recent data have become available recently and will be taken into consideration with the future revisions of the weights.

as those of sector 24 (chemicals), 30 (office machinery and computers), 33 (radio, TV, communication equipment) and 34 (motor vehicles).

Table 1 **Industry weights in%: Geographical total (value added at market prices)**

Sectors (NACE Rev. 1)	Italy		NW	NE	Centre	South
	1986	1999		1999		
15. and 16. Food, beverages, tobacco	9.94	9.65	3.19	3.13	1.35	1.99
17. Textiles	8.58	5.84	3.26	1.20	1.13	0.25
18. Wearing apparel; furs	5.38	3.74	0.98	1.29	0.76	0.71
19. Leather products	3.86	3.25	0.29	0.89	1.41	0.67
20. Wood and wood products (exc. Furniture)	2.97	2.32	0.69	0.93	0.38	0.33
21. Pulp, paper and paper products	2.47	2.20	0.85	0.56	0.51	0.27
22. Publishing and printing	3.03	3.80	1.95	0.79	0.75	0.32
23. Coke, refined petroleum	0.85	1.07	0.50	0.11	0.34	0.12
24. Chemicals	7.68	7.90	4.54	1.29	1.38	0.68
25. Rubber and plastic products	3.53	4.77	2.59	1.19	0.57	0.42
26. Other non metallic products	6.81	5.71	1.29	2.42	1.11	0.90
27. Basic metals	7.76	3.74	2.12	0.71	0.42	0.49
28. Metal products	5.60	12.22	5.71	3.94	1.26	1.31
29 Machinery and equipment n.e.c.	9.31	13.66	6.22	5.14	1.59	0.69
30. Office machinery and computers	0.64	0.81	0.45	0.11	0.17	0.09
31. Electrical machinery	2.19	4.60	2.46	1.24	0.50	0.39
32. Radio, TV, communication	4.32	1.90	0.78	0.34	0.44	0.34
33. Medical, precision, optical apparel	0.88	2.35	1.01	0.88	0.33	0.13
34. Motor vehicles	6.00	3.87	2.21	0.53	0.27	0.85
35. Other transport equipment	2.15	2.07	0.73	0.43	0.50	0.42
36. Manufacturing industries n.e.c.	6.07	4.51	1.29	1.79	0.94	0.49
Geographic total	100.00	100.00	43.13	28.91	16.10	11.87

Source: ISAE calculations on ISTAT data

3.3 The new weighting system: the model

After classifying each reporting unit along 3 “axes” (sector, region and firm-size) and constructing a new grid of weights, this section illustrates the four-step procedure used to elaborate survey percentages:

1. In the first stage, percentages of answers for each sector k, in region l, with firm-size m, are calculated using firm employees as weights.

2. In the second one, aggregated percentages for sector k (or region l/firm-size m) in region l (or sector k/firm-size m) are calculated, summing with respect to firm-size groups (or with respect to regions/sectors), using firm-size-specific (or region/sector-specific) value added weights.
3. In the third step, "marginal" percentages are calculated for total sector k (or for total region l/total size m), summing with respect to both region and firm-size groups (or, with respect to sectors and firm-size/sectors and regions) using the region- and firm-size-specific value added weights (or the sector- and firm-size-specific weights/sector- and region-specific weights).
4. In the final one, the overall percentage for all the firms of the manufacturing sector in Italy is calculated, aggregating all the industry, region and firm-size-specific percentages with their respective value added weights.

Suppose we consider the generic set of firms $j_{1\,k,l,m} \ldots\ j_{i\,k,l,m}$ operating in a specific sector k, in a particular region l, of a specific firm-size group m, for an example a small textile firm operating in Tuscany. Suppose also that we are interested in the question about the level of inventories X, particularly in the answer "above normal", in a way that $x_i = 1$ if inventories are considered above normal and $x_i = 0$, otherwise. Then, percentages of answers to the question X for all the firms operating in the strata (identified by k, l, m) are calculated as a weighted average of the firm-specific answers, the weights being the numbers of the firms' employees, y_j:

$$X_{k,l,m} = \sum_j \frac{y_j \cdot x_j}{\sum_j y_j} \tag{3}$$

Defining now $z_{k,l,m}$ as the generic value added for sector k, in region l, of firm-size m, the resulting generic value added weight may be written as follows:

$$w_{k,l,m} = \frac{z_{k,l,m}}{\sum_k \sum_l \sum_m z_{k,l,m}} \tag{4}$$

In (4) only industries answering in a particular survey are considered. To be precise, if there is no firm answering in a particular month for a generic strata, the relative value added $Z_{k,l,m}$ is considered equal to zero; this also implies that the overall sum $\sum_k \sum_l \sum_m z_{k,l,m}$ may vary from one month to another, according to the actual answers received in a particular month and also the $w_{k,l,m}$ weights used in computing the survey results may vary in time, because of a change in the denominator in (4). This allows to maximise weight representativeness of the actual firms answering the survey each month, given that a particular cell will contribute to the calculation of marginal and overall total if some firms are actually answering in that cell. By contrast, the cell will be excluded from the calculation if no firm in that cell is answering the survey. However, weight variability is expected to be relatively low, because of the above mentioned stability of the ISAE panel, implying that only

a very small proportion of firms are being substituted from one month to another, and therefore the overall sum $\sum_k \sum_l \sum_m z_{k,l,m}$ is relatively stable in time.[9]

In the second step of the procedure, aggregated percentages for sector k (or region l/firm-size m) in region l (or sector k/firm-size m) are calculated, summing groups with respect to firm-size (or with respect to regions/sectors), using firm-size-specific (or region/sector-specific) value added weights. Suppose we calculate $X_{k,l,.}$, the "above normal" percentage for all the firms (not only the small ones) of the textile industry in Tuscany: value added weights are used to aggregate, in this case through the different firm-size groups:

$$X_{k,l,.} = \sum_m (w_{k,l,m} \cdot X_{k,l,m}) \tag{5}$$

Suppose we now calculate the "above normal" percentage for all the firms of the textile industry for the Italian total: in this case, results need to be aggregated not only over firm-size groups but also with respect to the regions. Define $X_{k..}$ as the marginal total percentage of "above normal" answers for total sector k, calculated as the weighted average of the industry specific percentages for each region and firm-size groups:

$$X_{k..} = \sum_l \sum_m (w_{k,l,m} \cdot X_{k,l,m}) \tag{6}$$

In the final step, the overall percentage for all the firms of the manufacturing sector in Italy $X_{k..}$ is calculated, aggregating all the industry, region- and firm-size-specific percentages with their respective value added weights:

$$X_{...} = \sum_k \sum_l \sum_m (w_{k,l,m} \cdot X_{k,l,m}) \tag{7}$$

Obviously, the expressions (5) and (6) can be also used to calculate the "marginal" percentage of answers with respect to region or firm-size; in this sense, expression (7) applies to calculate the overall total.

The new method used to process survey results is equivalent to the one recently proposed in OECD (2003). In fact, the OECD recommends the use of the inverse sample probability to weight the answers provided by the kind of activity units (KAUs) within each stratum, in order to account for varying probability of extraction for the KAUs in the stratum. When, as in the case of the ISAE survey, the reporting unit is the enterprise itself (not the KAU), the inclusion probability is the same for each reporting unit and therefore the sample probability is constant within the stratum. Moreover, the value added values used to weight the strata are known from external sources and therefore there is no need to estimate them out of the sample.

9 Generally speaking, the new firms entering the panel each month amount to less than 2% of the sample.

4 The New Data-Set and Some Final Considerations

Before drawing some conclusions about the new structure of the ISAE manufacturing survey, we analyse the main cyclical features of the new and the old Confidence Indicator and compare them with those of the cyclical component of the Industrial Production Index (IPI) in the period 1991:1 – 2004:12 (Table 2)[10]. The new CI shows a stronger correlation with the IPI, both contemporaneously and at the peak of the cross-correlation function; this is true both looking at the whole sample and also considering separately the first and second part of the period (1991-1998 and 1999-2004, respectively). In the whole sample, the peak of the cross-correlation function takes place at $t-4$ for the old CI and at $t-3$ for the new one, denoting a weaker leading capacity of the new indicator; however, for both the indicators the cross-correlation function peaks at $t-2$ when only the second part of the sample is considered.

These results are confirmed also looking at the mean lead/lag at turning points: both indicators show on average a lead with respect to IPI, but the lead is longer for the old than for the new CI. However, this is especially due to longer leads at the beginning of the sample, while the lead of the new series is comparable with that of the old one in the period 1999-2004.

The larger lead of the old index at the beginning of the sample may be due to the fact that the indexes are constructed using fixed weights, but the old weights were referred to the year 1986, the new ones to 1999. The adoption of 1999 weights may have caused a weaker leading capacity of the new indicator, the farther away is the period from which the weights have been calculated. On the other hand, the adoption of more recent weights ensure stronger correlation and a better performance towards the end of the sample: those should be considered as desirable properties for such an indicator. These findings however support the need of further research, in order to adopt a variable system of weights, to be updated, for instance, every five years, so as to take into consideration the variability of the structure of the Italian manufacturing sector.

With the project described in this paper, ISAE manages to increase the quality of the manufacturing survey data in the OECD sense, in particular with respect to reliability, comparability and transparency of the results. In fact, the updating of the industrial classification and of the weights used in processing the results increases the accuracy of the measures provided by the survey, making the results more reliable for the analysts; the reconstruction of the time series since 1991 ensures intertemporal comparability of the data. Moreover, the adoption of the NACE Rev. 1.1 classification increases the comparability of the Italian data with those released by other European institutions, while the new system of

10 The Confidence Indicator is calculated by ISAE as the average of the balance of three questions (those concerning the assessment on the level of orders and inventories and the expectations on production), plus 100; all the series are seasonally adjusted with Tramo/Seats (Gomez and Maravall, 1996). The cyclical component of IPI has been extracted from the seasonally adjusted official ISTAT data using the Hodrick-Prescott filter; the cyclical chronologies have been calculated with the Bry-Boschan routine.

weights increases comparability at the regional and firm-size level. The paper also provides information about the structure of the Italian manufacturing sector and its evolution in time, allowing comparisons with the industry structure of other industrial countries. Finally, this study represents an important contribution to increase the transparency and interpretability of the results, helping researchers to draw meaningful conclusions: it gives detailed information to the analysts about survey frame, statistical units used in the survey, data collection methods, the sample and the weighting system used in processing the results.

Table 2 **Cyclical turning points of Confidence Indicators and Industrial production**

	IPI	Old CI			New CI		
		Cross-correlations					
		Whole sample	1991-1998	1999-2004	Whole sample	1991-1998	1999-2004
ρ_0		0.5110	0.5388	0.5947	0.5961	0.6434	0.6182
$\rho_{\max(lead)}$		0.6611 (4)	0.6930 (3)	0.7094 (2)	0.6813 (3)	0.6971 (3)	0.6913 (2)
		Turning points					
Trough	1993:10	1992:12			1993:07		
Peak	1995:10	1994:11			1995:03		
Trough	1996:11	1996:06			1996:07		
Peak	1997:10	1998:01			1998:02		
Trough	1999:03	1999:02			1999:03		
Peak	2000:12	2000:06			2000:06		
Trough	2002:01	2001:11			2001:12		
Peak	2002:09	2002:04			2002:05		
Trough	2003:04	2003:06			2003:07		
		Mean lead/lag					
		Whole sample	1991-1998	1999-2004	Whole sample	1991-1998	1999-2004
Total		-3.89	-5.75	-2.4	-2	-2.5	-1.6
Peak		-4.75	-4	-5.5	-3.25	-1.5	-5
Trough		-3.2	-7.5	-0.33	-1	-3.5	0.67

However, the paper does not deal with some other aspects concerning the quality of the data, leaving the field open to further research. With respect to the reliability of survey results, in particular, more careful attention should be devoted in the future to the problems of the correct measurement and the handling of non response that are currently treated simply by substituting non-answering firms within the sample frame. Possible future steps of research

include also the development of easy-to-access interfaces, able to distribute survey data not only to ISAE researchers, but also to the general public, analysts and executives alike, with different levels of detail, depending on the user's needs and requests.

In this respect, ISAE is carefully checking the possibility of developing dynamic "front end" dissemination of the data, allowing public access to survey results through the Internet. Possible future research in this field also includes the possibility of extending the methods and the software employed here to the other surveys currently performed by ISAE, in order to build an Intranet and Internet "portal" for all ISAE surveys.

References

Altissimo F.; D.J. Marchetti and G.P. Oneto. 2000. "The Italian Business Cycle: Coincident and Leading Indicators and Some Stylised Facts," Bank of Italy, Rome, Temi di Discussione no. 377.

Bovi M.; C. Lupi and C. Pappalardo. 2000. "Predicting GDP Components Using ISAE Bridge Equations Econometric Forecasting Model (BEEF)," Istituto di Studi ed Analisi Economica, Rome, ISAE Working Paper no. 13.

Bruno G. and C. Lupi. 2001. "Forecasting Industrial Production and the Early Detection of Turning Points," Istituto di Studi ed Analisi Economica, Rome, ISAE Working Paper no. 20.

Bruno G. and C. Lupi. 2003. "Forecasting Euro-Area Industrial Production Using (Mostly) Business Survey Data," Istituto di Studi ed Analisi Economica, Rome, ISAE Working Paper no. 33.

Carlson J. A. and M. Parkin. 1975. "Inflation Expectations," *Economica* 42:166, pp. 123-38.

Carnazza P. 2001. "The Role of Short-Term Economic Information in Industrial Firms' Strategy," Istituto di Studi ed Analisi Economica, Rome, ISAE Working Paper no. 15.

Carnazza P. and G. Parigi. 2003. "Tentative Business Confidence Indicators for the Italian Economy," *Journal of Forecasting* 22:8, pp. 587-602.

Cicchitelli G.; A. Herzel and G.E. Montanari. 1992. *Il Campionamento Statistico*. Bologna: Il Mulino.

Cochran W. G. 1977. *Sampling Techniques.* 3rd edition. New York: John Wiley and Sons.

Dahl C.M. and L. Xia. 2004. "Quantification of Qualitative Survey Data and Tests of Consistent Expectations: A New Likelihood Approach," *Journal of Business Cycle Measurement and Analysis*, 1, CIRET and OECD, Paris, pp. 71-92.

D'Elia E. 1991. "La Quantificazione dei Risultati dei Sondaggi Congiunturali: Un Confronto Tra Procedure," ISCO, Rome, Rassegna di Lavori dell'ISCO.

European Commission. 1997. "The Joint Harmonized EU Programme of Business and Consumer Surveys," European Economy, Brussels, Reports and Studies no. 6.

Gomez V. and A. Maravall. 1996. "Programs Tramo and Seats", Banco de Espana, Servicio de Estudios, Documento de Trabajo, n. 9628.

Malgarini M.; P. Margani and B. Martelli. 2005. "Re-engineering the ISAE manufacturing survey," Istituto di Studi ed Analisi Economica, Rome, ISAE Working Paper no. 47.

Martelli B. 1998. "Le Inchieste Congiunturali dell'ISCO: Aspetti Metodologici," Istituto Nazionale per lo Studio della Congiuntura, Rome, Rassegna di Lavori dell'ISCO, no. 3, Anno XV.

OECD. 2003. *Business Tendency Surveys: A Handbook*. Paris: OECD.

Oppenländer K.H. and G. Poser. eds. 1984. "Leading Indicators and Business Cycle Surveys. Papers presented at the 16th CIRET Conference, Washington D.C. 1983." Gower: Aldershot.

Oppenländer K.H. and G. Poser. eds. 1986. "Business Cycle Surveys in the Assessment of Economic Activity, Papers presented at the 17th CIRET Conference, Vienna, 1985". Gower: Aldershot.

Oppenländer K.H. and G. Poser. eds. 1988. "Contributions of Business Cycle Surveys to Empirical Economics, Papers presented at the 18th CIRET Conference, Zurich, 1987." Avebury: Aldershot.

Oppenländer K.H. and G. Poser. eds. 1996. "Business Cycle Surveys: Forecasting Issues and Methodological Aspects, Selected papers presented at the 22nd CIRET Conference, Singapore, 1995." Avebury: Aldershot.

Oppenländer K.H. and G. Poser eds. 2000. "Use of Survey Data for Industry, Research and Economic Policy, Selected papers presented at the 24th CIRET Conference, Wellington, New Zealand, 1999." Ashgate: Aldershot.

Oppenländer K.H.; G. Poser and G. Nerb. 1995. "Application of Business Surveys for Macroeconomic Analysis," CIRET Studies no. 49.

Appendix

Table A **The new ISAE classification of industrial activity**

Code	Sector	Value added weight (%) 1999	MIG
15.1, 15.2	Processing of meat and fish	1.80	FOBE
15.3, 15.4	Processing of fruit, vegetables, oil, fat	1.17	FOBE
15.5	Dairy products	1.53	FOBE
15.6, 15.7	Grain mill products, prepared animal feed	0.59	INTM
15.8	Other food products	3.32	FOBE
15.9, 16	Beverages and tobacco	1.24	FOBE
17.1	Preparation of spinning of textile fibres	1.12	INTM
17.2	Textile weaving	1.43	INTM
17.3, 17.6	Finishing of textiles; knitted and crocheted fabrics	1.24	INTM
17.4, 17.5	Made-up textile articles, other textiles	0.97	CNDU
17.7	Knitted and crocheted articles	1.08	CNDU
18	Wearing apparel, dressing and dyeing of fur	3.74	CNDU
19	Tanning and dressing of leather; luggage, handbags, saddlers, harness and footwear	3.25	CNDU
20	Wood and wood products (except furniture); articles of straw and plaiting materials	2.32	INTM
21	Pulp, paper, and paper products	2.20	INTM
22	Publishing, printing, reproduction of recorded metal	3.80	CNDU
23.2	Refined petroleum products	1.07	
24.1, 24.2, 24.3	Chemicals products for industry and agriculture	3.01	INTM
24.4	Pharmaceuticals	2.70	CNDU
24.5	Soap and detergents, cleaning preparations and perfumes	0.97	CNDU
24.6, 24.7	Man-made fibres industries; other chemicals products	1.22	INTM
25.1	Rubber products	1.19	INTM
25.2	Plastic products	3.58	INTM
26	Other non metallic mineral products	5.71	INTM
27	Basic Metals	3.74	INTM
28.1	Structural metal products	2.78	INVE
28.2, 28.3	Metal containers; central heating and boilers; steam generators	0.62	INVE
28.4	Metallurgy	1.19	INVE
28.5	Treatment and coating of metal; general mechanic engineering	3.81	INVE
28.6	Cutlery, tools, general hardware	1.03	INVE
28.7	Other metal products	2.79	INVE
29.1	Engines, compressors, pump	2.45	INVE
29.3	Agricultural and forestry machinery	0.74	INVE
29.4	Machine tools	1.26	INVE
29.5	Machinery for textiles	3.91	INVE

Code	Sector	Value added weight (%) 1999	MIG
29.2, 29.6	Other machinery and equipment n.e.c.	3.88	INVE
29.7	Electrical appliances	1.42	CDUR
30	Office machinery and computers	0.81	INVE
31.1	Electric motors, generators and transformers	0.79	INVE
31.2	Electricity distribution and control apparatus	0.92	INTM
31.3, 31.4, 31.5	Wire and cables; accumulators; lighting equipment	0.83	INTM
31.6	Electrical equipment n.e.c.	2.05	INTM
32.1	Electrical valves and tubes	0.65	INTM
32.2	Television and radio transmitters	1.10	INVE
32.3	Television and radio receivers	0.15	DUR
33.1	Medical and surgical equipment	0.57	INVE
33.2, 33.3	Instruments for measuring, checking, etc; industrial process control equipment	1.15	INVE
33.4, 33.5	Optical and photographic equipment; watches and clocks	0.63	DUR
34.1	Motor Vehicles	1.49	INVE
34.2	Bodies for motor vehicles	0.37	INVE
34.3	Parts for motor vehicles	2.01	INVE
35.1, 35.2	Ships, boats, railway, tramway	0.74	INVE
35.3	Aircraft and spacecraft	0.64	INVE
35.4, 35.5	Motorcycles, bicycles, other transports	0.69	DUR
36.1	Furniture	3.11	DUR
36.2, 36.3	Jewellery, musical instruments	0.73	DUR
36.4, 36.5, 36.6	Sports goods, toys, miscellaneous n.e.c.	0.67	CNDU

Notes: n.e.c. = not elsewere classified

Table B **Data availability by level of aggregation**

Geographical aggregation (number of geographical partition)	Firm-size-level aggregation (number of firm-size groups)	Industry aggregation (number of industries)
National (1)	Total (1)	3-digit industries (56)
National (1)	Firm-size groups (3)	2-digit industries (21)
Geographical partitions (4)*	Total (1)	2-digit industries (21)
Geographical partitions (4)	Firm-size groups (3)	Main Industrial Groups (3)
Regions (19)	Total (1)	Main Industrial Groups (3)
Regions (19)	Firm-size groups (3)	Total Manufacturing (1)

* North West: *Piemonte, Val d'Aosta, Lombardia, Liguria;*
North East: *Veneto, Trentino Alto Adige, Friuli Venezia Giulia, Emilia Romagna;*
Centre: *Marche, Toscana, Lazio, Umbria;*
South: *Abruzzi, Campania, Molise, Puglia, Basilicata, Calabria, Sicilia, Sardegna.*

Table C **Manufacturing value added shares in the main industrial countries, 1999**[11]

NACE	Sector	IT	DE	FR	EU11	US	JP	OECD
15-16	Food, beverages, tobacco	9.86	9.26	13.78	11.66	10.53	11.67	12.20
17-19	Textiles, leather, footwear	13.41	2.41	4.63	6.00	3.58	3.45	4.76
20	Wood and wood products (exc. Furniture)	2.73	2.01	1.61	2.29	2.98	1.07	2.47
21-22	Pulp, paper and paper products, publishing and printing	6.57	8.06	8.29	9.34	10.94	8.21	9.42
23-25	Chemicals, rubber, plastics and fuel	14.61	15.10	17.86	15.84	17.31	15.35	16.41
23	Coke, refined petroleum	1.62	0.61	2.27	1.43	2.05	5.47	2.83
24	Chemicals	8.57	9.46	10.86	9.76	11.29	8.69	9.83
25	Rubber and plastic products	4.42	5.03	4.73	4.65	3.96	1.19	3.75
26	Other non metallic products	6.47	4.08	4.76	4.93	2.80	3.38	3.95
27-28	Basic Metals and metal products	13.96	13.04	13.16	12.47	10.62	11.35	11.57
27	Basic metals	3.22	3.86	3.33	3.45	3.41	6.10	na
28	Metal products	10.74	9.18	9.82	9.02	7.22	5.25	na
29-33	Machinery and equipment	21.13	28.49	19.96	22.82	25.09	28.80	23.30
29	Machinery and equipment n.e.c.	11.87	14.38	7.91	10.54	7.77	9.21	8.51
30-33	Electrical and optical equipment	9.26	14.12	12.05	12.28	17.32	19.59	14.79
30	Office machinery and computers	0.33	0.91	1.07	1.10	2.46	2.61	na
31	Electrical machinery	4.77	7.35	4.37	5.04	2.63	5.31	na
32	Radio, TV, communication	1.99	2.40	3.26	3.23	8.31	10.10	na
33	Medical, precision, optical apparel	2.16	3.45	3.35	2.91	3.93	1.57	na
34-35	Transport equipment	6.43	14.61	12.22	10.80	12.46	10.84	11.87
34	Motor Vehicles	3.84	12.48	8.40	8.00	8.06	9.58	na
35	Other transport equipment	2.59	2.12	3.81	2.79	4.39	1.25	na
36-37	Manufacturing industries n.e.c., recycling	4.84	2.94	3.74	3.86	3.69	5.88	4.07

Source: OECD Structural Analysis (STAN) database

Notes: n.e.c. = not elsewere classified

[11] Data provided in Table C are slightly different from those provided in Table 1: on an international basis (in Table C), only figures for the aggregate of sectors 36 and 37 are available; while in Table 1 the sector 37, recycling, is not considered because the industry is not comprised in the joint harmonised EU manufacturing survey.

OECD and CIRET News – 2005/1

OECD Short-term Economic Statistics

Recent Events

OECD Workshop on composite leading indicators for major OECD non-Member economies, Paris, 25-26 April 2005

Participants from five of the six OECD major non-Member Economies (NMEs) attended the workshop (i.e. Brazil, China, India, Indonesia and South Africa), which was organised by the OECD to discuss and exchange experience in the area of cyclical analysis and construction of composite leading indicators. The Russian Federation, which was unable to attend the meeting, still contributed a paper outlining their work in this area. All of the institutes that attended the meeting found it quite useful and all supported continued co-operation between the OECD and participating institutions in the construction of composite leading indicators.

Future co-operation and work will focus on further improvement and development of initial OECD analyses on the identification of potential leading indicators and the construction of composite leading indicators for the major OECD NMEs. This includes reaching mutual agreement on a final set of leading indicators, establishment of timely transmission of regular data, identification and collection of relevant metadata and the creation of a modality to continue monitoring the quality of the selected leading indicators (and to adjust as required following their initial release).

A Statistical and methodological issues

National experience in the field of cyclical analysis and, in particular, work on composite leading indicators in OECD Non-Member economies was presented and discussed in contributed papers submitted by all invited countries. The experience in most of the countries that attended the meeting is at present largely restricted to academic research and / or ad hoc experimental work. Only China and South Africa reported on regular calculated and published composite leading indicators.

The cyclical approach in the countries differs, both with regard to the target cycle monitored and the reference series used for the composite leading indicator. However, the growth cycle or growth rate cycle approach is adopted in countries where composite leading indicators are regularly calculated and published. A composite coincident indicator is used as reference series in two of the indicator systems in regular production, while single reference indicators such as GDP or industrial production is used in several academic studies.

The OECD system of leading indicators is based on the growth cycle approach and uses industrial production as the target reference series supported by GDP for the establishment of the reference chronology of turning point dates. The application of this approach to OECD NMEs was discussed and some preliminary results prepared by the OECD were also presented and discussed. National delegates found the OECD approach interesting and supported further collaborative work on the OECD initiative to develop composite leading indicators for their countries.

B Potential leading indicators

The initial OECD selection of potential leading indicators for NMEs was presented and their cyclical characteristics and problems were discussed in detail. Specific problems concerned the short time period of available data, frequency and timeliness, smoothness, cyclical performance and the current availability of indicators in OECD databases.

National suggestions for alternative and/or additional potential leading indicators for calculation of country specific composite leading indicators were presented and discussed in contributed papers submitted prior to the meeting by all invited countries.

The paper from the Getulio Vargas Foundation (FGV) in Brazil evaluated in detail the OECD selection of potential leading indicators for Brazil and offered several suggestions for improvements. In addition, a set of untested indicators was suggested as potential leading indicators.

In the case of China, the National Bureau of Statistics (NBS) suggested and supplied historical data for a set of potential leading indicators based on their experience with cyclical analysis initiated in a co-operation project between the National Accounts Department of the NBS and the OECD. In addition, the NBS paper reported on the leading indicators used for the calculation of a composite leading indicator constructed and published by the Business Monitoring Center of NBS. The delegate from the State Information Center (SICC) of China reported on the leading indicators selected for the calculation of a composite indicator published by the SICC.

The Reserve Bank of India reported on leading indicators identified in several academic studies. However, annual data had been used in many of these studies due to the lack of long time series data of monthly or quarterly frequency. The development of a composite leading indicator for Indonesia was reported in a paper by Statistics Indonesia (BPS) which identified a large number of potential leading indicators.

In a paper from South Africa, a set of additional leading indicators was suggested for evaluation as candidate series for a composite indicator. The selection of indicators included component series used in the calculation of the composite indicators compiled by the South African Reserve Bank and some additional potential leading indicators.

C Meeting conclusions and future work

To progress the development and construction of composite leading indicators for the major six OECD NMEs, the meeting discussed the following activities and tasks to be undertaken by the OECD in co-operation with participating national agencies:

Evaluation of country suggested potential leading indicators – Country participants agreed to advise the OECD on where to find historical data for the suggested potential indicators presented in their papers at the meeting. The OECD will forward the latest version of the OECD Cyclical Analysis and Composite Indicators System software and user guide to institutes attending the meeting, which will allow them to experiment with the OECD methodology and, in particular, assist in the evaluation of the suggested potential indicators for their countries.

Agreement on final set of leading indicators – The OECD would like to commence publication of composite leading indicators for the major OECD Non-Member economies in its monthly Main Economic Indicators (MEI) publication by the end of 2005. To accomplish this, the final set of leading indicators to be used for the calculation of the composite leading indicators for each country needs to be agreed between the OECD and participating institutions.

Establishment of timely transmission or collection of regular data – The publication of composite leading indicators for a country is very much dependent on the availability of timely data for all or most of the leading indicators used for the calculation of the composite indicator every month. The OECD will negotiate a process for the regular collection of this data with each institute. In addition, improvements to the current collection arrangements of other relevant economic variables required for the monthly OECD Main Economic Indicators publication will be pursued.

Identification and collection of relevant metadata – An initial priority is the collection of the required metadata for component series not currently in the MEI database to allow an assessment of their suitability in the compilation of a composite leading indicator, and to improve their interpretability with regard to issues such as definition, coverage, collection, revisions, breaks etc.

Creation of a modality to continue monitoring the quality of the selected leading indicators and to adjust as required – Structural and other changes affecting an economy over time means that no composite leading indicator is valid indefinitely. The set of leading indicators used to calculate the composite indicator must therefore be evaluated at regular intervals. The quality of individual leading indicators may also change due to emerging statistical problems. For this reason, the OECD proposes to hold further ad-hoc meetings in future to monitor the quality of the selected indicators and exchange information in the field of cyclical analysis.

Conference Papers on www.ciret.org

The download of papers on the CIRET website, which have been presented at CIRET Conferences is restricted to CIRET members, authors and participants of the respective Conference. In the past, the only information the anonymous user could see was title, optional subtitle and name of the author(s) of a paper.

For the last Conference in Warsaw (September 2004), the CIRET Office developed an Internet application to organise abstracts, papers and sessions. This tool uses a database and allows to search for any character string in titles and subtitles or to search for authors.

Since the Conference in Warsaw, the CIRET Office further improved the information about papers on the CIRET website. The search for any character string is now extended to search in keywords too. In addition, it is possible to search for individual codes of the JEL-classification.

However, the main enhancement is the preview of abstract, keywords and JEL-classification of a paper, visible for all users of the CIRET website. This is currently available for papers presented in Warsaw and will be available for papers of future conferences.

We hope that we added with this tool a significant improvement of the information available about Conference papers on the CIRET website.

Link: http://www.ciret.org/conferences/warsaw2004

Conferences and Workshops*

Conferences

- **25th International Symposium on Forecasting, June 12-15, 2005**
  San Antonio, Texas, USA
  http://www.isf2005.org
- **Forecasting Summit 2005, September 26-28, 2005**
  Boston, MA, USA
  http://www.forecasting-summit.com
- **Survey Data in Economics – Methodology and Applications, October 14-15, 2005**
  Munich, Germany
  http://www.cesifo-group.de/link/50confforthcoming

* This page gives information about forthcoming events. Please send early notice to info@ciret.org

Aims and Scope

The Journal of Business Cycle Measurement and Analysis is jointly published by the OECD and CIRET to promote the exchange of knowledge and information on theoretical and operational aspects of economic cycle research, involving both measurement and analysis.

The OECD has developed various cyclical indicators using quantitative and qualitative information from its member countries. Information about the work of OECD in the field of short-term economic statistics may be found at www.oecd.org/std.

CIRET, the Centre for International Research on Economic Tendency Surveys, is a global forum for economists and institutions, which conduct and analyse business and consumer surveys. CIRET holds international conferences every other year. Information about CIRET may be found at www.ciret.org.

The scope of the Journal of Business Cycle Measurement and Analysis encompasses:

- Analysis of cyclical fluctuations
- Business cycle specification, definition and classification
- Statistical approaches to the development of short-term economic statistics and indicators
- Business tendency, investment and consumer surveys
- Use of survey data or cyclical indicators for business cycle analysis

Three issues of the journal are published in each volume.

Researchers in the field of business cycle measurement and analysis are encouraged to submit their papers to the Editor-in-Chief, Professor Günter Poser (editor-in-chief@ciret.org). All papers undergo a double blind referee process.

Under the heading “Report” additional contributions, including topics such as sample design, data collection and validation, dissemination and evaluation of survey results, are published. Reports are reviewed by members of the Editorial Board.

Notes for authors and a template for manuscripts are available on www.ciret.org/jbcma or www.oecd.org/std/jbcma.

Correspondence about editorial and other matters related to the journal may also be addressed to Daniel Bloesch at the CIRET Office (jbcma@ciret.org) or Ronny Nilsson at the OECD (ronny.nilsson@oecd.org).

From:
Journal of Business Cycle Measurement and Analysis

Access the journal at:
https://doi.org/10.1787/17293626

Please cite this article as:

Malgarini, Marco, Patrizia Margani and Bianca Maria Martelli (2005), "New Design of the ISAE Manufacturing Survey", *Journal of Business Cycle Measurement and Analysis*, Vol. 2005/1.

DOI: https://doi.org/10.1787/jbcma-2005-5km7v18340nr