The Methods Used in Economic Tendency Research

Abstract

In 2008 the Department of Marketing Research of the Poznan University of Economics conducted a survey among the most important centres dealing with economic tendency surveys.

Thematically the survey consisted of two blocks. First of them concerned the popularity of particular methods, ways of obtaining results (including self-conducted surveys and externally commissioned surveys), experience (years) in application of those methods, their most important advantages and areas of practical use.

Second block consisted in the evaluation of predictive validity obtained by means of particular methods and the cost assessment of their use. The survey also dealt with a way of solving methodological problems, related to the use of particular methods, employed by the research centres i.e. popularity of ways of elimination of seasonality and trends from time series and effectiveness assessment of those filters.

Whilst it is true that research community of economic trends cyclically, in connection with biennial CIRET conferences, exchanges information on the use of methods, the fact remains that this is the first survey which is a more formal attempt to sum up the applied research toolbox.

Key Words: use of economic tendency research methods
1. The goals and methods of conducted research

Business cycle research methods are widely known, however, despite the fact that they are used by many universities and non-academic centres worldwide, no paper recapitulating their use has been prepared. This gap served as an inspiration for worldwide research on the use and assessment of business cycle research methods.

The Department of Marketing Research at the Poznań University of Economics conducted, in 2008, studies among the most important centres which carry out economic tendency surveys. The thematic research contained two major sets of elements. The first of these concerned the popularity of particular methods, the ways of obtaining results (including own research and outsourced research), experience (in years) in the application of these methods, their most important advantages and the areas of practical application.

The second set of elements contains an assessment of the accuracy of diagnoses and forecasts obtained with the use of particular methods and the evaluation of the costs of their obtaining. The research also concerns the means by which research centres solve methodological problems connected with the use of particular methods, such as the popularity of the ways for eliminating seasonality and trends from time series and the assessment of the effectiveness of such filters. Five-grade scales (possible answers from 1 to 5), with extreme poles described, have been applied in all the evaluation questions.

The research involved a sample of 27 centres\(^\text{29}\) The text distinguishes among two categories: academic centres and other research institutions. While discussing academic centres, the author refers to parts of these centres, namely research teams dealing with economic tendencies which function within their structures. The group of the so-called other research institutions, in turn, includes all non-academic institutions which carry out economic tendency surveys and research.

The global population of economic tendency researchers was defined on the basis of CIRET membership lists. The research was carried out with the use of three methods, adjusted to fit the respondents’ availability. In the first stage it was an internet survey addressed to CIRET members. A part of the data was also obtained via direct interviews (during CIRET’s XXIX Congress) and via postal survey.

\(^{29}\) The centres are located in the following countries: Argentina, Finland, France, Indonesia, Japan, Latvia, Germany, Poland, Russia, the Republic of South Africa, the United States of America, Switzerland, Taiwan, Great Britain, Ukraine, Hungary and Italy.
2. The application and evaluation of economic forecasting methods

As it turned out, the most frequently used economic tendency research methods are economic barometers and business tendency surveys (9 out of 10 entities use them). The balance sheet – statistical and econometric methods are only slightly less popular (8 out of 10). Heuristic methods and analogy method are less often used (less than a half of the entities).

It is worth noting that the popularity of the methods is similar in academic centres and other research institutions. Only econometric methods are used more often by academic centres (90% of entities compared to two thirds of other institutions) while the analogy method is applied more frequently by other entities (every other entity, compared to one fifth among academic centres).

![Figure 1. The application of economic tendency research methods](source: data from the Department of Marketing Research of the Poznan University of Economics)

The popularity of methods is also historically conditioned. As a result of significant differences among the dates of the beginning of the application of particular methods, it was decided to indicate the medians. The methods which have been used for longest are analogies and heuristic methods; more than a half of the research centres started
applying them before 1976. However, one should also remember that they are, at the same time, the least popular methods. Among the more popular methods, balance sheet – statistical one has relatively been used for longest (median in 1987). In the case of econometric methods, barometers and business tendency survey, the medians are similar and they amount to, respectively, 1990, 1991 and 1993.

3. Advantages of economic tendency research methods

The most important advantages of business tendency survey include, according to experts: the possibility of monitoring economic changes, fast accessibility of results, simple methodology, user-friendliness and the possibility of using results for forecasting.

In turn, in the case of economic barometers, the most important features include: the possibility of defining the turning points, the possibility of non-linear forecasting, reading of warning signs, as well as the easiness of presenting the results. The balance sheet - statistical methods are, in users’ opinion, easy to use, with good software and well suited for the identification of the changes in the values of discrete variables.

In the assessment of heuristic methods, the major indications include the variety of the evaluation and points of view collected, as well as a good check of the coherence of results obtained with the use of other methods. Econometric methods, however, are, in the users’ opinion, accurate, coherent, and recurrent and have good scientific basis while analogy yields results with a relatively small workload, and they are easily understood.

4. The areas of application of economic tendency research methods

Among all the areas where economic tendency research is applied, two are clearly dominating: the analysis of macroeconomic indicators and the indicators related to output (production). In the case of business tendency survey, macroeconomic indicators are taken into consideration by three quarters of the centres while industrial output – by almost two thirds. To check the development of the construction sector, business tendency surveys are used by one third of research centres and less popular research areas include consumer surveys, financial markets and other services.

Economic barometers are applied by almost all research centres to analyze macroeconomic indicators (83%). Almost two thirds of those who use barometers use them also to analyze industrial output. Less popular applications include construction and consumer research (every third centre).
In case of econometric methods, the predominance of macroeconomic indicators in research is even more visible (nine out of ten experts). In the scope of the second area – industrial output – it is only 37% of centres. Other applications of econometric methods which are worth mentioning are the analysis of trade and consumer research (every fifth centre).

In the case of balance sheet – statistical methods, macroeconomic indicators (60% of research centres use this method) and industrial output (44%) also constitute the dominating areas of application. Also the areas connected with trade and consumer research are relatively popular (every fourth company). Less usage is manifested in the area of construction (every fifth centre), remaining services (every sixth) and financial services (every tenth).

5. The evaluation of accuracy in economic tendency research methods

The accuracy of forecasts decreases together with the increase of the time horizon, and, therefore, the comparison of particular methods with differing time horizons would yield unreliable results. Thus, further analysis will be presented while introducing three groups of time horizons: short-, medium- and long-term ones.

In the scope of short-term horizon forecasts, economic tendency barometers, econometric methods and business tendency survey method were considered the most accurate. The differences in assessment of the three methods were rather small (barometers’ accuracy was evaluated on the level of 3.70 points, econometric methods – 3.67 and business tendency survey – 3.65 on a five-grade scale, where 1 described totally inaccurate results and 5 – very accurate results). Significantly lower grades for short-term forecasts were given to heuristic methods (average 3.22) and analogy method (3.00). Large differences in the assessment of effectiveness were visible only in the case of heuristic methods, which were evaluated on the level of 2.86 by academic centres and on the level of as much as 4.5 by other research centres.

Econometric methods are considered as the most accurate (average 3.56) in the forecasts with a medium-term perspective. According to experts, less accurate forecasts are obtained via economic barometers (3.16), balance sheet methods (3.06) and heuristic methods (3.00). However, it was analogy method that was defined as the least reliable of the research methods with a medium-term horizon (accuracy assessment only 2.67). Similarly to short-term perspective, large differences appeared in the assessment of the accuracy of heuristic methods – academic centres evaluated their accuracy on the 2.57 level while the remaining centres – on 4.5 level.
Figure 2. The evaluation of accuracy in economic tendency research methods – short term
Source: data from the Department of Marketing Research of the Poznan University of Economics

Figure 3. The evaluation of accuracy in economic tendency research methods – medium term
Source: data from the Department of Marketing Research of the Poznan University of Economics
Among the methods used for long-term forecasting, econometric methods are seen as definitely having the highest accuracy (average grade amounts to 3.31). Balance sheet and heuristic methods were evaluated on the level of 2.75 and 2.73, respectively, while the spatial-temporal analogy has significantly lowest result accuracy among all presented methods (only 2.33 points).

**Figure 4.** The evaluation of accuracy in economic tendency research methods – long term
Source: data from the Department of Marketing Research of Poznan University of Economics

6. Costs of economic tendency research

The second aspect which determines the usage of methods for the analysis and forecasting of economic tendencies is the cost of applying particular methods. The researchers specializing in economic tendency research consider econometric methods to be most expensive by far (average of 3.6 on a five-grade scale, where 1 means low cost and 5 – high cost; the cost of this method was considered as high or very high by as many as two thirds of experts from research centres). Business tendency survey was ranked second when it comes to cost-intensity (average 2.6) while the remaining places were taken by barometers (average of 2.4), balance sheet methods (2.2), analogies (2.0) and heuristic methods (1.9).
Another two important issues, which strongly influence the preparation of economic tendency analyses, are the applications of correct filters which make it possible to eliminate trend and seasonality from time series.

The most popular method of seasonality elimination used worldwide is Arima X12 (48% of research entities use this method, including 80% of academic centres and every fourth among the remaining institutions). Less popular methods include: TRAMO SEATS and Arima X11, applied by every fourth entity. However, one should note that Arima X11 is more popular in academic centres (every third is using it), while TRAMO-SEATS is more popular in other institutions (also every third).

Interestingly, despite its lesser popularity, TRAMO-SEATS is regarded as a very good method (average grade is 3.92 on a five-grade scale where 1 means the lowest and 5 the highest efficiency); however, one should note that the average grade among the institutions which use this method is as high as 4.29. Arima X 12, which got the highest grades (average 3.93), was evaluated on a similar level; however, in this case
also the grades from entities which do not use it were higher, amounting to 4.33. Arima X11 is considered as a less efficient method, the average grade is 3.6. Just as it is in the case of Arima X12, this method is also evaluated better by the research centres which do not use it (average of 3.67).

8. Trend elimination methods

Among numerous methods of trend elimination, Hodrick-Prescott’s filter is the most popular one, used by a half of the centres which specialize in economic tendency research. They include as many as four-fifths of university entities and every third other institution. Kalman’s and Baxter-King’s filters follow, used by every third entity on average (these filters are also significantly more often used by academic centres – 60% and 50%, respectively). PAT is used, on average, in every third – every fourth centre (two-fifth of academic centres and one-fifth of the remaining ones), the least popular methods include Rotemberg’s filter and Cristiano-Fitzgerald’s filter (8% in each case).

Figure 6. The use and evaluation of trend filters by experts from research centres
Source: data from the Department of Marketing Research of the Poznan University of Economics
Similarly to the case of methods aiming at the elimination of seasonality, the most popular methods are not assessed as the most effective ones. Kalman’s filter was evaluated as the most reliable method (the average grade of 3.93 and 4.13 among the entities which apply this method, also in this case 1 means the lowest efficiency and 5 – the highest). Relatively high grades were indicated for PAT filter (average of 3.7 and 4.33 among its users) as well as for Baxter-King’s filter (3.62 and 3.88 among users).

9. Summary

The conducted research allows to indicate two major areas of economic tendency analyses. These include macroeconomic indicators and output indicators. However, regardless of the area of application, econometric methods were assumed to be the most universal ones because of their reliability – they were indicated most frequently as the most accurate ones. However, it did not determine the frequency of application – in this respect, economic barometers and business tendency survey turned out to be the leaders. On the other hand, analogy method was assessed as having a low accuracy in all time horizons (this method is the least popular one, together with heuristic methods). The situation presented seems stable; research centres, with their experience and time series at their disposal are very cautious about new methods being introduced. In the context of many incorrect forecasts concerning the previous year, one may expect that in the near future precautions concerning the presentation of forecasts will only increase. Most probably they will be more often constructed from partial forecasts or at least compared in the scope of several forecasts. In this situation, one may expect the increasing role of heuristic methods, especially as a method which combines the results obtained from other methods.

The above article is the first step in the process of reviewing research methodologies applied by the researchers who specialize in economic tendency research. More studies are being planned for the forthcoming years. They will enable gaining more detailed knowledge on the procedures applied and construct series which allow to trace the development and changes in time.
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