THE SEARCH FOR BUSINESS AND/OR INVESTMENT CONFIDENCE INDEX IN TURKEY

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ABSTRACT

Business surveys are one of the major instruments of short term economic analysis and they provide relevant, detailed information about the cyclical developments in the economy. Our aim in this paper is to present some summary information about the monthly Business Tendency Survey of the Central Bank of the Republic of Turkey (CBRT) and to describe the process of cross-correlograms by which we tried to construct a monthly and a quarterly composite business confidence index and a separate quarterly investment confidence index by using the data derived from the CBRT Survey.

1. INTRODUCTION

Business surveys are one of the major instruments of short term economic (or conjoncture) analysis and they provide relevant, detailed information about the cyclical developments in the economy. There are three major business tendency surveys conducted in Turkey. One of them is the "Quarterly Manufacturing Industry Tendency Survey" of the State Instute of Statistics (SIS). This survey has been conducted since the third quarter of 1977 and there are over two thousand firms answering the survey questionnaire regularly. However, the number of questions is limited to twelve and they are mainly involved with output, production capacity, employment, sales, and price movements. The SIS Quarterly Survey does not contain questions about the general business outlook or investment confidence, and the continuous backward revisions it has been subject to renders it impossible to be used as a building block for one. The second one is the "SIS Monthly Manufacturing Industry Tendency Survey." It was started in February 1991, and it has approximately one thousand panelists. The Monthly SIS Survey is a smaller replica of the Quarterly Survey and it is also subject to significant and continuous backward revisions. The third survey has

been conducted by the Central Bank of the Republic of Turkey (CBRT) on a monthly basis since December 1987. Unlike the SIS surveys, the number of representative firms is limited to the largest private sector firms and the scope of the Survey is wider, and it does contain questions involving the business outlook and investment expectations.

Our aim in this paper is to present some summary information about the CBRT Survey and to describe the process by which we tried to construct a composite business confidence index and a separate investment confidence index by using the data derived from the Survey.

2. THE CENTRAL BANK BUSINESS SURVEY

As in many other tendency surveys, the CBRT Monthly Business Tendency Survey helps to assess the economic activity performance in manufacturing industry before most of other economic indicators are published. Beside the fact that it has the advantage of rapidity, it also provides information in areas not covered by quantitative statistics in Turkey. Information about items like the volume of domestic and export deliveries, new orders received from the domestic and foreign markets, inventories of raw materials and finished goods may be cited as examples for the latter. Thus, in that sense, it does complement the monthly traditional manufacturing industry data in Turkey.

2.1. The Panelists of the CBRT Survey

The CBRT Survey was first introduced as a pilot project in September 1987; however, the Survey data begins from December 1987. The panelists for the Survey consist of the executives of 500

largest firms which are members of the Istanbul Chamber of Industry (ICI), plus the executives of 100 largest firms from the Egean Chamber of Industry (ECI). This subpopulation contains both public and private sector firms; however, only the responses of private sector manufacturing industry firms are evaluated and reported in the Central Bank's Quarterly Bulletin. An average of 250 private sector manufacturing industry firms answer the questionnaire each month and the distribution of these firms among the branches of manufacturing industry is found to be fairly consistent with the composition of the subpopulation.

2.2. The Questionnaire

The CBRT Survey questionnaire is closely akin to the one utilized by the Confederation of British Industry (CBI) Industrial Trends Survey. It contains 28 qualitative questions, 23 of which are concerned with the direction of recent and imminent trends, while 5 questions require ranking of various factors. The contents of the questions are very similar, however, the time horizon involved is adjusted for the market conditions in Turkey, i.e., the span is shorter in some questions of the CBRT Survey as compared to their counterparts in the CBI questionnaire. As in the CBI Survey, the questions cover a rather wide range, involving monthly general business outlook, export prospects for the next three months, expected investment expenditure authorizations for the next 12-month period, recent and expected trends for variables like sales, orders received, production, employment, inventories of raw materials and finished goods, and other items. (An example of the CBRT Survey questionnaire is given in the Appendix.)

In order to test the internal consistency of the CBRT questionnaire, an "alpha-reliability" test involving "inter item correlations" and "item total correlation" (Cagli, 1990) has been run in 1991 (Dengiz and Özcan, 1991). As a result of the test, an alpha-reliability coefficient of 0.78 was obtained, which happened to be more than fairly acceptable (Nunnally, 1978).

2.3. The Utilization of the Survey Data

The balances obtained from the Survey data ("more" minus "less" or "up" minus "down," etc.) have been utilized extensively within the Central Bank during the preparation of monthly and quarterly reports on the economic conjoncture in Turkey. The 1988-89 recession; the upturn in the second half of 1989; the acceleration of economic activity in 1990, which aborted in the third quarter of 1990 with the outbreak of the Gulf Crisis; the slump of late 1990 and early 1991, as the crisis turned into a full scale war and the after-effects; the gradual upturn in 1992 and the boom in 1993 can be tracked, for example, from the balances involving the general business outlook (Graph 1), expected investment expenditures (Graph 2), recent and imminent trends for output (Graph 3), and new orders received from the domestic market (Graph 4).

Nevertheless, one of the steps throughout the course of our ongoing search for a more convenient set of tools, which would enable us to track the cyclical developments in the Turkish economy more efficiently, was to transform the Survey data into indexes and to see whether these indexes could reveal relevant information involving business confidence and investment confidence, two important factors of change in cyclical developments. Thus, we went after the correlations between the Survey series and the traditional

quantitative series in order to see how the fluctuations observed in the Survey series match the fluctuations in the quantitative series. We ran cross-correlograms with varying lags, searching for the highest correlation between the balances obtained from the Survey series and the quantitative series. We identified business confidence mainly with short term production decisions, which are assumed to be inherent in the monthly production indexes available for the Turkish manufacturing industry. There are two different monthly industrial production indexes, namely, the State Institute of Statistics (SIS) manufacturing industry production index with 105 goods and base year 1986, and the Central Bank production index with 37 goods (which represents 34 percent of value added within the manufacturing industry) and with base year 1984. In order to make comparisons with the Survey balances possible, the graphs of the two quantitative indexes are provided below (Graphs 5 and 6). There is also a quarterly index, namely, the SIS Quarterly Production Index with base year 1986, which has a much wider coverage of the Turkish industry as compared to the CBT and SIS monthly production indexes. It contains 213 public sector goods and 488 private sector goods and it also has the advantage of being able to be separated into its private and public sector components, as well as its manufacturing and non-manufacturing components.

Involving investment confidence, we used the private sector real investment expenditure component of the GDP series released by the SIS, and as for the general framework for investment confidence, we went along with Marshall:

> "The most obvious of the causes that affect the purchasing power of the precious metals in a country is the quantity of them that is available for use as money.(...) But although men have the power to purchase they may not choose to use it. For when confidence has been shaken by failures, capital cannot be got to start new companies or extend old ones. Projects for new railways meet with no favor, ships lie idle, and there are no orders for new ships (...) The chief cause of this evil is want of confidence" (Boyd and Blatt, 1988; pp. 23 and 26).

And with Keynes:

> "The state of long-term expectation, upon which our decisions are based, does not solely depend, therefore, on the most probable forecast we can make. It also depends on the confidence with which we make this forecast -on how highly we rate the likelihood of our best forecast turning out quite wrong. If we expect large changes but are very uncertain as to what precise form these changes will take, then our confidence will be weak.
>
> "The state of confidence, as they term it, is a matter to which practical men always pay the closest and most anxious attention. But economists have not analysed it carefully and have been content, as a rule, to discuss it in general terms.

> "We have seen above that the marginal efficiency of capital depends, not only on the existing abundance or scarcity of capital-goods and the current cost of production of capital goods, but also on current expectations as to the future yield of capital goods. In the case of durable assets it is, therefore natural and reasonable that expectations of the future should play a dominant part in determining the scale on which new investment is deemed advisable. But, as we have seen, the basis of such expectations is very precarious. Being based on shifting and unreliable evidence, they are subject to sudden and violent changes" (Boyd and Blatt, 1988; pp. 28-29).

3. THE SEARCH FOR A BUSINESS CONFIDENCE INDEX

According to the CBRT Survey findings, the time horizon for the production plans of the firms in the Turkish manufacturing industry is mainly within the 1-3 month range. Therefore, the search for a confidence index was conducted on both monthly and quarterly terms.

3.1. The Monthly Business Confidence Index

The first question of the CBRT Survey deals with the "general business outlook" within the branch of industry which the firm operates. The panelist states whether she/he is more or less optimistic about the general business situation with respect to the previous month. Naturally, the balance for this question (the percentage of "more" minus the percentage of "less") was the first

candidate for a general business confidence index. According to the cross- correlograms, the correlation between the series obtained from the first question of the Survey (indexed with base at December 1989) and the CBRT index came up to be the highest at t=0 with R=0.55. The Survey series lags the SIS index by two months at the highest R, which was 0.51; however, the correlation coefficient for a simultaneous relationship is not far less from that, namely, R is 0.48 for t=0.

We also ran cross-correlograms for other Survey series in order to find out whether we could capture closer relationships between the production indexes and the Survey series, the latter being again in the form of indexed balances with base December 1989=100. We found out, for example, that the balance for the volume of output in the Survey led the SIS production index by one month, with R=0.40, while the correlation with the CBRT index was much weaker than that at any time period. The correlations between the two production indexes and the Survey series involving the inventories of finished goods, capacity utilization, and work in progress also came out to be very weak. It was also found out that the correlation coefficients for the relationship between the two indexes and the Survey series involving export deliveries and new orders received from the export markets were not higher than 0.35. This outcome seems to be reasonable, since out of the total sales of 416 private sector firms quoted in the ICI 1992 list of 500 largest firms, the share of domestic sales was 86 percent, while the share of exports was only 14 percent.

On the demand side, according to the cross-correlograms, the correlations between the SIS index and the Survey series for the recent and expected three-month trends of both the domestic deliveries and new orders received from the domestic market were higher than the correlations reached with the CBRT index. Expected trend for domestic deliveries leads the SIS production index by 5 months with R=0.53 and the expected trend for new orders leads the SIS index by 6 months with R=0.51.

In order to find the maximum correlation, constructing composite indexes by utilizing various Survey series seemed to be feasible at this point. In the first step, last three-month averages of the balances for the first question (business outlook) were combined on a monthly basis with the five and six-month lagged values of the expected trend balances for domestic deliveries and new orders received from the domestic market. When the balances for the business outlook and total monthly orders received, together with the one-month lagged value of the balance for expected investment authorizations were added to this combination, the optimal composite index with maximum correlation coefficients at t=-1, t=0, and t=1 was reached (Graph 7). R was found to be 0.56, 0.64, and 0.60 for those periods, in the same order.

3.2. The Quarterly Business Confidence Index

For the construction of a quarterly business confidence index, the SIS Quarterly Industrial Production Index has been utilized as the quantitative reference series.

The composite index for the Survey series, which provided the maximum cross-correlation, has been constructed by combining the

quarterly averages of the balances for the business outlook with the end-of-quarter values of the expected trend balances for domestic deliveries and new orders received from the domestic market, i.e., the March balances for the first quarter, the June balances for the second, etc.. The Survey series are again indexes of the balances with base December 1989 (Graph 8). The R between the SIS Quarterly (Private Sector) Manufacturing Industry Production Index and the quarterly composite index was found out to be 0.53 for t=-1, 0.65 for t=0, 0.78 for t=1, and 0.58 for t=2. The R for the one quarter lagged value of the composite index has come out to be very high; however, this inconvenience does not devalue the functioning of the composite index; since, as stated in Klein and Moore (1991, p. 410) involving the cross-correlogram of the NAPM survey of manufacturers' new orders and the actual quantitative data, "...there are three offsetting considerations," which "users of the indicators must weigh (...) in their evaluations". First, the survey data as a composite index is usually smoother than the actual series, so that cyclical turns are easier to recognize. Second, the survey data are available more promptly with respect to the quantitative data. Third, the survey data are not revised, whereas the production indexes are subject to revision. There is a problem here, involving the promptness of the survey data in the Turkish case. Because the CBRT Survey series lags the SIS Quarterly Production Index by a quarter, the release of the SIS Index may take place about two weeks earlier than the Survey. However, the correlation coefficient at t=0 is still high enough (R=0.65 at t=0), so that it can be utilized.

4. THE SEARCH FOR AN INVESTMENT CONFIDENCE INDEX

The third question of the CBRT Survey deals with the expected authorization of investment expenditures over the next 12 months. Naturally, the balance for this question in its turn, was the first candidate for an investment confidence index. Thus, involving investment confidence, we searched for a match between the quarterly private sector real investment expenditure data obtained from the GDP accounts released by the SIS, and the Survey series obtained from the indexed balances for the third question of the CBRT Survey.

Throughout the search, the cross-correlations with the Survey series consisting of demand variables came out to be 0.02 at t=0, 0.31 at t=1, and 0.49 at t=2, so that they were not feasible. The maximum correlation was reached when the Survey series as indexed balances were matched with the percentage increases of quarterly private sector real investment expenditures on an annual basis (Graph 9). R was found to be 0.12 for t=-1, 0.60 for t=0, and 0.69 for t=1. The Survey series again lag the actual series, therefore, the qualifications mentioned for the quarterly business confidence index also apply here.

5. CONCLUSION

The monthly CBRT Business Tendency Survey is an important device for the cyclical analysis of the Turkish economy. In order to improve the content of the information gathered through this device, the Survey data have been transformed into indexes and cross-correlograms have been run through these indexes and

corresponding traditional-quantitative series to see whether more rigorous information about business confidence and investment confidence could be obtained. Within this framework, business confidence was identified with short term production decisions, which were assumed to be inherent in monthly and quarterly production indexes available for the Turkish manufacturing industry. As for the reference series for investment confidence, the quantitative series was the private sector real investment expenditures obtained from the quarterly GDP series for Turkey. Though there is much place for further development, the peaks and troughs of the confidence indexes made up from the Survey series are mainly in line with the reference series, and, as far as business confidence is concerned, the monthly composite series seem to be slightly leading the manufacturing production index. On a monthly basis, the maximum correlation for business confidence was reached through a composite index constructed by the Survey series involving business outlook, expected investment expenditures, and two expected domestic demand series (i.e., domestic deliveries and new orders received). The attempt to construct a quarterly business confidence index was more fruitful, and the Survey composite index, which contained the business outlook and the two expected domestic demand series mentioned above, had a higher maximum correlation coefficient than the one reached by the monthly index. The close relationship between the composite index consisting of expected domestic demand variables and the quantitative production index is throughly in line with the current findings of Uygur (1989, 1991, and 1992) and Özatay (1990), which state that the output and capacity utilization decisions of the manufacturing firms in Turkey are strongly driven by expected domestic demand.

Involving investment confidence, the Survey series obtained from the indexed balances for expected authorization of investment expenditures over the next 12 months had the maximum correlation with the quarterly real investment expenditure data. Although the Survey series lagged the quantitative series by one quarter, the correlation coefficient at t=0 was also high and the result was mainly satisfactory.

APPENDIX
THE CENTRAL BANK OF TURKEY
MONTHLY BUSINESS SURVEY QUESTIONS

1.	Your opinion about the general course of business in your industry, compared to previous month	Optimistic	Same	Pessimistic
2.	Over the next three months, opinon about the export possibilities compared to previous month	Optimistic	Same	Pessimistic
3.	Over the next 12 months, how much investment expenditure you expect to authorize	More	Same	Less
4.	Your capacity utilization compared to previous month is	More	Same	Less
5.	What is the level of your productive capacity in accordance with your demand expectations for the next 12 months	More than Adequate	Adequate	Less than Adequate
6.	Comparing the month which has just ended with the one just before it, what is the level of your sales revenues	Higher	Same	Lower
7.	Comparing the month which has just ended with the one just before it, what is the level of non-performing trade credits	Higher	Same	Lower
8.	What is the cash requirement of your firm for the next month compared to previous one	Higher	Same	Lower

Excluding seasonal variations:

		Above Normal	Normal	Below Normal
9.	Total amount of orders received in this month			
		Above Normal	Normal	Below Normal
10.	Amount of monthly export orders received			
		Above Normal	Normal	Below Normal
11.	Amount of monthly stocks of finished goods			

		Trend of the last there months			Trend of the next three months		
		Up	Same	Down	Up	Same	Down
	Excluding seasonal variations, what is the last 3-month trend and the expectation for the next 3-month trend for:						
12.	Total amount of employment						
13.	The amount of new orders received from the domestic market						
14.	The amount of new orders received from the exports market						
15.	The volume of output						
16.	The volume of domestic deliveries						
17.	The volume of export deliveries						

18.	The volume of raw-material stocks						
19.	The volume of work in process						
20.	The volume of finished goods						
21.	Average UNIT cost						
22.	Average price for the new orders received from the domestic market						
23.	Average price for the new orders received from the export market						
24.	According to your present records or production scheme, how long is your production programme	1 Month	1-3 Month	6-9 Month	9-12 Month	12-18 Month	18-24 Month
25.	Over the next quarter, which factor (s) might restrict the production, rank according to degree of importance.	Order& Sale	Labor(*) Qua./Non-Q	Plant Capacity	Credit Finance	Input Cost	
26.	Over the next quarter, which factor (s) might restrict to receive new export order, rank according to degree of importance	Price comp.	Delivery date	Cre. finan.	Quotas & other restrictions		Foreign conjoncture

27.	In the next 12 months, what is the main reason fo the planned spendings on building, plant or equipment, rank according to degree of importance	New investment To increase capacity To increase productivity Renovation No spending planned
28.	Which factor (s) might restrict the realization of these spendings, rank according to degree of importance	Cost of financing Shortage of capital Shortage of externel resources Insufficient demand Insufficient net proceeds Cost of labor

(*) Qualified / Non-qualified

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