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Do the Managers' Expectations Predict Main Economic Tendencies in Ukraine?

Comparison of the Business Tendency Survey Results with Quantitative Statistics

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Abstract

The information about business's perceptions of their environment is of key importance for policy makers. It is mostly due to they have become a valuable tool for economic analysis and forecasting. Nevertheless when we deal with particular country it is necessary to get sufficient evidence of relationship between Business Tendency Survey data and quantitative data of the official statistic. In Ukraine the Quarterly Enterprise Survey is the oldest survey belongs to the group of Business Tendency Surveys which has been originally launched in 1996. It covers the period of economic recession (till 1999) and next economic growth (from 2000 till now). By now day there are enough data set collected to try answering question either the managers' expectations describe and predict main economic tendency in Ukraine. It is important question for the economic policy in the country. In order to evaluate the quality of businessman's prediction and as results to find out either the data received from the Ukrainian survey is close to economic tendencies it is necessary to compare the data received from the survey with quantitative data of the official statistics. In the paper the relationship of the indicators received from Business Tendency survey to published statistical macroeconomic indicators is analyzed. Comparison is done for all period of observations (from 1996 to 2007) as well as separately for period of economic recession (1996-1999) and two periods of economic growth — before and after "orange revolution" (respectively 2000-2004, 2005-2007).

Key Words: Business Tendency Survey, Leading Indicators, Expectations, Confidence Indicators, Manufacturing, Ukraine

JEL Classification: C42, E32

1. Introduction

The aim of the paper is to find to what extend the qualitative data correspond to the "real" economic situation and find out its predicting ability in case of Ukraine. Business tendency surveys (BTS) are the source of information about the state and future progress of selected economic indicators based on the enterprise managers' opinions and expectations. The BTS data is usually called "qualitative" statistics. Such statistics aims to improve the information basis of trade cycle analyses and forecasts. The qualitative statistics is comparable to traditional quantitative statistics. According to a literature there is a close correlation between quantitative and qualitative data. Thus, EC, (1997) mentioned that the study of a time series of BTS data can give a valuable insight not only of the fluctuations of the respondents' judgments, but also of the evolution of the variable itself. Nevertheless when we deal with particular country it is necessary to get sufficient evidence of relationship between Business Tendency Survey data and quantitative data of the official statistic.

Starting from July 2002 the Institute for Economic Research and Policy Consultations (IER) continues the Quarterly Enterprise Survey (QES), Project, which has been originally launched in 1996 by Soros Group in Ukraine. This is the survey of the managers of manufacturing enterprises that belongs to the group of business tendency survey and follows a methodology developed at the IFO institute in Munich, Germany. Since 2005 the Project is base for Institutional Partnership between the IER and the Swiss Institute for Business Cycles Research (KOF/ETH).

In this paper the first attempt to compare the results of the BTS in manufacturing with quantitative data in Ukraine is presented. The QES data set is used to answer research question can the BTS data be leading or coincident indicators to corresponding quantitative time-series in the Ukrainian conditions. At the beginning of the paper a lot of attention is pied for data set description. The QES has four gaps in time series and the way of replacing missing data are discussed here. Correlation analysis is the method applied to analyze the relationship of the indicators received from BTS and quantitative statistic indicators. Correlation is run for period of observations from 1998 to 2007 when it possible. Separately it is analyzed correlation between qualitative and quantitative data for period of economic recession (1996-1999) and two periods of economic growth — before and after "orange revolution" (respectively 2000-2004, 2005-2007). One more research question is either production expectation, assessment of order book and assessment of finished good stock are the sufficient components for construction of the confidence indicator. The comparison between the time series of *ex post* and *ex ante* evaluation is produced to test hypothesis about quality of the managers' prediction in different economic conditions. Also we take sale and sale expectations as the variables which collected from 1996 to find any differences between managers' ability to predict movement of indicator in different periods of Ukrainian economic development.

2. Background and Research Objectives

2.1 Background of the research

Before starting our research we studied the problems that might potentially influence its quality as well as possibility to apply widely used method of analysis. A lot of factors characterized different sides of the Ukrainian society are impacted to quality of the comparison between quantitative and qualitative data. There are economic uncertainly cased by transformations process in the mid and end of 1990th, bad organized system of gathering statistical information, shadow economy which is approximately about 40% of official GDP etc. Here it should be mentioned political uncertainly as result of "straggle for state" between oligarch groups that become stronger during last years.

In the paper we focus our attention on two of problems possibly influenced relation between qualitative and quantitative data that seemed to be the most important. First is quality and accessibility of the appropriate official statistics data for whole period of BTS observations. Second one is political instability that observed in Ukraine during last years.

2.1.1 Official statistics in Ukraine: solved and unsolved problems

By now there are no any wide-known forecast of Ukraine economy based on any modeling tools. Vast majority of produced forecast relies on expert assessments. Why it is? The answer is simple: it is because of statistics. Producing high quality forecast demands of the high quality statistical data. Ukraine like any other Post-Soviet country received from the socialist times bad organized system of statistic accounting. *ICPS* (2000) mentioned that the majority of problems in Ukrainian statistics relate to the transition from the system of material production to modern international standards. Also there are doubts regarding reliability and quality of data arise due to set of reasons (*ICPS* (2000), pp.6-7). Non transparently methodology of calculation of statistical indicator and unclear relations between cumulative monthly data with discrete quarterly data are in the top of them. Only starting from 2000 the Ukrainian statistics office (Derzhcomstatrt) has made the first attempts to present data according to international standards. Despite this the Ukrainian official statistics still have some peculiarities that might decrease the quality and the accuracy of forecast. It is caused not only by change in methodology of calculation, but also due to implementation of new classification of raw data used for statistical aggregation. We are talking about change of classification of type of economic activity from old ZKNG to new KVED build on NACE principles in 2003-2004. All abovementioned contributes to possible system error of the calculation when historical time series used. There are no all required data for all period of Ukrainian economic history. Moreover even the required date is found it might be calculated by different way in different periods of time. In other words in case of absence evident correlation between the corresponding time series of quantitative statistic and BTS statistics we are not sure definitely that it is problems of BTS statistics only.

2.1.2 Ukrainian paradox: political instability as a factor not hindering business activity

The period of second half of 2005-2007 witnessed toughening of political struggle and political uncertainty caused by the election campaign of 2006, the long process of formation of the ruling coalition in Parliament, early dissolution of Parliament, early elections and another formation of the ruling coalition. Theoretically, all this could influence economic activity in the country. But, according to both statistic reports and the poll data, political uncertainty had no effect on the economic situation in the country, at least in the short run. Specifically, the majority of the polled managers noted that the processes related with the latest elections had little influence on economic performance of their enterprises. Furthermore, according to the assessments produced by enterprise managers, over the past years, the rating of obstacles for production growth has been topped by insufficient demand, tax burden and tough competition, while unfavorable political situation ranked 6th to 12th. According to those polled, in 2007, political situation hindered production growth the least in January (4.3% of respondents), the most – in May (14.5%). In November, only 5.8% of those polled reported that political situation strongly influenced production activity of their enterprises. In 2007 68.6% of managers reported that processes related with the parliamentary elections did not influence the performance of their enterprises. Results of the 2006 poll also showed that managers felt no influence on their enterprises in the result of processes related with parliamentary elections in March (then, 74.5% of respondents reported no influence). Denial of influence of election processes by the majority of those polled witnesses adaptation of business to economic activity in the conditions of “on-going elections”. Gradual adaptation to elections decreases the sensitivity of business entities to the growing political and, respectively, economic uncertainty in the country. For this study it means that the BTS

time series received in the period when political uncertainty was increased should be in stream of previously observed season tendencies.

2.2 Research questions and Hypotheses

In this paper we are looking for correlation between qualitative data of BTS and qualitative data of official statistics in Ukrainian conditions. We assume that in spite of different problems mentioned above the significant correlation between qualitative and quantitative data can be found even in Ukrainian conditions. Before starting the abovementioned exercise it is reasonable to check if economic agents can predict performance changes at own enterprise. Therefore we should talk about correlation between *ex post* and *ex ante* qualitative data. Also it is important to know do ability of economic agents to predict change depends on periods of economic development of the country. The research question is either in period of recession (after destroy of socialist system) the predictable power of managers expectations was less than in period of next economic growth. In order to find it we compare correlation between *ex post* and *ex ante* variable evaluation in different periods of economic development in Ukraine. Furthermore tested hypothesis is that the level of correlation between qualitative and quantitative data varies in different periods of economic development of the country.

3. DATA

3.1 Description of the qualitative data set

3.1.1 The QES data and indexes: overall review

The data used in this paper is received from the QES. The QES is conducted quarterly. The QES questionnaire includes questions about managers' expectation and in past evaluation of selected economic indicators of particular enterprise in one quarter prospective (3 months). The different variables are covered by the survey. There are such as production, sale, export, demand, order, raw material, finished goods, arrears, profit etc. Also the QES includes questions about evaluation of the both current and future business climate in the country and business situation at the enterprise. The completed list of the indicators can be found on http://www.ier.kiev.ua/English/qes_eng.cgi. The panel sample includes 300 enterprise located in the East, West, Central and East regions of Ukraine. Some time series are collected from the 1996 but majority of the data is observed from 1998. Also there were periods when survey was not conducted due to lack of financing.

As it is mentioned above the QES belongs to the group of BTS, the majority of questions used is the same as traditional BTS questions, but the presentation of the QES data differs from traditional presentation of the BTS data. Instead of balance percents, the QES results are presented as indexes. The content as well as interpretation of the QES indexes is the same as balance percents. Taking into account local specifics of Ukrainian research and policy making communities in the mid of 90^{th} — in order to avoid long explanations for the Ukrainian clients of the survey results what is the difference between percents and balance percents — the research groups which was in origins of the QES[1] decided to present survey findings as index which vary from –1 to 1. Such index is calculated as weighted arithmetic mean of answers 'increase' (+1), 'the same' (0) and 'decrease' (-1). In other words the index value equals balances percent divided on 100. For example, if total sample is 100

[1] The survey has been originally launched in January of 1996 by Soros Group in Ukraine (SIEAG). SIEAG worked on economic policy advices issues from 1994 till 1998 under the supervision of Prof. Anders Aslund.

respondents and 20 respondents report an increase/improvement of the issue (i.e. production in the firms, business situation in the firm, overall economic climate etc.), 50 respondents report a decrease/deteriorate, and 30 report no change, the corresponding index value would be –0.30, which corresponds to –30 balance percents.

3.1.2 The data set used for analyses

We work with the time-series data collected from 1998-2007 on the quarterly base. For the analysis we use time series characterized the both *ex past* and *ex ante* changes. *Ex past* indexes base on question "how did the indicator change in quarter # X in comparison with the previous quarter, increased, remained without changes or decreased". We call this group of indexes as "indexes of change", acronym is IC. *Ex ante* indexes base on question "how will the indicator change during next 3-4 months in comparison with quarter # X, increase, remain without changes or decrease". We call them "indexes of expectations", acronym is IE. In the paper the abovementioned types of indexes are presented for the following variables:

production,
sale,
stock of raw materials,
new order,
domestic demand,
capacity utilization,
selling prices,
purchasing prices,
employment (number of workers),
profitability.

Also there are two *ex ante* indexes with higher horizon of the prediction. Namely, the index of overall business climate expectations (IBCe) (the most often quoted and used in mass media index of the QES) and index of the expected firm's business situation (IBSe) are presented. The first is result of aggregation of answers on the question "how will overall economic condition, which impact to your enterprise, change in the next 6 months". The second is on the basic of question "how will business situation at your enterprises change in the next 6 months". The enterprise managers select the traditional for the BTS options of answer: "improve", "the same" and "deteriorate".

Since 2002 we started to calculate the Industrial confidence indicator (ICI). ICI and its components (production expectations, assessment of current order books and assessment of current stock of finished goods) are used for our analysis also.

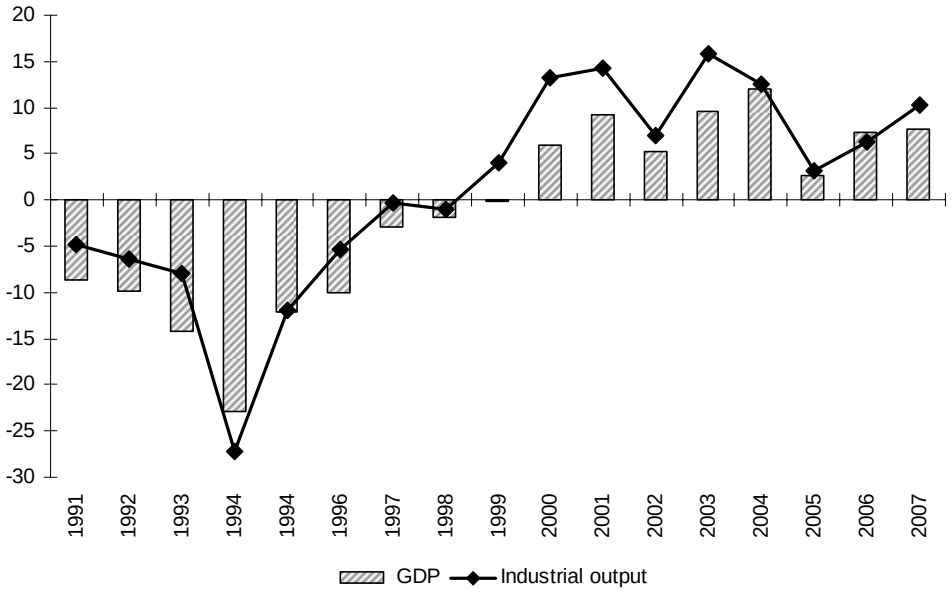
3.2 Defining period of time

The survey is conducted in the first month of the quarter following the studied quarter. For example if data is marked as Q1 2008 it is mean that information was gathered in last two weeks of April 2008. And in this case IC describe managers' assessments how variable changed in the Q1 2008 in comparison of the Q4 2007, IE characterized of the managers' expectations about possible movement of variable in next three months. IBCe and IBSe are characterized of the managers' expectations in next six months prospective.

When correlation analysis is applied the IE is shifted on one quarter forwarded. I.e. IE for the Q1 of 2008 would be compared with IC for the Q2 of 2008 or values of qualitative statistic indicator for the Q2 of 2008.

The history of Ukraine economic development are divided by three periods according to important economic and political reasons. First period is 1996-1999. It is period of mid and end of economic recession, which have been started in Ukraine after breakdown of administrative socialist economy in 1991. Second period in 2000-2004 is beginning of economic recovering. Third selected period is further economic growth but after important political event that influence all institutions in the country. We are talking about President election in 2004 and "orange revolution". In the Figure 1 the growth rate of GDP and industrial output for all whole Ukraine economic history are presented.

Figure 1. Growth rate of GDP and Industrial Output in Ukraine, yoy



3.3 Missing values replacement

The QES consists in two gaps caused by absence of surveying. The surveys for the 1st and the 2nd quarters of 2000 and surveys for the 4th quarter of 2001 and the 1st quarter of 2002 were not conducted. In order to increase data accuracy the missing values should be replaced. The QES missing values are so called embedded missing data. There are time series with gap in the middle of series. The replacing missing value in the middle of series is perceived to be a much more serious problem than replacing data at the beginning or end of a series. The simplest methods for replacing missing values are series mean or mean of nearby points. But in our case there are two more factors aggravating the problem. First, the missing values are recorded for period of change in the economic tendencies in Ukraine: 2000-2002 years became the begging time of economic recovering after almost decade of the post-socialist recession. Second, two of missed periods are observed for the first quarter of year. Taking into account the abovementioned the following algorithm of replacing missing value has been chosen. The each time series was divided into four sub-series according to period of observations. Thus there are time series of observation in the first quarter, in second quarters, in the third quarters and in the fourth quarters. The Linear trend at point[2] was applied as method of replacing

[2] Linear trend at point — Replaces missing values with the linear trend for that point. The existing series is regressed on an index variable scaled 1 to n. Missing values are replaced with their predicted values.

missing values. Missing values were replaced separately for each quarter sub-series. Than all data was combined together. In the Figures 2-3 the variable "production" (IC and IE) without and with missing value replacement is presented

Figure 2 Production (Prod IC) and Production expectations (Prod IE), index

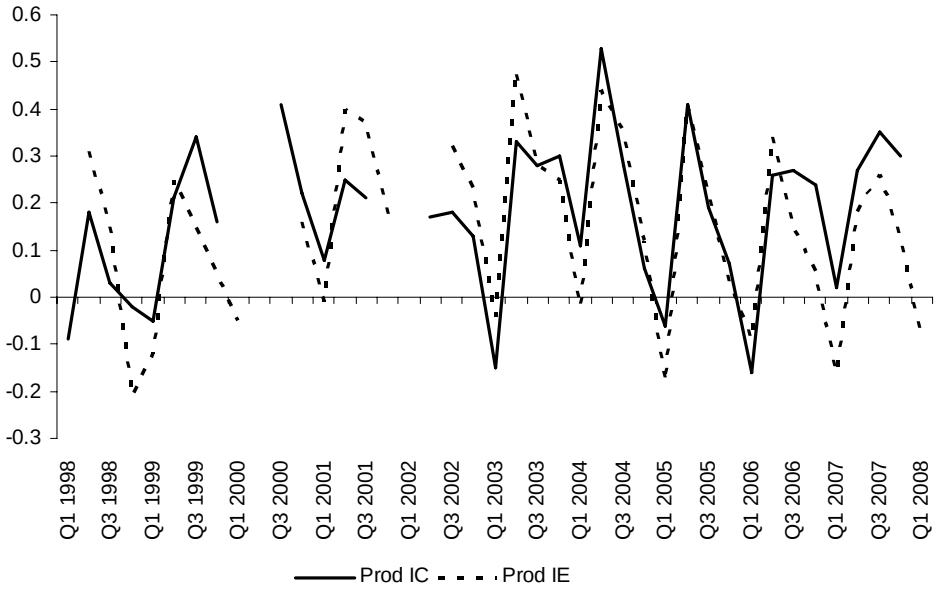
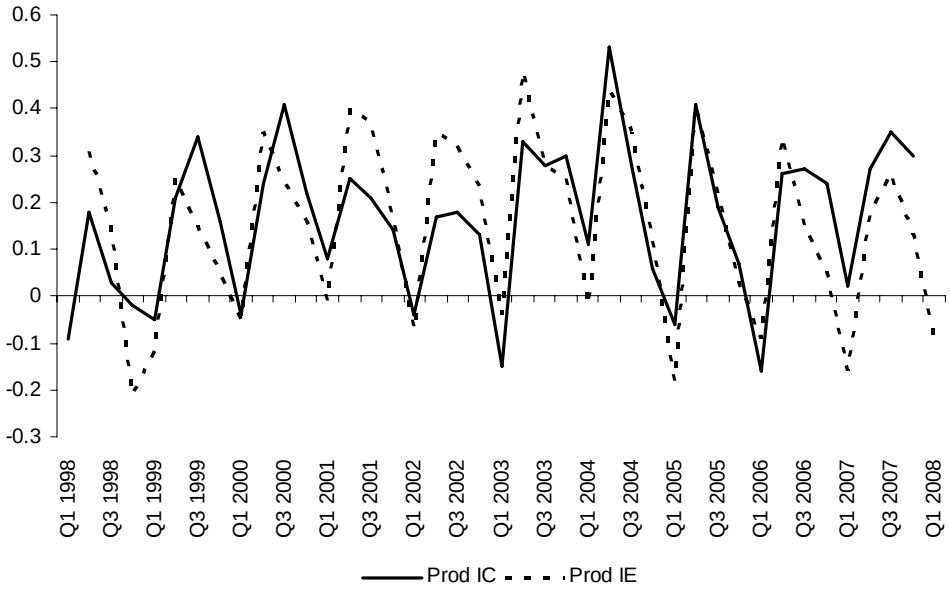


Figure 3 Production (Prod IC) and Production expectations (Prod IE) with replaced missing values, index



3.4 Quantitative data set description

As corresponding indicators to qualitative data we use the main indicators of Ukrainian national statistics. The QES indexes are correlated to the changes in corresponding quantitative variables. It is reasonable due to nature of BTS data which is movement of the variable. And according to international experience (EE (1997) "the appropriate parameter to be compared with is not the variable itself, but the first differences of the corresponding series". The following quantitative time series are used in our analysis:

rate of growth of value added (VA),

rate of growth of industrial output (IOP),

rate of growth of consumer price (CPI)

rate of growth manufacturing output (MOP)

We do not use rate of the GDP growth due to the QES cover only manufacturing sector of Ukrainian economy. Growth rate of specific economic indicators was calculated by such formula: (quarter2/quarter1)-1. This means quarter over quarter growth.

4. Analysis and its results

4.1 Correlation between *ex post* and *ex-ante* data

Before studying the predictable power of the survey data it is definitely need to check data on logical consistency. We supposed that positive liner correlation between variables characterized production (production, capacity utilization) and demand (sale, new orders, profitability) should be exist. Results of correlation analysis between are encouraged. Correlations for IC vary from 0.745 to 0.986 depending on variables. The same situation is observed when correlation between respective IE is produced (see Table 1). These results imply that managers' opinions are more or less consistent.

Table 1. Correlation between Production (*ex past* , *ex ante*) and other indicators characterized performance of enterprise

IC (Indicator *ex past*)	Production	IE (Indicator of expectations)	Production exp.
	Correlation		Correlation
Sale	**0.986***	Sale exp.	**0.990***
Stock of raw materials	0.428*	Stock of raw materials exp.	0.537*
Capacity utilization	**0.931***	Capacity utilization exp.	**0.971***
New orders	**0.745***	New orders exp.	**0.866***
Domestic demand	0.578*	Domestic demand exp.	0.752*
Number of workers	0.688*	Number of workers	0.688*
Profitability	**0.830***	Profitability Exp.	**0.936***

*. Correlations significant at the 0.01 level (2-tailed)

The second issue that should be analyzed is correlation between *ex past* and *ex ante* data. It is important to get information if managers' expectations are come true, can managers predict the trend of changes for main indicators of enterprise activity in case of Ukraine. To verify the predictability of expectations the correlation between values of IE and the values of IC was studied. It should be mentioned that the IE value was smoothed by one quarter forward.

Table 2. Correlation between values of IC and IE smoothed by one quarter forward

Variables	IC vs IE
Production	**0.787***
Sale	**0.826***
Stock of raw materials	0.191
Capacity utilization	**0.744***
New orders	0.499*
Domestic demand	0.660*
Employment	**0.767***
Profitability	0.686*

*. Correlations significant at the 0.01 level (2-tailed)

The highest correlations are recorded for production, sale, capacity utilization and employment (more than 0.74). For other selected indicators the correlation is higher than 0.65 (with exception for new orders and stock of raw materials). This respectively high correlation imply that probability that expectations would became true is quite high.

4.2 Correlation between *ex post* and *ex ante* data in period of economic recession vs. period of economic growth

The coefficient of correlation between *ex post* and *ex ante* data varies in different periods of economic history of Ukraine. The question "how did sale change comparing to the previous quarter?" and "how will sale change in the next quarter?' are the oldest ones in the QES that describe the both past and future changes of variable. They are collected since 1996. In mid of 1990th the variable sale provided even more information about situation in the real sector than variable production. It informed about "demanded output", i.e. output that was really produced because it was sold.

Correlation for whole period 1996-2007 between IC(sale) and IE(sale) is 0.612. For period 1996-1999 correlation is statistically insignificant and lower than 0.3. Since 2000 correlation became statistically significant and achieve more than 0.8.

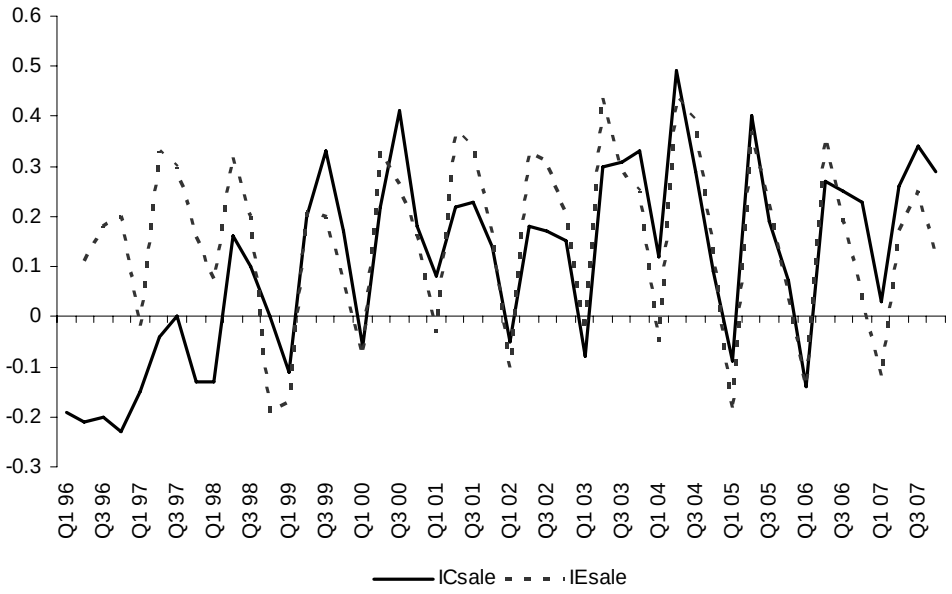
It supports the hypothesis that in the period of recession (which was in case of Ukraine at the same time the period of transformation from the socialist administrative economy to market one) the probability that rational expectations of economic agents become true is lower. There are a lot of reasons of such situation, but according to SIEAG (1998) the most important of them are economic uncertainty cased by transformation process and lack of experience of managers to work under the new economic conditions. Also the financial crisis of 1998 contributes to low correlation between in past assessments and expectations as it is shown on the Figure 4.

Table 3 Correlation between sale and expected sale in different period of economic history in Ukraine

Period	Correlation
1996-1999 (recession)	0.251
2000-2004 (first period of growth)	0.824*
2005-2007 (period of growth after change of political regime)	0.894*
1996-2007	**0.612***
1998-2007	**0.826***

*. Correlations significant at the 0.01 level (2-tailed)

Figure 4 Sale (ICsale) and Sale expectations (IEsale)



4.3 Correlation between "real life" official statistics and survey data (production, demand, employment)

As it was mentioned above taking into account the nature of business tendency survey data the growth rate of the indicator is more sufficient for our analysis than value of indicator. The additional evidence came from our empirical analysis. According to our findings the correlation between value added for manufacturing and IC for production (ICprod) is quite low (<0.02). At the same time the correlation between growth rate of value added and ICprod is about 0.76.

The both indexes IC and IE for each variable were compared with three quantitative indicators: growth rate of value added (VA), growth rate of manufacturing output (MOP), and growth rate of industrial output (IOP). Theoretically the index of manufacture output is more sufficient as corresponding series to our data due to the survey covers manufacturing industry only. But index of industrial outputs which characterized not only manufacturing but mining industry and industry of production and distribution of gas, electrify and water also is available for longer period. It allows us to

check hypothesis if correlation between qualitative and quantitative data depends on period of economic history in Ukraine.

Results of correlation analysis are presented in the Table 4. We can see that time series of growth rate of VA and growth rate of MOP are strongly correlated with qualitative data that time series of growth rate of IOP. It is one more evidence that survey that cover manufacturing industry is more related to manufacturing data than the whole of industrial data.

Indexes of expectations for all variable have stronger correlation with corresponding quantitative time series the indexes of change. The best qualitative indicators for analyzed quantitative indicators (VA, IOP, MOP) are production and production expectation, sale and sale expectation, capacity utilization and capacity utilization expectations, and, finally, profitability and profitability utilizations. At the same time other qualitative time series have also respectively high correlation with quantitative ones. Correlation is higher that 0.5 for all of them with exception for stock of raw materials. While index of expectations for raw material significant correlates with VA and MOP time series.

Table 4 Correlation between qualitative and quantitative data

		Quantitative indicators		
	Lag/Lead	VA	IOP	MOP
Production (IC)	0	**0.759***	**0.593***	**0.748***
Production exp. (IE)	+1	**0.792***	**0.575***	**0.788***
Sale (IC)	0	**0.766***	**0.574***	**0.757***
Sale exp. (IE)	+1	**0.802***	**0.588***	**0.805***
Stock of raw materials (IC)	0	0.243	0.244	0.288
Stock of raw materials (IE)	+1	0.476*	0.235	0.485*
Capacity utilization (IC)	0	**0.703***	**0.504***	**0.691***
Capacity utilization (IE)	+1	**0.721***	**0.496***	**0.724***
New orders (IC)	0	0.547*	0.369*	0.513*
New orders exp. (IE)	+1	0.661*	0.385*	0.633*
Domestic demand (IC)	0	0.544*	0.311*	0.571*
Domestic demand (IE)	+1	0.765*	0.481*	0.777*
Employment (IC)	0	0.381*	0.302	0.343
Employment exp.	+1	0.497*	0.289	0.451*
Profitability (IC)	0	**0.740***	**0.490***	**0.747***
Profitability (IE)	+1	**0.763***	**0.490***	**0.760***

* Correlation significant at the 0.05 level (2-tailed)

Source: Own calculations

The result of analysis is encouraging to define leading and coincident indicators within the QES data. We can say that variables of expectations (or IE) can be perceived as leading indicators and variable of in pat evaluation can be examined as coincident indicators. While it is required seasonal decomposition for the both survey and real life statistics data for getting strong evidence.

4.4 Survey-based price indicators and inflation

Study of inflation expectations is important for macroeconomic situation in the country. The second set of variables which we compare to quantitative data are variables "selling price" and "purchase price". In the QES we asks about selling and purchasing price expectations for three months ahead and about in past changes during last three months. Based on respondents' answers on the above mentioned questions the index of sale price expectations (ISP) and index of purchase price expectations (IPP) are calculated. The index value, which reflects the difference between the share of respondents with negative and positive expectations, varies from -1 (decrease of indicator) to 1 (increase of indicator).

The assessment of links between actual consumer inflation and the expectations of business regarding the development of prices showed that the expected changes in domestic sales and purchase price at the beginning of the quarter have quite high correlation with the CPI changes over the respective quarter (0.68 and 0.49 respectively). That means that QES estimates can be used as leading indicators of future inflation. On the other hand, the correlation of expected changes in domestic sales and purchase price with CPI changes over the previous quarter (i.e. historical inflation) is much lower: 0.44 and 0.26, correspondingly.

Figure 5. Selling price expectation (ISP) vs. CPI growth rate (qoq)

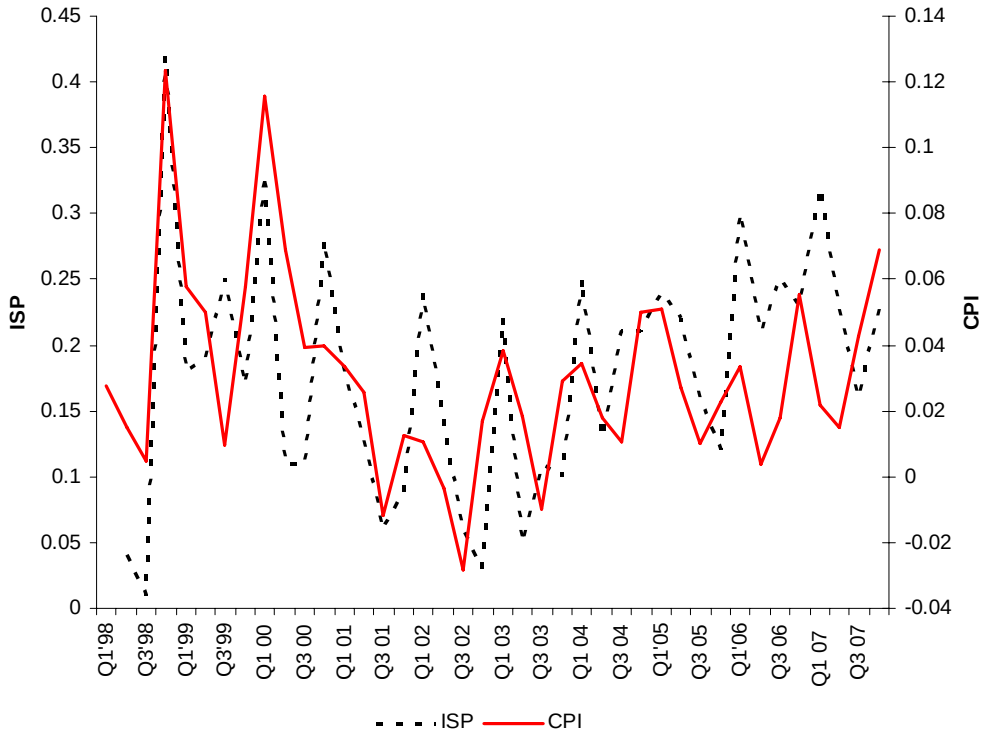
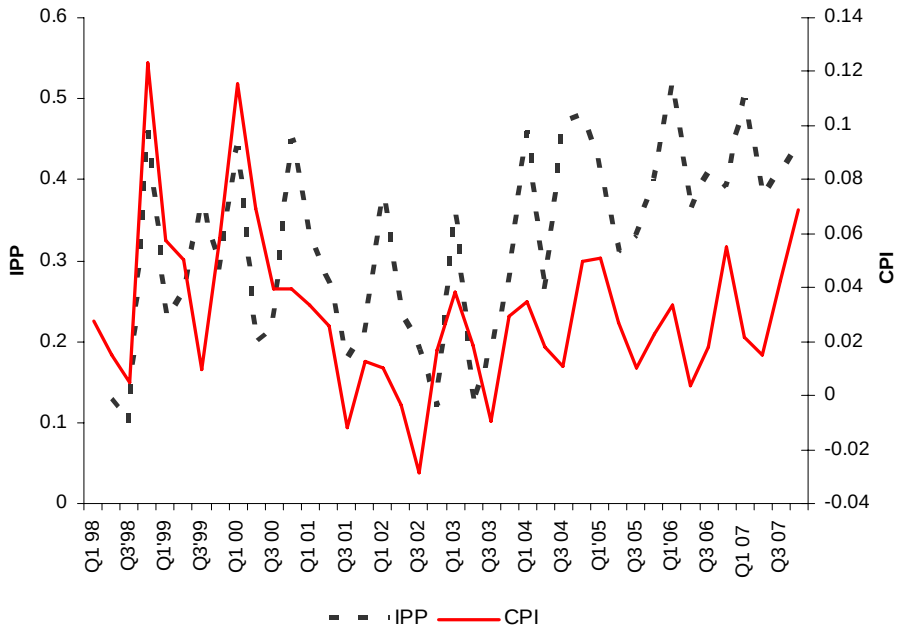


Figure 6 Purchase price expectations (IPP) vs. CPI growth rate (qoq)



4.5 Comparison of the indexes the 6 months horizon of forecasts: business climate and business situation at the enterprise

The business climate index (IBCe) is based on the answer on question about change of business climate during next 6 months. The definition of business climate in the QES is rather wide. During a special study we asked managers open-end question what they first means when answering our question about business climate changes. They said that there were overall economic situation, conjuncture of main markets, regulatory clime in the country, Government policy toward the business development as well as overall economic policy of the state. Thus, this indicator is rather proxi of business assessment of the Government economic policy. In the first glance it might mean that it has no significant relation to day-to-day enterprise activity. But in the paper Kuziakiv (2006) it was shown that the indicator is influenced by enterprises performance, i.e. "the higher probability of increase in production plans of the firms, the higher probability that managers will expect the positive change in overall business climate". That is way this index is also will tested to find correlation with real life quantitative statistics.

Managers' expectations about business situation at the enterprise (IBSe) is interesting indicator due to it allows receiving information for respective higher horizon of managers' assessments of economic activity. While there are questions how realistic might be such assessments and do managers have enough information for doing such forecast. According to the QES results the share of respondents that do not answer this questions is higher then for questions with 3 months prospective of prediction. About 10-12% of respondents are not able to provide with assessments of the business situation at the enterprise in a half-year prospective.

Business situation at the enterprises in Ukrainian translation calls as “financial and economic situation” at the enterprise. This variable con be compared to production and profitability expectations for 3 month prospective.

Table 5 Correlation between 6-months ahead expectations and statistic quantitative data

	Reference quantitative variable – Growth rate of VA				
Variable	Period of shooting (1 period is 3 months ahead)				
	0	+1	+2	+3	+4
Overall business climate (IBCe)	0.010	0.106	0.287	-0.420	-0.015
Business situation at the enterprise (IBSe)	-0.374	0.326	0.325	-0.100	-0.581*

* Correlation significant at the 0.05 level (2-tailed)

The results of correlation IBCe with VA and ISBe with VA are presented in the Table 5. We can see that the correlation between qualitative and quantitative data in case of 6 month expectations is low. The curios result is recorded when expectation about business situation at the enterprises shifted ahead by 4 period (one year). It is significant negative correlation that mint mean the following curios — if most of economic agents expect improving the business situation at the enterprises during next 6 month, in a year the rate of growth in manufacturing sector might decrease. In order to test if it is accident situation or real tendency the longer period of observation is demanded.

All correlation of 6 months ahead expectations with corresponding quantitative series are worse than correlation of 3 months expectations with the same series. Thus correlation of production expectations vs. VA and profitability expectations vs. VA are statistically significant and constitute respectively 0.792 and 0.763. At opposite correlation of IBSe vs. VA with different periods of smoothing is insignificant (with exception of case described in previous paragraph). It is support the idea that the shortest expectations of economic agents have more odds to come true than longest ones.

4.6 Industrial confidence indicator

The industrial confidence indicator (ICI) is defined as the arithmetic mean of the answers to the questions on production expectations, assessments of the order books and assessment of the stock of finished products (the latter with an inverted sign)[3]. In Ukraine this indicator start to be produced since the middle of 2002. In order to test if the combination of these three variable summarizes the situation in manufacturing sector in Ukraine we compared ICI itself and its components with the reference time series of growth of VA, growth of MOP and growth of IOP.

As result of correlation analysis it is recorded the quite high correlation between the ICI and all referencing time series. The highest correlation is observed between ICI and growth rate of VA (0.812). Concerning the components of the ICI the highest correlation is for production expectations. Assessment of current level of order book and finished goods have no significant correlation with quantitative data. But the correlation between ICI and referencing quantitative time series is higher

[3] For details see: The Joint Harmonized EU Programme of Business and Consumer Surveys.

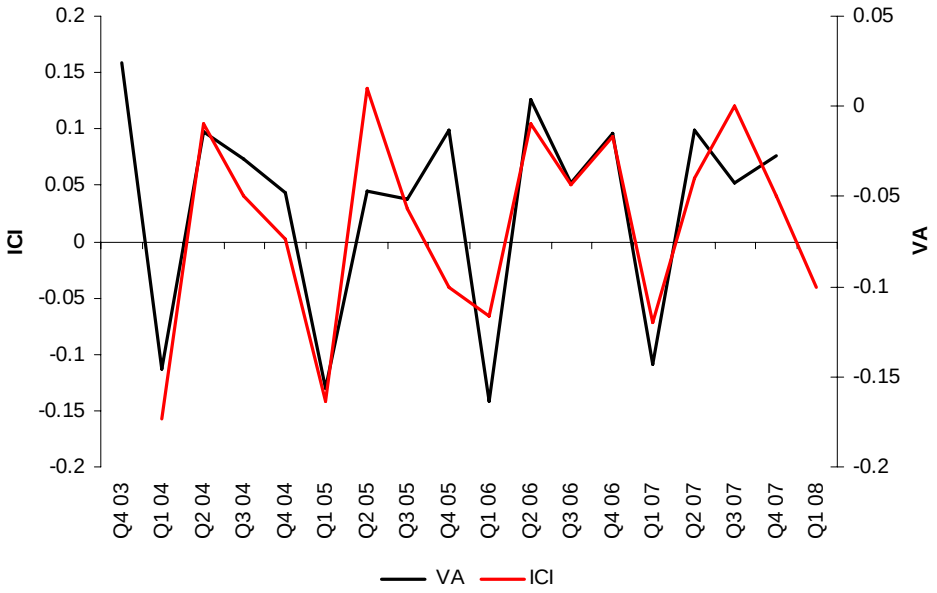
than correlation between its component “production expectations” and quantitative series. It means that composite indicator is more accurate reflect to quantitative data than single variable.

Table 6 Correlation between ICI, its components and statistics quantitative data

	Lag/lead	VA	IOP	MOP
Industrial Confidence Indicator	+1	**0.812***	**0.696***	**0.783***
Production expectations	+1	**0.792***	**0.575***	**0.788***
Stock of current order books	+1	0.341	0.436	0.366
Stock of current order books	0	0.087	0.03	0.162
Stock of current finished goods	+1	0.348	0.319	0.348
Stock of current finished goods	0	-0.206	-0.268	-0.310
*. Correlations significant at the 0.01 level (2-tailed)				

The results of correlation analysis allows to says that in Ukrainian conditions the ICI may be leading indicator. In the Figure 7 the fluctuations of ICI in caparison with growth rate of values added is shown. At the same it should be mentioned that the longer time series will provide with more information about value of ICI for economic analysis and forecasting.

Figure 7 Industrial Confidence Indicator (ICI) vs. Growth rate of VA (qoq)



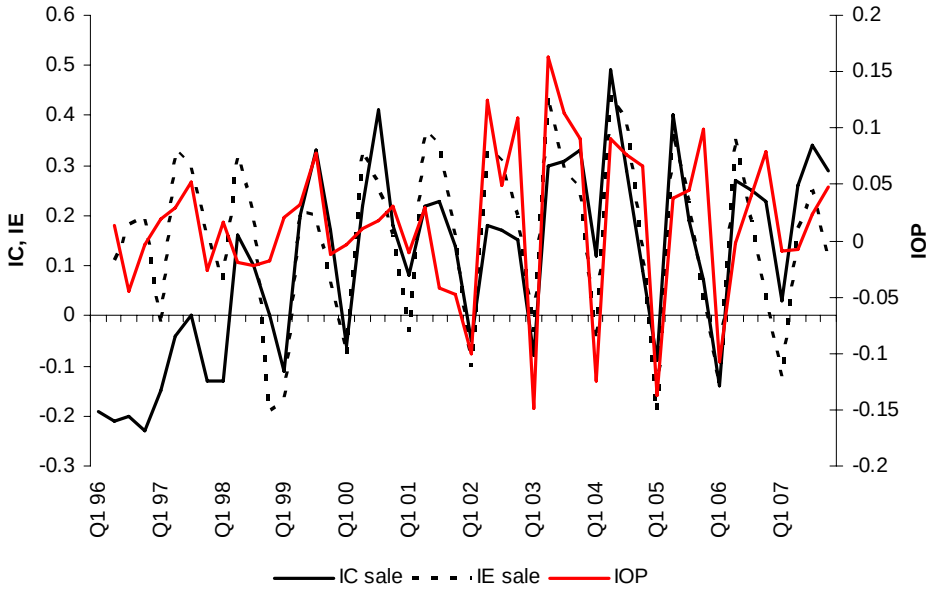
4.7 Correlation between qualitative and quantitative data in different periods of Ukrainian economic history (1996-1999, 2000-2004, 2004-2007)

The sale and sale expectations are the longest collected variables in the survey. They have been started to be gathered in 1996. In turn the time series “production” and “production expectations”

began in 1998. Taking into account the existence of high correlation between variables production and sale in our survey, we decide to use sale as variable to check a hypothesis about depending level of correlation between qualitative and quantitative data on periods of economic history in Ukraine. Taking into account that index of industrial output (IOP) is available for longer period than index of manufacturing output (MOP) we use IOP as the reference quantitative time series for testing hypothesis if correlation between qualitative and quantitative data depends on period of economic history in Ukraine.

Result of analysis shows that in the period 1996-1999 correlation between qualitative and quantitative data was considerably lower then in periods 2000-2004 and 2004-2007. For the whole of periods (1996-2007) correlation between ICsale and IOP is 0.503, between IEsale and IOP is 0.567 (correlation is significant at the 0.01 level (2-tailed)). For period 1996-1999 correlations constitute respectively 0.362 and 0.140. For period 2000-2004 — 0.614 and 0.711 (significant at the 0.01 level) and finally for recent period 2005-2005 correlations ICsale and IOP is 0.662, correlation IEsale and IOP is 0.547 (significant at the 0.05 level).

Figure 8 Sale and sale expectations vs. Growth rate of Industrial output (qoq)



Received results support the idea that in the period of transition to market economy the economic tendencies not to be predicted even by economic agents. But we do not undervalue the role of BTS data in that period of economic history in Ukraine. The BTS was the source of alternative information of state and prospective of economy against the background of doubt about quality and reliability of official statistic data.

Since 2000, period of beginning economic recovering in Ukraine, the BTS data — the both in-past and in-future evaluations — have a stronger relations with quantitative statistics. The main conclusion of this research is the following: the Ukrainian economic tendencies might be and are predicted by use of the business tendency survey data.

5. Conclusion

1. The results of study allow to state that in Ukraine the business tendency survey data have a quite high correlation with corresponding quantitative statistic data. There is a set of survey variables that can serve as leading or coincident indicators for such “real life statistics” as growth rate of value added in manufacturing sector and growth rate of manufacturing output.

2. Composite indicator is better as leading indicator than single variable. Thus, correlation between Industrial composite indicator and growth rate of value added is 0.812 while correlation between production expectations and growth rate of value added is 0.792. Industrial confidence indicator can be leading indicator to growth rate of value added as well as growth rate of manufacturing output.

3. Also we found that the managers’ assessments and expectations recorded in the QES are rather consistent. The coefficient of correlation between production’s and demand’s indicators is enough high, e.g. correlation between production and sale is about 0.99, production and profitability is 0.89. It is evidence that the QES data has appropriate quality and can be applied with sophisticated econometric tools.

4. The shorter horizon of forecast the better prediction. It is observed respectively high correlation between expectation on 3 months prospective and the reference quantitative time series. At the same the correlation between expectations on 6 months prospective and quantitative time series is substantially lower.

5. Special attention in the study has been paid for inflation expectations. In the situation of increase in inflation which is recorded in Ukraine during last year the indicator that might be use for monitoring of inflation expectations is key important for policy makers. Selling price expectants can be leading indicator to growth rate of CPI. It is important finding taking into account not only academic purpose but policy application of the issue also.

6. Accuracy of economic agents predictions is low in period of increased economic uncertainty. We found that in the period of recession, which was in Ukraine at the same time the period of transformation from the socialist administrative economy to the market one, the rational expectations of economic agents do not become true in contrast to the next periods of Ukrainian economic history.

7. At the beginning of transformation from administrative to market economy the BTS data had worse correlation with quantitative statistics. At the same time it does not mean that expectations and assessments were less valuable for economic analysis. Quite the contrary, taking into account the quality of the official statistics in the period of transition the BTS results served as important source of information about economy state and prospective.

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