Do the Managers’ Expectations Predict Main Tendency before and during recession of Ukrainian economy?

Comparison of the Business Tendency Survey Results with Qualitative Statistics

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Abstract

The question either the managers’ expectations describe and predict main economic tendency in Ukraine is important question for the economic policy in the country. The information about business’s perceptions of their environment became of key importance in the times of change in economic tendencies. The international financial crisis of 2008 is just such period in economic development of the world. The crisis and next deceleration of world economy have to lead a sharp recession of Ukrainian economy in 2009. In Ukraine the Quarterly Enterprise Survey is the oldest survey belongs to the group of Business Tendency Surveys (BTS) which has been originally launched in 1996.

In this paper we continue the comparison the results of the BTS in manufacturing with quantitative data in Ukraine. The focus of the paper is on looking answer on the question: what business confidence trend to tell us in situation of the recession. The first results of the study have been presented in CIRET/KOF/GKI-Workshop 2009.

We have started from the description of the dynamic of BTS variables before deterioration of macroeconomic indicators and during the recession in 2009, beginning of 2010. Then the relationship of the indicators received from BTS to published statistical macroeconomic indicators is analyzed. Comparison is done for period of observations from 1998 to 2009 with special attention on 2008-2009 crisis periods. It is important to mentioned that new recalculated series of macroeconomic statistics has become public available since beginning of 2010 and it has impact to comparison. The set of BTS indicators includes the both single variables and composite indicator. Moreover we try to study the role played by the single elements of balances, namely share of negative and positive answers ("bad" and "good" for variable of assessments of indicator and "decrease" and "increase" for ex-past and ex-ante changes), because sometimes the share percents are more consistent to the actual trend than balance.

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

JEL Classification: C42, E32
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1. Introduction

The aim of the paper is to find to what extent the qualitative data correspond to the “real” economic situation and find out its predicting ability in case of Ukraine in time of economic recession.

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 called “qualitative” statistics aims to improve the information basis of trade cycle analyses and forecasts. 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 BTS data and quantitative data of the official statistic. Especially the study of correlation of qualitative and quantitative data is important in time when tendencies of economic development have being change.

The scale of 2008 international financial crisis has been unprecedented shock for the world economy. The crisis has affected Ukraine in a number of ways. It deals with financial sector, real sector, labor market and social welfare. Thus, the crisis and the resulting deceleration of the world economy have led to a shape decline in growth of the Ukrainian economy in the fourth quarter of 2008 (Burakovsky et al., 2009). The negative tendencies of economic development have been continued in 2009. The real GDP contraction is at 15.1% in 2009 (Derzhkomstat, 2010).

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).

This third paper produced by IER which aims at looking the survey-based variables which came be treated as leading or coincident ones in Ukraine. We continue the comparison the results of the BTS in manufacturing with quantitative data in Ukraine. The focus of this paper is on looking for answer on the question: what business confidence trend to tell us in situation of the recession. It is important to mentioned that new recalculated series of macroeconomic statistics has become public available since beginning of 2010 and it has impact to comparison done.

At the beginning of the paper a lot of attention is pied for data set description. We have started from the description of the dynamic of survey’s variable before deterioration of macroeconomic indicators and during the recession in 2009 and at the beginning of 2010. Then 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 1998 to 2009) with special attention on 2008-2009 crisis periods. The set of BTS indicators includes the both single variables and composite indicator. Moreover we try to study the role played by the single elements of balances, namely share of negative and positive answers (“bad” and “good” for variable of assessments of indicator and “decrease” and “increase” for ex-past and ex-ante changes), because sometimes the share percents are more consistent to the actual trend than balance.

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 2009 when it possible. 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. Especially the attention is paid on recent two years. The both qualitative and quantitative data used for the correlation analysis are seasonally adjusted.
2. **Background and Research Objectives**

2.1 **Background of the research: Recession of Ukrainian economy in 2008-2009**

Before starting our study it is important to describe the economic development in Ukraine in 2008—2010. International financial crisis and the resulting deceleration of the world economy have led to a sharp decline in growth of the Ukrainian economy in the fourth quarter of 2008 and next breakdown of economy in 2009. Recovery of economy is expected in 2010, while the first signal of acceleration of economic activity was observed in mid of 2009.

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

Ukraine’s economy entered in a recession in the fourth quarter of 2008 as the world financial crisis uncovered and aggravated weaknesses of the national economy. In 2008 real GDP growth decelerated from 6.3% yoy for the first nine months to 2.1% yoy for the year. In nominal terms GDP constituted around UAH 950.5 bn (USD 180.4 bn) in 2008.

Ukrainian economy is export oriented one. Export is about 50% of GDP (e.g. 63.6% in 2004, 46.8% in 2008). Reduced demand and prices on international commodity markets have caused an abrupt decrease in Ukrainian export. First, this is felt negatively in ferrous metals and chemical products. Thus, real export of cast-iron dropped by 30.8 percent from September to October 2008. Decline of real export was seen in other categories of non-precious metals and in several groups of chemical industry products. Decreased prices and demand for metals has caused major problems in the domestic mining and smelting sector. Reduced domestic demand cased mainly by limited access to consumer credits had a negative influence on machine building. Production of automobile industry has decreased by 40 percent during the last four months of 2008. Demand for production of transport

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1 State Committee of Statistic of Ukraine or Derzhkomstat, [www.ukrstat.gov.ua](http://www.ukrstat.gov.ua)
machine building has also dropped. As results, total industrial production in the last quarter of 2008 started to decline. According to the Ukrainian State Statistical Office (Derzhkomstat), industrial output contracted by 3.1% yoy in 2008 in comparison with a 10.2% rise in 2007. The last year with comparable reduction in industrial production was 1996. In the Figure 1 the growth rate of GDP and industrial output are presented.

Moreover, the contraction of housing and commercial construction that had been observed since the beginning of the 2008 sharply accelerated in autumn of 2008 against the background of crisis in the domestic financial system. In September-October 2008, the banking system faced an outflow of deposits with simultaneous increase in bad loans. Also the autumn 2008 phase of international crisis restricted access to external financial resources. This restriction has significantly affected the active operations of commercial banks in the setting of exhausted interbank financial resources due to problems in real sector. Hryvna devaluation imposes additional difficulties for loans repayment. Exchange rate fluctuation has sharply increased due to imbalance of demand and supply. During October 2008, the exchange rate fluctuated around USD 1:UAH 5.06-UAH 7.05. In the 2009 the devaluation has continued. In the end of August 2009, the interbank exchange rate is USD 1:UAH 8.15 (Burakovsky I. Et Al. (2009).

In 2009 the negative tendencies in Ukrainian economy have been continued. Real GDP contracted by 15.1%. On production side, the major decrease in real value added was in construction (by 54.1% yoy) hard-hit by the decline in the investment activity, and manufacturing (by 21.5% yoy) that suffered from the drop in external demand. Only agriculture, healthcare, and education have show relatively well results ranging from 0.3% yoy growth to 4.6% yoy contraction.

Taking into account the purpose of this paper attention is paid on manufacturing. In the Figure 2 real sector trend on monthly base is presented. During 2009, industrial output was heavily suppressed by unfavorable global economic conditions and weakening of domestic demand. External conditions were defined by low demand and prices in international commodity markets, deceleration of investment activity in developing countries. On domestic side shortfall of solvent consumer demand in Ukraine and noncompetitive costs in majority of Ukrainian producers also contributed to the significant output contraction in 2009.

According to Derzhkomstat, industrial output decreased by 21.9% between January and December 2009. The deepest contraction was in machine building (-45.1%) and non-metallic mineral products sectors (-38.4%). Output of metallurgy and chemical products industry decreased by 26.6% and 23.2%, accordingly, supported by external demand stabilization in the second half of 2009. Extractive industry and utilities output declined by 10.7% and 11.1%, respectively, following by demand shortfall from the manufacturing industry. Food industry suffered to the less extent as its output decreased by only 6.1%.

At the same time it should be mentioned that in second part of 2009 the slight acceleration of economic activity has been recorded. In July 2009 there are first signals of improving situation. Industrial production contraction decelerated to 26.7% yoy thanks to noticeable acceleration in most sectors, in contrast after first three months of 2009 it was 36.5%. High external demand for metals was the key driver of July manufacturing growth, raising output in metallurgy by 15.3% mom. Related industries – coke production and non-energy mining – increased output significantly as well by 11.2% mom and 16.1% mom, respectively. At the same time, almost fourfold contraction of alcohol production and standstill of several chemical giants limited potential growth in manufacturing and industry overall in July.

Slow recovery of Ukraine economy is expected in 2010. According to the preliminary Derzhkomstat estimate real GDP grew by 4.8% yoy in the first quarter of 2010. The real net exports and inventories changes are likely to be contributing to the growth. At the same time, real gross fixed capital accumulation is estimated to decline as compared to the first quarter of 2009. Household demand was also weaker than the initial projections. As a result, IER downgraded our estimate for the
real GDP growth in 2010 to 3.8%. On the production side, IER anticipate further recovery of industrial output for the rest of the year. In annual terms the growth rates are likely to be lower than in the first quarter due to the statistical base effect. Real value added in trade is expected to renew its growth against the increase in demand and higher mark-ups.

**Figure 2. Ukraine Industrial Output Trend, 2007=100.**

Source: Derzhcomstat

### 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 with special attention on crisis 2008-2009 periods. The aim of the correlation analysis is to quantify consistence between qualitative and quantitative variables by the Pearson’s coefficient of correlation and as result, to find the BTS variables which are the most correlate with reference data of the official statistics as well as get know either these survey variables are lead, lag, or coincide with referent quantitative series. In Kuziakiv, 2008 it was shown existing the strong correlation between the business tendency survey data and corresponding quantitative statistic data. There was identified a set of survey variables that can be leading or coincident indicators for such “real life statistics” as growth rate of value added in manufacturing sector and growth rate of manufacturing output. In January 2010 State Statistic Office of Ukraine provide with new recalculated series of value added. This fact demands recalculation of the correlation between BTS data and corresponding statistic.

In this paper we assume the significant correlation between qualitative and quantitative data can be found in Ukrainian conditions in time when economic tendencies have turned. Two research questions are tested.

1. The first research question is what kind of variables are more consistences with quantitative ones in time of crisis. In order to find it we compare correlation between different *ex past*, *ex ante* variables with 3 months horizon of forecast, *ex ante variables* with 6 months horizon of forecast, variables of assessment of current level of issue, and composite indicator in one side and corresponding quantitative statistics in other side.
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2. Novelty is study of the role played by the single elements of balances, namely share of negative and positive answers (“bad” and “good” for variable of assessments of indicator and “decrease” and “increase” for ex-past and ex-ante changes) and answer on research question either the share percents are more consistent to the actual trend than balance.

Also we assume that year over year quantitative statistic data is more sufficient that quarter by quarter one and make a comparison of BTS data and two types of growth rate of value added: year over year and quarter over quarter.

In the analysis we assume that correlation between variables is "strong" when a correlation coefficient is greater than 0.70.

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 Quarterly Enterprise Survey (QES). The QES is conducted by IER 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 90th — 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 QES² 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 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.

² The survey has been originally launched in January of 1996 by Soros International Economic Advisory Group in Ukraine (SIEAG). SIEAG worked on economic policy advices issues from 1994 till 1998 under the supervision of Prof. Anders Aslund and Prof. Georges De Menil.
3.1.2 The data set used for analyses

We work with the time-series data collected from 1998-2009 on the quarterly base. There are several types of variables.

1. First, there are series of variables characterized the both *ex past* and *ex ante* changes. *Ex past* indexes based on question “how did the indicator change in quarter # X in comparison of the previous quarter, increased, remained without changes or decreased”. We call them 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 all variables of these types which are observed:

- Production
- Sales
- Export
- Accounts receivable
- Accounts payable
- Stocks of raw materials
- Stocks of finished goods
- Capacity utilization
- Purchase price
- Domestic sales price
- Export sales price
- New orders
- Domestic demand
- Foreign demand
- Barter
- Number of workers on floor
- Workers on forced leave
- Profitability
- Tax arrears
- Wage arrears
- Labor productivity

2. Second, 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
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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”.

3. Third is type of variable which refer to assessment of current level of indicator. There are assessment of current order books, assessment of current stock of finished goods, assessment of current employment, assessment of current stock of input, and assessment of capacity utilization level at the enterprise.

4. Finally there is the composite indicator. 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.

5. In order to increase data accuracy the missing values were replaced: The Linear trend at point\(^3\) was applied as method of replacing missing values. Missing values were replaced separately for each quarter sub-series. Than all data was combined together (see Kuziakiv, 2008)

3.1.3 Seasonal adjustment procedures

The data is seasonally adjusted. The seasonal decomposition procedure decomposes a series into a seasonal component, a combined trend and cycle component, and an "error" component. The procedure which is an implementation of the Census Method I and otherwise known as the ratio-to-moving-average method is used. The additive approach for modelling the seasonal factors is used during the seasonal decomposition procedure.

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 2009 it is mean that information was gathered in last two weeks of April 2009. And in this case IE characterized of the managers’ expectations about possible movement of variable in next three months comparing with Q1 2009. 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 2009 would be compared with IC for the Q2 of 2009 or values of qualitative statistic indicator for the Q2 of 2009.

The history of Ukraine economic development is divided by several 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”. And the deceleration of economic activity in the end of 2008 and 2009 opened the next page of economic development in Ukraine.

\(^3\)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.
3.3 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”. We do not use rate of the GDP growth due to the QES cover only manufacturing sector of Ukrainian economy. Taking into account that in Kuziakiv (2008) it was found that the rate of growth of value added (VA) constituted as the best reference series for production business surveys indicator from the QES, in first stage of the study we use only VA as quantitative time series. Growth rate of specific economic indicators was calculated by such formula: (quarter2/quarter1)-1 (Kuziakiv, 2009).

In January 2010 State Statistic Office of Ukraine provide with new recalculated series of value added. This fact insists on new calculation of reference statistic time series which have been done successfully. In this paper there are two types of growth rate of value added: year over year (VA2) and quarter over quarter (VA1). The last one is seasonally adjusted by author.

4. Analysis and its results

4.1 Description of economic tendencies based on BTS findings in 2008-2010

4.1.1 Fluctuation of the composite indicator (Industrial Confidence Indicator)

The first signal of deterioration of economic tendencies has been recorded in the beginning of the 3rd quarter of 2008: the assessments and expectations of the managers regarding performance of the enterprises have started to decrease. The value of Industrial Confidence Indicator (ICI) has decreased from 0.06 in April to -0.05 in July 2008. Than more significant deterioration of the manager’s expectations have been observed in the beginning of the 4th quarter of 2008. In the October survey the ICI decreased from –0.05 for the 3rd quarter of 2008 to –0.27 for the 4th quarter which is the lowest value since 2003. The indicator decrease is essentially due to deteriorating production plans for the next three months. The other two components of the indicator (production expectations and assessment of the stock of finished goods) have also significantly decreased. The assessment of the volume of present orders has worsened: from –0.64 for the 3rd quarter to –0.72 for the 4th quarter. As to the third component of the indicator – the stock of finished goods – after its increase in the previous quarter it has decreased again to the 2007 level and amounts to –0.29.

In the next quarter (the 1st of 2009) the ICI continue its reduction (from -0.27 to -0.39) again because of deterioration of the production plans of the enterprises for the next 3 months. The assessment of the volume of present orders decreased also (from -0.72 to -0.79). At the same time the value of the component “the stock of finished goods” increased significantly (from -0.29 in the 4th quarter to -0.19 in the 1st). This deceleration of expectation in the beginning of year is normally observed every year. But in this time the rate of decrease was significantly higher than usually.

Next in April — in survey for the 1st quarter of 2009 — ICI has sharply increased by 28 points traditionally because of the significant change of the production plans of the enterprises for the next 3 months. In this time there was recorded the improvement of production plans. Other two components of the ICI also have improved. In July 2009 ICI has decreased by 1 point in comparison to April because of deterioration of the production plans. In spite this we consider this fact rather as positive. Two other indicators continue to be improved: the stock of finished goods has decreased (from -0.17 in April to -0.23 in July) and order book has increased (-0.73 in April and -0.66 in July).
Then in October of 2009 our optimism was supported by the survey results: ICI has increased by 12 points in comparison to July. It happened because of improvement of all its components: the improvement of the production plans of the enterprises for the next 3 months, the increase in the value of the component “orders book” and decrease of the component “the stock of finished goods.

In February of 2010 the ICI has decreased by 14 points in comparison to October 2009. It happened mostly because of the significant deterioration of the production plans of the enterprises for the next 3 months which is seasonal factor recorded each year in this time. In April 2010 ICI significantly increased by 21 points comparing February 2010 mostly due to improvement of production plan of the enterprises.

Non seasonal adjusted and seasonally adjusted Industrial Confidence Indicator is presented in the Figure 3. According to analysis of ICI dynamic the signal about deterioration of economic situation have been received in the 3rd quarter of 2008. The lowest point is the 1st quarter of 2009; the next points are in the upward trend.

**Figure 3.** Industrial Confidence Indicator, raw data (ICI) and seasonally adjusted (ICI_SAS)

The single variables also indicated that there were the first signals about decrease of business activity in July 2008. First of all there are the demand indicators. Values of demand expectation index has decreased from 0.27 (April 2008) to 0.05. The same tendency has been recorded for new order expectations (from 0.37 to 0.16). The worst situation has been recorded in October 2008 survey. In particular, values of demand index diminished considerably from 0.02 to -0.50 and demand expectations index decreased to -0.38. This deterioration of the demand indicators has impact on the sale in the 4th quarter of 2008. Thus, according to respondents, the volume of sales has decreased notably in the 4th quarter compared to the 3rd quarter: the value of the corresponding index fell from 0.10 to -0.38. Managers expected a further decrease in this indicator in the 1st quarter of 2009: the index of expected sales equals -0.59. At the same time the demand and new orders indicators kept deceasing in this time: the value of the index of new orders has dropped from 0.01 in the 3rd quarter to -0.23 in the 4th. The percentage of managers, who assess the stock of orders as a satisfactory one, fell from 22.8% in the 3rd quarter to 18.5% in the 4th. It should be noted that 42.1% of all surveyed
managers reported that their companies have no stock of orders. For comparison: there was four times less of such cases (10.2%) in the first half of the year.

After the reduction of domestic demand, observed since October 2008, the improvement in indicators of demand was registered in July of 2009:

- value of the index of domestic demand increased by 38 points (from -0.67 in the 1st quarter to -0.29 in the 2nd). 17.1% of polled managers informed about growth in demand and 48.3% – about its decline (in the previous quarter these indicators were equal to 4.7% and 74.5% respectively).
- in the 2nd quarter the volume of sales noticeably increased compared to the 1st quarter: the value of the corresponding index significantly went up from -0.58 to 0.09.
- managers also noted increase in the number of new orders: the value of the index of new orders has grown up from -0.40 in the 1st quarter to 0.05 in the 2nd.
- the share of managers assessing the portfolio of orders as a satisfactory one slightly increased to 26.9% in July compared to 24.3% in April. On the contrary, the share of companies those have no stock of orders fell from 40.4% in April to 31.6% in July.

Against the background of encouraging trends according to the results of the survey in the 2nd quarter of 2009, managers’ expectations concerning demand for the following 3-4 months were very careful. In particular, the index of expected demand for the 3rd quarter of 2009 has the negative value again and it is less, than the respective value for the 2nd quarter (-0.13 vs. 0.04). In the 3rd quarter more than a half of the managers (57.4%) did not expect significant changes in the number of new orders compared to the 2nd quarter: the index of expected new orders makes up 0.09.

Figure 4. Fluctuation of selected single variables, raw data

The next quarters results — the 3rd and the 4th of 2009 — supported the statement about very slow speed of economic recovery in Ukraine. After the increase of domestic demand, observed in the 2nd quarter of 2009, there were no significant changes in indicators of demand in the 3rd and in the 4th
quarters. The value of the index of domestic demand remains practically at the same level as in the 3rd quarter (-0.26 in the 4th quarter and -0.25 in the 3rd one).

Thus, according to raw data of the survey, the July 2008 is turn pint when positive tendencies of economic activity in the country have been substituted by negative trend. This negative trend has been continued in October 2008 and January 2009. In that time the pessimistic assessments and expectations were dominated. In April 2009 the first positive tendencies were recorded. The results of the July 2009 and latest surveys provide with arguments for the statement about very slow speed of economic recovery in Ukraine. Comparison of the seasonal adjusted series and quantitative statistics is described below.

4.2 Correlation between “real life” official statistics and survey data

4.2.1 Singles variables

The results of the cross-correlation between quantitative data and qualitative data are encouraging. The reference quantitative time series is rate of change of value added quarter over quarter (VA1) and rate of change of value added year over year (VA2). In the analysis we assume that correlation between variables is “strong” when a correlation coefficient is equal or greater than 0.70 and correlation is “moderate” when a correlation coefficient is equal or greater than 0.50 and less than 0.70.

As it was mentioned at the beginning of paper all BTS variables as well as rate of growth of value added quarter over quarter (VA1) are seasonally adjusted by application of the additive approach for modeling the seasonal factors. As result there are two series — seasonally adjusted series (SAS) and trend-cycle components (STC). The both of them are used for correlation for each BTS variable. The rate of growth of value added year over year (VA2) is used without special seasonal decomposition.

The results of correlations (with corresponding lag or lead or without them) are presented in the Table 1 (ex past indicators), table 2 (ex ante indicators) and table 1, second part (assessment of current level of indicator). In each table there are four types of correlations:

• between BTS seasonally adjusted series (SAS) and seasonally adjusted series of growth rate of value added quarter over quarter (VA1);
• between BTS seasonally adjusted series (SAS) and series of growth rate of value added year over year (VA2);
• between trend-cycle components (STC) for BTS data and trend-cycle components (STC) for growth rate of value added quarter over quarter (VA1);
• between trend-cycle components (STC) for BTS data and the growth rate of value added year over year (VA2);

The first finding that should be emphasized is stronger correlation between BTS data and VA2 than between BTS data and VA1. It is true for the both seasonally adjusted series and trend-cycle components as well as ex past and ex ante series. For ex past variable in case of seasonally adjusted series 10 out of 21 indicators have a moderate correlation with VA1 and none of strong correlation cases is recorded. In contrast, 12 out of 21 indicators have strong correlation with VA2, moderate correlation is in 3 out of 21 cases. The same situation is observed in case of comparison of trend-cycle components (see Tables 1). For ex ante variable in case of seasonally adjusted series 6 out of 21 indicators have a moderate correlation with VA1 and there is no strong correlation. In the case but when the correlation with VA2 is analysed there are 8 “strong” and 5 “moderate” coefficients of
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correlation. For ex ante variables correlation of trend-cycle components with VA2 is stronger than they are with VA1 (see table 2).

The second finding is support suggestion that trend-cycle components correlation is higher that correlation of seasonal adjusted series. It is true for ex past and ex ante indicators. Below in this sub-chapter we are talking about trend-cycle components correlation only.

Table 1 Correlation between BTS indicators characterized performance of enterprise (ex past, current assessment) and Growth rate of value added (VA1(qoq), VA2 (yoy))

<table>
<thead>
<tr>
<th>Variable</th>
<th>Name of variable</th>
<th>SAS</th>
<th>STC</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1</td>
<td>Production</td>
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</tr>
<tr>
<td>p2</td>
<td>Sales</td>
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<td>Export</td>
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<td>Accounts payable</td>
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<td>-0.38</td>
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<td>Stocks of raw materials</td>
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<td>0.57</td>
</tr>
<tr>
<td>p7</td>
<td>Stocks of finished goods</td>
<td>0</td>
<td>0.06</td>
</tr>
<tr>
<td>p8</td>
<td>Capacity utilization</td>
<td>0</td>
<td>0.50</td>
</tr>
<tr>
<td>p9</td>
<td>Purchase price</td>
<td>0</td>
<td>0.04</td>
</tr>
<tr>
<td>p10</td>
<td>Domestic sales price</td>
<td>0</td>
<td>-0.09</td>
</tr>
<tr>
<td>p11</td>
<td>Export sales price</td>
<td>0</td>
<td>0.04</td>
</tr>
<tr>
<td>p12</td>
<td>New orders</td>
<td>0</td>
<td>0.57</td>
</tr>
<tr>
<td>p13</td>
<td>Domestic demand</td>
<td>0</td>
<td>0.43</td>
</tr>
<tr>
<td>p14</td>
<td>Foreign demand</td>
<td>0</td>
<td>0.56</td>
</tr>
<tr>
<td>p15</td>
<td>Barter</td>
<td>0</td>
<td>-0.14</td>
</tr>
<tr>
<td>p16</td>
<td>Number of workers on floor</td>
<td>0</td>
<td>0.54</td>
</tr>
<tr>
<td>p17</td>
<td>Workers on forced leave</td>
<td>0</td>
<td>-0.34</td>
</tr>
<tr>
<td>p18</td>
<td>Profitability</td>
<td>0</td>
<td>0.58</td>
</tr>
<tr>
<td>p19</td>
<td>Tax arrears</td>
<td>0</td>
<td>-0.18</td>
</tr>
<tr>
<td>p22</td>
<td>Wage arrears</td>
<td>0</td>
<td>-0.35</td>
</tr>
<tr>
<td>p23</td>
<td>Labor productivity</td>
<td>0</td>
<td>0.58</td>
</tr>
</tbody>
</table>

2. Assessments

<table>
<thead>
<tr>
<th>Variable</th>
<th>Name of variable</th>
<th>SAS</th>
<th>STC</th>
</tr>
</thead>
<tbody>
<tr>
<td>p22</td>
<td>Stocks of raw materials</td>
<td>0</td>
<td>0.20</td>
</tr>
<tr>
<td>p23</td>
<td>Stocks of finished goods</td>
<td>0</td>
<td>-0.21</td>
</tr>
<tr>
<td>p24</td>
<td>Number of workers</td>
<td>0</td>
<td>-0.11</td>
</tr>
<tr>
<td>p25</td>
<td>Capacity utilization</td>
<td>0</td>
<td>0.06</td>
</tr>
<tr>
<td>p26</td>
<td>Volume of new orders</td>
<td>0</td>
<td>0.34</td>
</tr>
</tbody>
</table>

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

Source: Own calculations
Do the Managers’ Expectations Predict Main Tendency before and during recession of Ukrainian economy?

All variables which were strong correlate with VA2 series have correlation significant at the 0.01 level. The highest correlations are recorded for variables capacity utilization sale, new orders, domestic demand, foreign demand, production, export, employment, profitability, labor productivity (all ex past and ex ante). Strong correlation with reverse sign is recorded for inter enterprise arrears, tax and wage arrears as well as part-time employment.

When we compare the cross correlation between the series which include and exude the period Q2 2008 – Q2 2009 the correlation either still at the same level or even increase. It means the period of change of the economic tendencies do not reflect negatively on correlation between real life statistics and business tendency survey data in Ukraine. And even we can say that in Ukraine during recession time the managers’ expectations and anticipation are stronger correlate with real life statistics then it was before. It should be stressed separately that the correlation with reverse sign is significant stronger for the pre-crisis and crises period (Q2 2008 – Q2 2009) than for other periods. It means that increase of such negative issues from economic point of view as arrears, decrease of working time of employees in time were good indicator coming recession.

Table 2 Correlation between BTS indicators characterized performance of enterprise (ex ante) and Growth rate of value added (VA1(qoq), VA2 (yoy))

<table>
<thead>
<tr>
<th>Variable</th>
<th>Name of variable</th>
<th>Lag/Lead</th>
<th>VA1</th>
<th>VA2</th>
<th>VA1</th>
<th>VA2</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1e</td>
<td>Production</td>
<td>+1</td>
<td>0.48</td>
<td>0.76*</td>
<td>0.50</td>
<td>0.88*</td>
</tr>
<tr>
<td>p2e</td>
<td>Sales</td>
<td>+1</td>
<td>0.51</td>
<td>0.78*</td>
<td>0.53</td>
<td>0.90*</td>
</tr>
<tr>
<td>p3e</td>
<td>Export</td>
<td>+1</td>
<td>0.16</td>
<td>0.68</td>
<td>0.39</td>
<td>0.88*</td>
</tr>
<tr>
<td>p4e</td>
<td>Accounts receivable</td>
<td>+1</td>
<td>-0.35</td>
<td>-0.75*</td>
<td>-0.36</td>
<td>-0.78*</td>
</tr>
<tr>
<td>p5e</td>
<td>Accounts payable</td>
<td>+1</td>
<td>-0.30</td>
<td>-0.60</td>
<td>-0.32</td>
<td>-0.71*</td>
</tr>
<tr>
<td>p6e</td>
<td>Stocks of raw materials</td>
<td>+1</td>
<td>0.51</td>
<td>0.58</td>
<td>0.43</td>
<td>0.74*</td>
</tr>
<tr>
<td>p7e</td>
<td>Stocks of finished goods</td>
<td>+1</td>
<td>0.29</td>
<td>0.35</td>
<td>0.31</td>
<td>0.57</td>
</tr>
<tr>
<td>p8e</td>
<td>Capacity utilization</td>
<td>+1</td>
<td>0.44</td>
<td>0.68</td>
<td>0.49</td>
<td>0.84*</td>
</tr>
<tr>
<td>p9e</td>
<td>Purchase price</td>
<td>+1</td>
<td>-0.33</td>
<td>-0.23</td>
<td>-0.38</td>
<td>-0.35</td>
</tr>
<tr>
<td>p10e</td>
<td>Domestic sales price</td>
<td>+1</td>
<td>-0.42</td>
<td>-0.25</td>
<td>-0.46</td>
<td>-0.40</td>
</tr>
<tr>
<td>p11e</td>
<td>Export sales price</td>
<td>+1</td>
<td>-0.41</td>
<td>-0.19</td>
<td>-0.42</td>
<td>-0.38</td>
</tr>
<tr>
<td>p12e</td>
<td>New orders</td>
<td>+1</td>
<td>0.57</td>
<td>0.72*</td>
<td>0.57</td>
<td>0.90*</td>
</tr>
<tr>
<td>p13e</td>
<td>Domestic demand</td>
<td>+1</td>
<td>0.48</td>
<td>0.70*</td>
<td>0.50</td>
<td>0.90*</td>
</tr>
<tr>
<td>p14e</td>
<td>Foreign demand</td>
<td>+1</td>
<td>0.46</td>
<td>0.71</td>
<td>0.51</td>
<td>0.87</td>
</tr>
<tr>
<td>p15e</td>
<td>Barter</td>
<td>+1</td>
<td>-0.17</td>
<td>-0.29</td>
<td>-0.27</td>
<td>-0.45</td>
</tr>
<tr>
<td>p16e</td>
<td>Number of workers on floor</td>
<td>+1</td>
<td>0.61</td>
<td>0.67</td>
<td>0.54</td>
<td>0.81</td>
</tr>
<tr>
<td>p17e</td>
<td>Workers on forced leave</td>
<td>+1</td>
<td>-0.52</td>
<td>-0.46</td>
<td>-0.50</td>
<td>-0.68</td>
</tr>
<tr>
<td>p18e</td>
<td>Profitability</td>
<td>+1</td>
<td>0.49</td>
<td>0.71*</td>
<td>0.49</td>
<td>0.85*</td>
</tr>
<tr>
<td>p19e</td>
<td>Tax arrears</td>
<td>+1</td>
<td>-0.31</td>
<td>-0.47</td>
<td>-0.38</td>
<td>-0.57</td>
</tr>
<tr>
<td>p20e</td>
<td>Wage arrears</td>
<td>+1</td>
<td>-0.32</td>
<td>-0.44</td>
<td>-0.39</td>
<td>-0.62</td>
</tr>
<tr>
<td>p21e</td>
<td>Labor productivity</td>
<td>+1</td>
<td>0.55</td>
<td>0.73*</td>
<td>0.54</td>
<td>0.84*</td>
</tr>
</tbody>
</table>

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

Source: IER surveys, own calculations
Cross-correlation between assessments of current level of indicator and quantitative statistic is quite lower. Only STC of "stocks of raw materials" have respectively strong correlation (0.72) with VA2. At the same time for demand indicators (stock of finished good, volume of new orders) shifting data by several quarter impacts on the correlation (see Table 3). Correlation between stock of finished good and growth rate of value is the highest with lag 3 and 4 quarter ahead. At the same time the correlation between volumes of new order is the highest after 1 and 2 quarters shift ahead.

Table 3 Correlation between current assessment and growth rate of value added

<table>
<thead>
<tr>
<th>Lag/Lead</th>
<th>Stocks of finished goods</th>
<th>Volume of new orders</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-0.01</td>
<td>0.32</td>
</tr>
<tr>
<td>+1</td>
<td>-0.23</td>
<td>0.50</td>
</tr>
<tr>
<td>+2</td>
<td>-0.34</td>
<td>0.50</td>
</tr>
<tr>
<td>+3</td>
<td>-0.37</td>
<td>0.34</td>
</tr>
<tr>
<td>+4</td>
<td>-0.37</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Source: IER Surveys, own calculations

In the Figure 5 the correlation between production, production expectation and rate of value added growth are presented. From the figure we find that the turn points (or change in tendency) for production expectations and rate of VA growth are the same. It is the 2nd quarter of 2008. The bottom point for all three variables is the 1st quarter of 2009, then up going tendency for the both survey based indicators as well as for quantitative rate of VA growth is recorded. The same picture is observed for other survey based indicators that have strong correlation with VA2 (according to data presented in Tables 1-2).

Figure 5. Production (ex past and ex ante) versus growth rate of value added
4.2.2 Variables of the 6 months horizon of forecasts: business climate and business situation at the enterprise

There are two variable with horizon of forecast 6 months in the QES. One of them is business climate index (IBCe) which is based on the answer on question about change of business climate during next 6 months\(^4\). Other is managers’ expectations about business situation at the enterprise (IBSe)\(^5\). According to Kuziakiv (2008) correlation between qualitative and quantitative data in case of 6 month expectations was quite low. But new reference series of quantitative statistics has significantly improved the correlation. And we will try to answer on the question what the fluctuation of these indicators in before and during recession.

The correlations IBCe with VA and ISBe with VA are 0.40 and 0.62 respectively. It should be stressed that the both indicators are sifted by one quarter ahead. We can see the correlation between qualitative indicator based on overall situation expectations and quantitative data is low. At the same time correlation is stronger than it was when the old references series were applied (see Kuziakiv 2008). Also important finding is the fact that before and during recession (Q2 2008 till Q4 2009) the correlations for the both indicators are higher than in other times. The chars for these indicators are presented in Appendix 1.

4.2.3 Overall assessments: overall economic situation in the country and business situation at the enterprises

There are two variable regarding overall assessments in the QES. One of them is current situation index (IBCcur) which is based on the answer on question about assessment of current economic situation in the country. Other is managers’ assessments regarding business situation at the enterprise (IBScur). Cross correlation of these variable with growth rate of value added (VA1 and VA2) are quite higher. They are respectively for IBCcur 0.63 and 0.69 and for IBScur 0.70 and 0.88 (see Appendix 1). The data is not shifted. This finding means that, the first, the indicators can be treated as coincident ones, the second, indicators based on managers’ opinions about the situation at the enterprises is stronger coincide with “real life” official statistics than those which based on opinions’ toward overall economic situation.

4.2.4 Composite indicator (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)\(^6\). In Ukraine this indicator starts to be produced since the middle of 2002.

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\(^4\) The definition of business climate in the QES is rather wide. During a special study we asked managers open-end question what they first mean 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 proxy 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.

\(^5\) Business situation at the enterprises in Ukrainian translation calls as “financial and economic situation” at the enterprise.

\(^6\) For details see: The Joint Harmonized EU Programme of Business and Consumer Surveys.
The correlation between seasonally adjusted series of ICI and growth rate of VA is 0.71 with significance at 0.01 level. The ICI is smoothed by one quarter ahead while the growth rate of VA is without smoothing. The correlation between trend cycle series for ICI and growth rate of VA is stronger and equals to 0.82. This result of correlation analysis allows stating that in Ukrainian conditions the ICI may be treat as leading indicator. Also the correlation between ICI and rate of VA growth is weaker correlation between single indicator which are part of ICI (production expectations) and quantitative series (correlation of production expectation and rate of VA growth is 0.88).

In the Figure 7 the fluctuations of ICI in comparison with growth rate of values added is shown. The second quarter of 2008 and third quarter of 2008 are points when respectively the ICI and VA2 started to break down sharply.

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

4.2.5  Share of positive/negative answers

In this paper we in the first time try is study of the role played by the single elements of balances, namely share of negative and positive answers ("bad" and "good" for variable of assessments of indicator and "decrease" and "increase" for ex-past and ex-ante changes) and answer on research question either the share percents are more consistent to the actual trend than balance.

For such comparison we were selected several indicators which characterize of different aspects of enterprises’ activities, namely production, export, demand and employment. In the Table 4 the results of cross-correlation are presented.

The main finding here is that the negative answers highly correlate with references quantitative statistic trend. In case of new order the correlation between negative answers and reference quantitative data (VA2) is higher that correlation between index (balance percentages) and quantitative data. Also we find that the coefficients of correlation for negative answers are higher than they are for positive or neutral ones. It is true for each indicators examined here. Especially the huge
difference between coefficients of correlation for positive and negative answers is recorded for new order and domestic demand. But it is interesting that for these indicators are observed respective high values of correlation between neutral answers and reference quantitative time series.

Table 4  Correlation between shares of positive/negative answers and growth rate of value added (VA2)

<table>
<thead>
<tr>
<th>Name of Indicator</th>
<th>Lag/Lead</th>
<th>Positive answer (Share of good/increase)</th>
<th>Neutral answer (Share of ‘the same”)</th>
<th>Negative answer (Share of bad/decrease)</th>
<th>Index (balance percentages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production ex ante</td>
<td>+1</td>
<td>0.69</td>
<td>0.27</td>
<td>-0.81</td>
<td>0.88</td>
</tr>
<tr>
<td>Sale ex ante</td>
<td>+1</td>
<td>0.66</td>
<td>0.44</td>
<td>-0.84</td>
<td>0.90</td>
</tr>
<tr>
<td>Export ex ante</td>
<td>+1</td>
<td>0.51</td>
<td>0.44</td>
<td>-0.73</td>
<td>0.88</td>
</tr>
<tr>
<td>New orders ex ante</td>
<td>+1</td>
<td>0.27</td>
<td>0.70</td>
<td>-0.92</td>
<td>0.90</td>
</tr>
<tr>
<td>Domestic demand ex ante</td>
<td>+1</td>
<td>0.16</td>
<td>0.82</td>
<td>-0.88</td>
<td>0.90</td>
</tr>
<tr>
<td>Number of workers ex ante</td>
<td>+1</td>
<td>0.40</td>
<td>0.40</td>
<td>-0.51</td>
<td>0.81</td>
</tr>
</tbody>
</table>

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 in time of recession in Ukraine.

2. In April 2008 the first signals about deterioration of economic situation in the manufacturing sector of Ukraine has been received. The 2nd quarter of 2008 is turn point when positive tendencies of economic activity in the country have been substituted by negative one according the both qualitative survey data and quantitative statistics data. It was recorded by single variables as well as composite indicator. The bottom point for the both type of is the 1st quarter of 2009, then up going tendency for the both survey based indicators as well as for quantitative rate of VA growth is recorded.

3. Stronger correlation between BTS data and real life official statistic is recorded in case of usage as reference series year over year quantitative indicators.

4. The highest correlations are recorded for the both type (ex past and ex ante) of such variables as capacity utilization sale, new orders, domestic demand, foreign demand, production, export, employment, profitability, labor productivity al. Strong correlation with reverse sing is recorded for inter enterprise arrears, tax and wage arrears as well as part-time employment.

5. Important finding is that before and during recession the expectations and anticipation of manages of Ukrainian manufacturing enterprises are stronger correlate with real life statistics. It is true for 3 months expectations as well as 6 months ones.

6. It should be stressed separately that the correlation with reverse sing is significant stronger for the pre-crisis and crises period (Q2 2008 – Q2 2009) than for other periods. It means
that increase of such negative issues from economic point of view as arrears, decrease of working time of employees in time were good indicator coming recession.

7. Correlation between growth rate of value added and assessment of current level of indicators which refer to demand (assessment of stock of finished good and assessment of volume of new orders) are increasing when the survey-based indicators are being shifted by several quarters ahead.

8. Correlation between variables assessing current economic situation in the country as well as current business situation at the enterprise are respective moderate and strong correlate with the quantitative statistics as a coincident indicators. Also the findings indicate that indicators based on managers’ opinions about the situation at the enterprises is stronger coincide with “real life” official statistics than those which based on opinions’ toward overall economic situation. Also important finding is the fact that before and during recession (Q2 2008 till Q4 2009) the correlations for the both type of indicators are higher than in other times.

9. For whole period of observations (1998-2009) the composite indicator has the quite less quality as leading indicator than single variable. Thus, correlation between Industrial composite indicator and growth rate of value added is 0.82 while correlation between production expectations and growth rate of value added is 0.88.

10. The share “negative” percents are consistent to the actual economic trends. In case of new order the correlation between negative answers and reference quantitative data is higher than correlation between index (balance percentages) and quantitative data.
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Do the Managers' Expectations Predict Main Tendency before and during recession of Ukrainian economy?

Appendix 1 Correlation between BTS variables (SAS, STC) and quantitative statistics (VA1, VA2)