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FIIs and Indian Stock Market: A Causality Investigation

Abstract

While the volatility associated with portfolio capital flows is well known, there is also a concern that foreign institutional investors might introduce distortions in the host country markets due to the pressure on them to secure capital gains. In this context, present chapter attempts to find out the direction of causality between foreign institutional investors (FIIs) and performance of Indian stock market. To facilitate a better understanding of the causal linkage between FII flows and contemporaneous stock market returns (BSE National Index), a period of nineteen consecutive financial years ranging from January 1992 to December 2010 is selected. Granger Causality Test has been applied to test the direction of causality.

1. Introduction

FII flows were almost non-existent until 1980s. Global capital flows were primarily characterized by syndicated bank loans in 1970s followed by FDI flows in 1980s. But a strong trend towards globalization leading to widespread liberalization and implementation of financial market reforms in many countries of the world had actually set the pace for FIIs flows during 1990s. One of the important features of globalization in the financial service industry is the increased access provided to non local investors in several major stock markets

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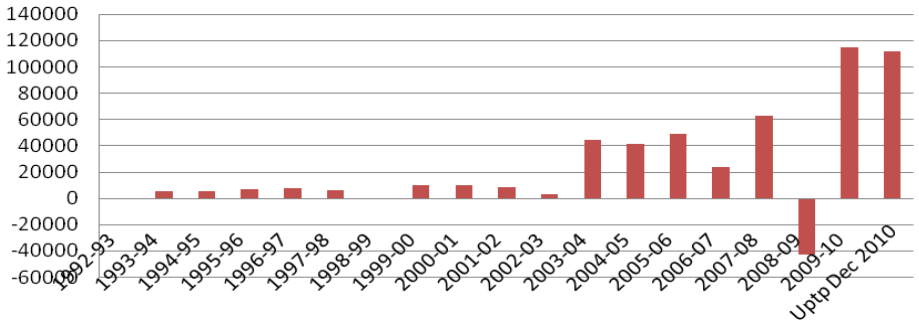
of the world. Increasingly, stock markets from emerging markets permit institutional investors to trade in their domestic markets. The post 1990s period witnessed sharp argument in flows of private foreign capital and official development finance lost its predominance in net capital flows. Most of the developing countries opened their capital markets to foreign investors either because of their inflationary pressures, widening current account deficits, and exchange depreciation; increase in foreign debt or as a result of economic policy. Positive fundamentals combined with fast growing markets have made India an attractive destination for foreign institutional investors. Portfolio investments brought in by FIIs have been the most dynamic source of capital to emerging markets in 1990s (Bekaert and Harvey, 2000). India opened up its economy and allowed Foreign Institutional Investment in September 1992[1] in its domestic stock markets[2]. This event represent landmark event since it resulted in effectively globalizing its financial services industry. Initially, pension funds, mutual funds, investment trusts, Asset Management companies, nominee companies and incorporated/institutional portfolio managers were permitted to invest directly in the Indian stock markets. Beginning 1996-97, the group was expanded to include registered university funds, endowment, foundations, charitable trusts and charitable. Till December 1998, investments were related to equity only as the Indian gilts market was opened up for FII investment in April 1998. Investments in debt were made from January 1999. Foreign Institutional Investors continued to invest large funds in the Indian securities market. For two consecutive years in 2004-05 and 2005-06, net investment in equity showed year-on-year increase of 10%. Since then, FII flows, which are basically a part of foreign portfolio investment, have been steadily growing in importance in India.

[1] The policy framework for permitting FII investment was provided under the Government of India guidelines vide Press Note dated September 14, 1992, which enjoined upon FIIs to obtain an initial registration with SEBI and also RBI's general permission under FERA. Both SEBI's registration and RBI's general permissions under FERA were to hold good for five years and were to be renewed after that period. RBI's general permission under FERA could enable the registered FII to buy, sell and realise capital gains on investments made through initial corpus remitted to India, to invest on all recognised stock exchanges through a designated bank branch, and to appoint domestic custodians for custody of investments held.

[2] The Government guidelines of 1992 also provided for eligibility conditions for registration, such as track record, professional competence, financial soundness and other relevant criteria, including registration with a regulatory organisation in the home country. The guidelines were suitably incorporated under the SEBI (FIIs) Regulations, 1995. These regulations continue to maintain the link with the government guidelines by inserting a clause to indicate that the investment by FIIs should also be subject to Government guidelines. This linkage has allowed the Government to indicate various investment limits including in specific c sectors.

Figure 1. Net FIIs Inflows in India between 1992-2010 (Rs. In Crore)



Source: Handbook of Statistics on the Indian Securities Market, SEBI.

Figure 1 shows the movement of Net FII flows in India. The above figure shows the FII flows are negative in 1998-99 because of East Asian crisis and after that FII flows started to increase and increased upto 2007-08 and again in 2008-09, there is sudden decline in FII flows due to global financial crisis. Foreign institutional investors pulled out close to Rs 50,000 crore (Rs 500 billion) at the domestic stock market in 2008-09, almost equalling the inflow in the 2007-08, FIIs' net outflows have been Rs 47,706.2 crore (Rs 477.06 billion) till March 30 in the financial year 2008-09 as against huge inflows of Rs 53,000 crore (Rs 530 billion) in the previous fiscal, according to information on the SEBI. FII flows into India remained strong since April 2009. According to data released by the SEBI, net FII inflows (debt and equity combined) in 2009-10 stood at US$30.25 billion (over Rs. 1.43 trillion)-the highest at any point in time during the last three financial years, driven by both the equity and debt segment. During the quarter ended March 2010, the FII (debt and equity combined) flows into India stood at US$ 9.26 billion driven by strong debt flows as against US$ 6.63 billion for the quarter ended December 2009 and US$7.93 billion for the quarter ended September 2009. In the previous quarters, the FII inflows were predominantly in the equity segment while in the last three months there have been significant investments in the debt segment as well. Anecdotal evidence suggests that the debt investments made by FIIs have largely been in better rated short term debt papers driven by attractive yields.

2. FIIs and Stock Market Behaviour: Empirical Evidence

FII investment as a proportion of a developing country's GDP increases substantially with liberalization as such integration of domestic financial

markets with the global markets permits free flow of capital from 'capital-rich' to 'capital-scarce' countries in pursuit of higher rate of return and increased productivity and efficiency of capital at global level. Clark and Berko (1997) emphasize the beneficial effects of allowing foreigners to trade in stock markets and outline the "base-broadening" hypothesis. The perceived advantages of base- broadening arise from an increase in the investor base and the consequent reduction in risk premium due to risk sharing. Other researchers and policy makers are more concerned about the attendant risks associated with the trading activities of foreign investors. They are particularly concerned about the herding behaviour of foreign institutions and potential destabilization of emerging stock markets.

In 1990s, several research studies have explored the cause and effect relationship between FII flows and domestic stock market returns but the results have been mixed in nature, Tesar and Werner (1994, 1995), Bhon and Tesar (1996), and Brennan and Cao (1997) have examined the estimates of aggregate international portfolio flows on a quarterly basis and found evidence of positive, contemporaneous correlation between FII inflows and stock market returns. Jo (2002) has shown empirically tested instances where FII flows induce greater volatility in markets compared to domestic investors while Bae *et. al.* (2002) has proved that stocks traded by foreign investors experience higher volatility than those in which such investors do not have much interest.

There have been attempt to explain the impact of FIIs on Indian stock market. Most of the studies generally point the positive relationship between FII investment and movement of the National Stock Exchange share private index, some also agree on bidirectional causality stating that foreign investors have the ability of playing like market makers given their volume of investment (Babu and Prabheesh in 2008; Agarwal, 1997; Chakrabarti, 2001; and Trivedi and Nair, 2003, 2006[3]). Whereas, Takeshi (2008) reported unidirectional causality from stock returns to FII flows irrelevant of the sample period in India whereas the reverse causality works only post 2003. However, impulse function shows that the FII investments in India are more stock returns driven. Perhaps the high rates of growth in recent times coupled with an increasing trend in corporate profitability have imparted buoyancy to stock markets, triggering off return chasing behaviour by the FIIs. Kumar (2001) inferred that FII flows do not respond to short-term changes or technical position of the market and they are more driven by fundamentals. The study finds that there is causality from FII to Sensex. This is in contradiction to Rai and Bhanumurthy (2003) results using

[3] Trivedi and Nair (2006) investigate the determinants of FII flows to India and the causal relationship between FII movement and indian stock market. Their study finds return and volatility in the Indian stock market emerge as principal determinants of FIIs inflows.

similar data but for a larger period. A study by Panda (2005) also shows FII investments do not affect BSE Sensex. No clear causality is found between FII and NSE Nifty. Mazumdar (2004) studied the impact of FII flow in Indian stock market focusing on liquidity and volatility aspects. Her study reveals that FII has enhanced liquidity in the Indian stock market while there is no evidence of increased volatility of equity returns. Sundaram (2009) found FII data to be I (0) i.e. it does not have a unit root at conventional level. It also gives positive unidirectional granger causality results i.e. stock returns Granger cause FII. No reverse causality is seen even after inserting a structural break in 2003, as some of the researchers suggest.

3. Methodology and Data Source

There have been quite a few episodes of volatility in the Indian stock market over past decade induced by several adverse exogenous developments like East Asian Crisis in mid-1997, imposition of economic sanctions subsequent to Pokhran Nuclear explosion in May 1998, Kargil War in June 1999, stock Market Scam of early 2001 and the Black Monday of May 17, 2004 when the market was halted for the first time in the wake of a sharp fall in the index. In the first quarter of 2008-09, market was again halted in the wake of sharp fall in the index. A sharp decline in FII flows coincided with the above events and this has prompted the Indian policy makers to announce a number of changes in FII regulations like enhancing the aggregate FII investment limit (in February 2001), permitting foreign investors to trade in exchange traded derivatives (in December 2003) etc. in order to regenerate the foreign investors' interests in the Indian capital market. So, to facilitate a better understanding of the causal linkage between FII flows and stock market movements, a period of nineteen consecutive financial years ranging from *January, 1992 to December, 2010* is selected for the empirical study.

The present chapter is based on secondary market data of monthly net FII flows (i.e., gross purchase-gross sales by foreign investors) into the Indian equity market and monthly averages of BSE National Index is a market capitalization- weighted index of equity shares of 100 companies from the 'Specified' and 'Non-specified' list of the five stock exchanges – Mumbai, Calcutta, Delhi, Ahmadabad and Madras – and its monthly values are averages of daily closing indices. Since the market for equity shares is subject to much larger fluctuations than the bond market, the emphasis is on equity market in the present study. Both the secondary data for the relevant sample period are obtained from RBI website. The following variables are used in the model.

B_t represents natural log of BSE National Index's averages of daily closing indices at month t and F_t represents FII's investment in equity at month t.

$$B_t = \text{In } (B)$$

where, B is the monthly averages of BSE national index.

It is important to note that, as mentioned earlier, BSE National Index is representative market capitalization weighted index of five major stock exchanges of the country and hence use of BSE National Index monthly returns as the measure of Indian stock market returns in the case analysis appears justified.)

4. Analytical Tools

Empirical work based on the time series data assumes that the underlying time series is stationary. According to Engle and Granger (1987) *"a time series is said to be stationary if displacement over time does not alter the characteristics of a series in a sense that probability distribution remains constant over time".* In other words, the mean and variance of the series are constant over time and the value of covariance between tow time periods depends only on the distance or lag between the two time periods and not on the actual time at which the covariance is compute.

Before going to use the Granger causality test one should test the normality and stationary properties of the variable in case of time series data. As our data is time series in nature, first one has to test normality by using Jerque Bera test and then stationarity of variables using different unit root tests.

Normality Test

The Jarque-Bera (JB) and Anderson Darling (AD) tests are used to tests whether the closing values of stock market and FII follow the normality distribution. The JB test of normality is an asymptotic or large sample test. It is also based on the OLS residuals. This test first computes the skewness and Kurtosis measures of the OLS residuals and uses the following test statistic:

$$JB = n\left[s^2/6 + {(K-3)^2}/{24}\right]$$

where n = sample size, S = skewness coefficient, and K = kurtosis coefficient. For a normally distributed variable, S=0 and K=3. Therefore, the JB test of normality is the test of Joint hypothesis that S and K are 0 and 3 respectively. Under null hypothesis that the residuals are normally distributed, Jerque and Bera showed that asymptotically (i.e., in large samples) the JB statistic follows the chi-square distribution with 2 df. If the p value of the computed chi-square statistic in an application is sufficiently low, one can reject the hypothesis that the residuals are normally distributed. But if p value is reasonably high, one does not reject the normality assumption. The Anderson-Darling normality test, known as the A^2 is used to further verify the findings of JB test.

Unit root test (Stationarity Test)

Unit root test is used to test whether the averages of BSE and FII flows are stationary or not. The researcher can test the stationarity of variable by using Augmented Dicky-Fuller (ADF) test and Phillips-Perron (PP) test. ADF is an augmented version of the Dickey–Fuller test for a larger and more complicated set of time series models. The augmented Dickey–Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejections of the hypothesis that there is a unit root at some level of confidence.

The testing procedure for the ADF test is the same as for the Dickey–Fuller test but it is applied to the model

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta \Delta y_{t-1} + \cdots + \delta_{p-1} \Delta y_{t-p+1} + \epsilon_t$$

where α is a constant, β the coefficient on a time trend and p the lag order of the autoregressive process. Imposing the constraints $\alpha = 0$ and $\beta = 0$ corresponds to modelling a random walk and using the constraint $\beta = 0$ corresponds to modelling a random walk with a drift.

By including lags of the order p (greek for 'rho') the ADF formulation allows for higher-order autoregressive processes. This means that the lag length p has to be determined when applying the test. One possible approach is to test down from high orders and examine the t-values on coefficients. An alternative approach is to examine information criteria such as the Akaike information criterion (AIC), Bayesian information criterion (BIC) or the Hannan-Quinn information criterion (HQIC). We use this alternative approach of determining the lag length based on AIC.

The unit root test is then carried out under the null hypothesis $\gamma = 0$ against the alternative hypothesis of $\gamma < 0$. Once a value for the test statistic is

computed it can be compared to the relevant critical value for the Dickey–Fuller Test.

$$DF_\tau = \frac{\hat{\gamma}}{SE(\hat{\gamma})}$$

If the test statistic is less (this test is non symmetrical so we do not consider an absolute value) than (a larger negative) the critical value, then the null hypothesis of $\gamma = 0$ is rejected and no unit root is present.

One advantages of ADF is that it corrects for higher order serial correlation by adding lagged difference term on the right hand side. One of the important assumptions of DF test is that error terms are uncorrelated, homoscedastic as well as identically and independently distributed (iid). Phillips-Perron (1998) has modified the DF test, which can be applied to situations where the above assumptions may not be valid. Another advantage of PP test is that it can also be applied in frequency domain approach, to time series analysis. The derivations of the PP test statistic is quite involved and hence not given here. The PP test has been shown to follow the same critical values as that of DF test, but has greater power to reject the null hypothesis of unit root test.

Granger causality Test

Granger causality test was developed in 1969 and popularized by Simsin 1972. According to this concept, a time series X_t granger causes another time series Y_t if series Y_t can be predicted with better accuracy by using past values of X_t rather than by not doing so, other information is being identical. If it can be shown, usually through a series of F-tests and considering AIC of lagged values of X_t (and with lagged values of Y_t also known), that those X_t values provide statistically significant information about future values of Y_t times series then X_t is said to Granger cause Y_t i.e. X_t can be used to forecast Y_t. The pre condition for applying Granger Causality test is to ascertain the stationarity of the variables in the pair. Engle and Granger (1987) show that if two non-stationary variables are co-integrated, a vector auto-regression in the first difference is unspecified. If the variables are not co-integrated; therefore, Bivariate Granger causality test is applied at the first difference of the variables. The second requirement for the Granger Causality test is to find out the appropriate lag length for each pair of variables. For this purpose, the researcher used the vector auto regression (VAR) lag order selection method available in Eviews. This technique uses six criteria namely log likelihood value (Log L) , sequential modified likelihood ratio (LR) test statistic, final prediction error(F&E), AKaike

information criterion (AIC), Schwarz information criterion(SC) and Kannan-Quin information criterion (HQ) for choosing the optimal lag length. Among these six criteria, all except the LR statistics are monotonically minimizing functions of lag length and the choice of optimum lag length is at the minimum of the respective function and is denoted as a * associated with it.

Since the time series of FII is stationary or I (0) from the unit root tests, the Granger causality test is performed as follows:

$$\Delta B_t = \alpha_1 + \beta_{11}\Delta B_{t-1} + \beta_{12}\Delta B_{t-2} + \cdots + \beta_{1n}\Delta B_{t-n} + \gamma_{11}F_{t-1} + \gamma_{12}F_{t-2} + \cdots + \gamma_{1n}F_{t-n}\varepsilon_{1t}$$

$$F_t = \alpha_2 + \beta_{21}F_{t-1} + \beta_{22}F_{t-2} + \cdots + \beta_{2n}F_{t-n} + \gamma_{21}\Delta B_{t-1} + \gamma_{22}\Delta B_{t-2} + \cdots + \beta_{1n}\Delta B_{t-n}\varepsilon_{1t}$$

where n is a suitably chosen positive integer; β_j and γ_j, j = 0, 1.....k are parameters and α's are constant; and ε_t's are disturbance terms with zero means and finite variances. (ΔB_t is the first difference at time t of BSE averages where the series in non-stationary. F_t is the FII flows at time t where the series is stationary).

Variance Decomposition

The vector auto-regression (VAR) by Sims (1980) has been estimated to capture short run causality between BSE averages and FII investment. VAR is commonly used for forecasting systems of interrelated time series and for analysing the dynamic impact of random disturbances on the system of variables. In VAR modelling the value of a variable is expressed as a linear function of the past, or lagged, values of that variable and all other variables included in the model. Thus all variables are regarded as endogenous. Variance decomposition offers a method for examining VAR system dynamics. It gives the proportion of the movements in the dependent variables that are due to their 'own' shocks, versus shocks to the other variables. A shock to the ith variable will of course directly affect that variable, but it will also be transmitted to all of the other variables in the system through the dynamic structure of VAR (Chirs Brooks, 2002). Variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR and provides information about the relative importance of each random innovation in affecting the variables in the VAR. In the present study, BVAR model has been specified in the first differences as given in following equations:

$$\Delta X_t = \alpha_1 + \sum_{j=1}^{k} (\alpha_{11}(t)\Delta X_{t-j}) + \sum_{f=1}^{k} \alpha_{12}(f)\Delta Y_{t-f} + \epsilon_{xt}$$

$$\Delta Y_t = \alpha_2 + \sum_{j=1}^{k} (\alpha_{21}(t)\Delta X_{t-j}) + \sum_{f=1}^{k} \alpha_{22}(f)\Delta Y_{t-f} + \epsilon_{yt}$$

where ε's are the stochastic error terms, called impulse response or innovations or shock in the language of VAR.

Impulse Response function

Since the individual coefficients in the estimated VAR models are often difficult to interpret, the practitioners of this technique often estimate the so-called impulse response function (IRF). The IRF traces out the response of the dependent variable in the VAR system to shocks in the error terms. So, for each variable form each equation separately, a unit shock is applied to the error, and the effects upon the VAR system over time are noted. Thus, if there are m variables in a system, total of m_2 impulse responses could be generated. In our study there are four impulse responses possible for each phase, however we have considered only two which are of our interest. In econometric literature, but impulse response functions and variance decomposition together are known as innovation accounting (Enders, 1995).

5. Empirical Analysis

As outlined in the methodology the empirical analysis of impact of FII flows on Indian stock market is conducted in the six parts:

First: The normality test is has been conducted for F_t and B_t. The Jerque Bera statistics and Anderson darling test are used for this purpose. The results are shown in Table (3 (B).1) along with descriptive statistics. The skewness coefficient, in excess of unity is taken to be fairly extreme (Chou 1969). High or low Kurtosis value indicates extreme leptokurtic or extreme platykurtic (Parkinson1987). Skewness value 0 and Kurtosis value 3 indicates that the variables are normally distributed. As per the statistics of Table 1 frequency distributions of variables are not normal.

Table 1. Descriptive Statistics of FIIs

Estimates	Time period(January 1992 to December 2010)
Mean	2031.739
Median	546.2450
Maximum	29506.91
Minimum	-13461.39
Standard deviation	5254.431
Skewness	1.926040
Kurtosis	10.18559
Jarque-Bera	631.4772
Probability	0.000000
Andersion Darling (Adj. Value)	21.36305
Probability	0.000000
Result	**Not Normal**

Source: Authors calculation using BSE National Index Data (Data has been accessed from RBI Database).

These results are further supported by Jerque-Bera (probability = 0) and Andersion Darling (probability = 0). Zero value of probability distribution indicates that the null hypothesis is rejected. Or FII flows are not normally distributed.

Table 2. Descriptive Statistics of BSE National Index

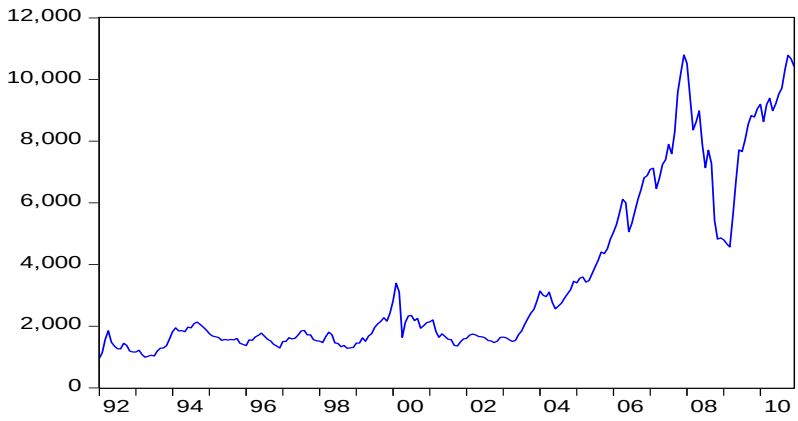
Estimates	Time period(January 1992 to December 2010)
Mean	3440.320
Median	1938.505
Maximum	10795.30
Minimum	960.1400
Standard deviation	2763.419
Skewness	1.262780
Kurtosis	3.206250
Jarque-Bera	60.99942
Probability	0.000000
Anderson Darling (Adj. Value)	23.06024
Probability	0.000000
Result	**Not Normal**

Source: Authors calculation using BSE National Index Data (Data has been accessed from RBI Database).

The results presents in table 2 shows that these results supported the by Jerque-Bera (probability = 0) and Andersion Darling (probability = 0). Zero value of probability distribution indicates that the null hypothesis is rejected. Or BSE national index averages are not normally distributed. However, BSE national index averages shows less variable than FII flows as indicated by their Standard Deviation.

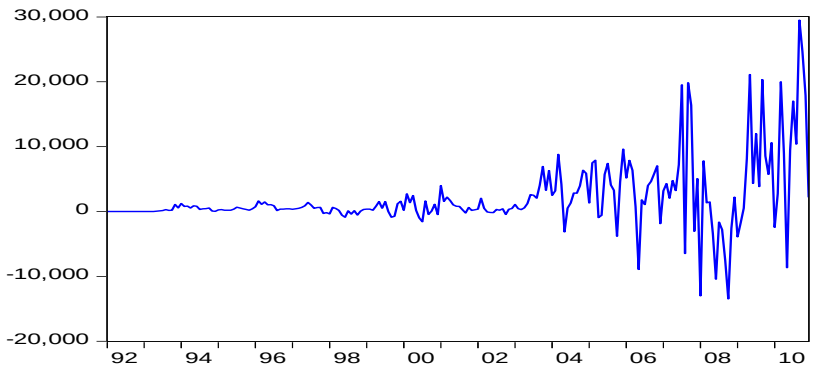
Second: Stationary test has been conducted by BSE national index averages and Net FII flows. Simplest way to check the stationarity of variables is to Plot time series graph and observed the trend in mean, variance and co-variances. A time series is said to be stationary if their mean and variance of the series are constant. BSE national Index averages seems to be trend in its mean since it has a clear cut upward movement which is the sign of non constant mean. Further, Vertical fluctuation is not the same at different portions of the series, indicating that variance is not constant. Thus, it is said that the series BSE national index averages are not stationery (Figure 2).

Figure 2. BSE National Index Averages Time Series



Source: Authors computation using BSE National Index Data (Data has been accessed from RBI Database).

Figure 3. Net FII Flows Time Series (in Rs. Crore)



Source: Authors computation using BSE National Index Data (Data has been accessed from RBI Database).

In case of Net FII flows time series (Figure 3), means and variance seems to be constant, which indicates presence of stationery in the time series. In addition to visual inspection, econometric tests are needed to decide the actual nature of time series. Or In simply, the researchers conforms the above decisions by applying Unit root tests. The results of various unit root tests namely DF, ADF and PP test are shown in table 3 and 4.

Table 3. Unit Root Test of BSE National Index Averages

Variable: BSE	At Level		At First Difference	
	t- statistics	p-value	t-statistics	p-value
Without Trend Values				
DF	0.53428	0.5937	-6.19464	0.0000
ADF	-0.09609	0.9473	-6.98863	0.0000
PP	0.053630	0.9615	-10.65834	0.0000
With Trend Values				
DF	-1.83147	0.0684	-6.42789	0.0000
ADF	-2.11103	0.5364	-7.13124	0.0000
PP	-1.66719	0.7627	-10.69348	0.0000

Source: Authors calculation using BSE National Index Data (Data has been accessed from RBI Database).

The results present in table 3 shows that the values of the different unit root test *i.e.*DF and ADF and PP values and their p- values support the results of the time series graph. It was found that BSE is non- stationery in both the cases

with trend values and without trend values. BSE is stationery when the trend is allowed only according to the Dikky Fuller test at 10% significance level but ADF and PP test does not support the view of DF test. So it is concluded that the BSE is non- stationery series at level. Therefore, we can also check the stationerity at first difference. At First difference, all the unit root tests show that the BSE is stationery in all the cases at 1% significance level. So, it was found that the BSE is stationery at their first difference.

Table 4. Unit Root Test of Net FII Flows Averages

Variable: FII	At Level		At First Difference	
	t- statistics	p-value	t-statistics	p-value
Without Trend Values				
DF	-4.14925	0.0000	-17.28878	0.0000
ADF	-4.60525	0.0020	-12.03556	0.0000
PP	-10.4613	0.0000	-69.92335	0.0001
With Trend Values				
DF	-10.61406	0.0000	-2.143656	0.0000
ADF	-10.7099	0.0000	-12.03258	0.0000
PP	-11.2578	0.0000	-71.13907	0.0001

Source: Authors calculation using FII Data (Data has been accessed from SEBI Database).

The results presents in table.5 shows that the values of different unit root test results of Net FII flows. It was found that the FII is stationery in all the cases at 1% significance level.

Third: Correlation test has been conducted between FII and BSE. Correlation test can be seen as first indication for the existence of interdependency among time series. Table 5 shows the correlation coefficients between BSE averages and FIIs investment.

Table 5. Correlation Matrix between FII and BSE

Symbol	BSE	FII
BSE	1.00000	0.43482
FII	0.43482	1.00000

Source: Authors calculation using FII and BSE Data (Data has been accessed from SEBI Database and RBI Database).

It was found that there is a moderate degree of correlation between FII flows and BSE averages (table 5). Further, it was found that the movement in the BSE averages or FII flows does not strongly influence market movement as the

coefficient of determination of the bse and FII is not high (r^2= o.1890). The correlation needed to be further verified for the direction of influence by the Granger causality test for long term movement among the returns of stock markets, by the co-integration. To perform co-integration test, time series must be non-stationary and in our findings FIIs comes out be stationary at level which rejects the applicability of co-integration test. So, we can't predict anything about long term relationship between BSE and FIIs on the basis of co-integration test. As the researcher applied Granger Causality test to find out the relationship between FII flows and BSE National Index.

Fourth*:* To capture the degree and direction of the long term correlation between BSE and FII flows, granger causality tests are conducted. For the granger causality test, the researcher needed to find out the optimum lag length by applying VAR are shown in the table 6:

Table 6. VAR Lag Order Selection Criteria

Lag	SC	HQ
0	38.53852	38.52013
1	33.97035*	33.91518
2	34.00448	33.91252
3	33.99523	33.86648
4	34.03152	33.86598*
5	34.09417	33.89185
6	34.17025	33.93114
7	34.23005	33.95416
8	34.26151	33.94884

Note: *indicates lag order selected by the criterion;

SC: Schwarz information criterion

HC: Hannan-Quinn information criterion

Source: Authors calculation.

It was found that the Vector lags order selection criteria of Schwarz information criterion (SC) i.e. (SC=1) and Hannan-Quinn information criterion (HQ) i.e. (HQ=4). It was found that the HQ is more than the SC. Therefore, the researcher used HQ for selecting the optimum lag length and for applying Granger causality test. Granger causality test statistics are shown in the table 7.

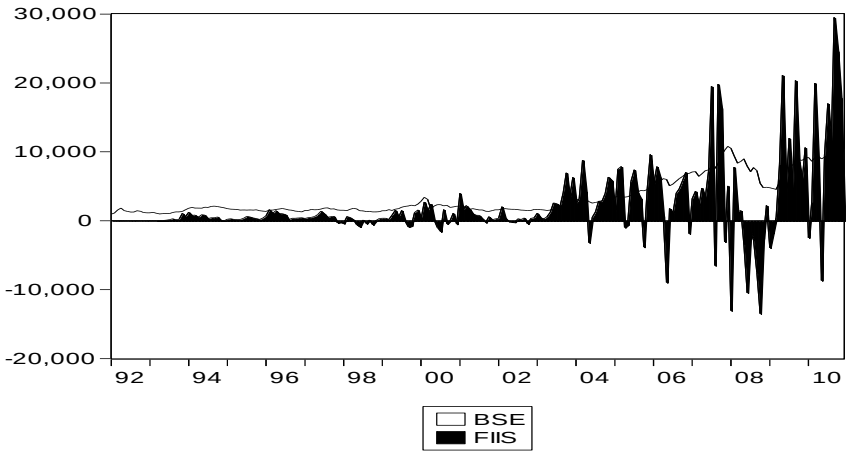
Table 7. Results of Granger Causality Tests

Null Hypothesis	F-Statistic	p-Value
FII does not granger cause BSE	6.12012	0.0001
BSE does not granger cause FIIS	2.28553	0.0613
No. of lags specified by HQ	4	4

Source: Authors calculation using FII and BSE Data (Data has been accessed from SEBI Database and RBI Database).

The results of granger causality test (present in table 7) shows that the F-statistics of FII and BSE was significant. Therefore, the null hypotheses were rejected and alternative (i.e. FII granger cause BSE and BSE granger cause FII were accepted. In other words, there is statistical evidence that any forecast about the movement of market depends on the movement of FII flows and vice-versa. It can also be shown from the following graph:

Figure 4. Movement of BSE Averages and FII Flows



Source: SEBI Database and RBI Database.

The above graph shows that if there is movement in the BSE averages then FII flows are also affected. FII flows are more volatile than BSE averages because the graph show that if the BSE is increased or decreased by one points the FII flows are moved by more than one point. BSE Averages shows frequent downward trend which causes FIIs to disinvest and this influence of BSE and FII flows are supported with the outcome that BSE granger cause FIIs and FIIs granger cause BSE.

Fifth: In the context of varying causal links of BSE with FIIs net investment, Sim's VAR were applied and short run causal links were explored

by using Variance decomposition and Impulse response functions. Variance Decomposition determines how much of the n step ahead forecast error variance of a given variable is explained by innovations to each explanatory variable. Generally it is observed that own shocks explain most of the forecast error variance of the series in a VAR. Table 8 shows the results of Variance decomposition of FII and BSE at 2, 5 and 10 periods. In the case of Bivariate modelling of BSE and FII, BSE explains 91% of its own forecast error variance while FII explains only 9% of BSE variance; but FII explains 81% of its own forecast while BSE explains only 19% of FII variance. This indicated that BSE defines FII more than FII defines BSE which conclude to the result that BSE causes FII in short run. It indicates that FII do not hesitate to pull out their money from Indian market whenever market faces downward trend.

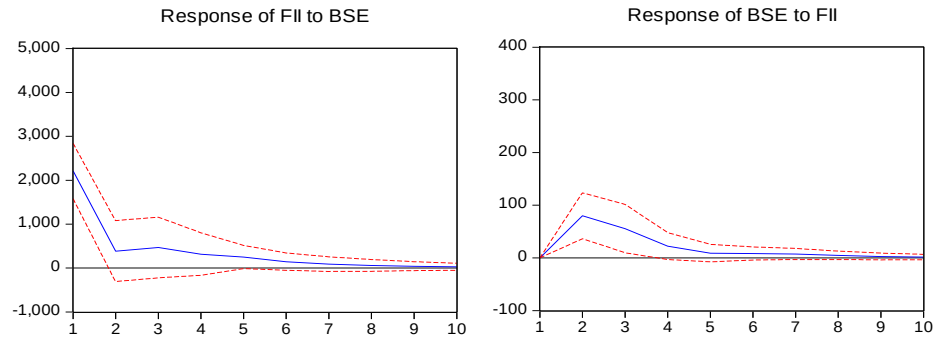
Table 8. Results of Variance Decomposition

Variance Decomposition of	Variance Periods	BSE	FII
BSE	2	94.27	5.73
	5	91.41	8.59
	10	91.30	8.70
FII	2	20.00	80.00
	5	19.18	80.82
	10	19.14	80.86

Source: Authors calculation using FII and BSE Data (Data has been accessed from SEBI Database and RBI Database).

***Sixth*:** To investigate dynamic responses further between the variables, Impulse Response of the VAR system has also been estimated. The impulse response functions can be used to produce the time path of the dependent variables in the BVAR, to shocks from all the explanatory variables. The shock should gradually die away if the system is stable. The Impulse Response functions (IFRs) as generated by the VAR model are shown in figure 5.

Figure 5. Response to Cholesky One S.D. Innovations ± 2S.E



Source: Authors calculation using FII and BSE Data (Data has been accessed from SEBI Database and RBI Database).

The response BSE to one standard deviation shock to FII is sharp and significant and dies after ten lags. Whereas response of FII to one standard deviation shock to BSE is also sharp and significant and dies after ten lags. It implies that FIIs and BSE are correlated with each other. As indicated by variance decomposition, similar pattern of causality is also observed graphically using impulse response functions. Impulse response function indicated that BVAR (Bayesian VAR) is stable.

6. Conclusion

This chapter empirically investigates the causal relationship between BSE averages and FII flows in Indian economy. The researcher also investigates the degree of interdependency between BSE averages and FII flows. First of all, normality of time series in checked. And found that the BSE averages and FII flows both are not normally distributed. After that stationarity is checked and found that FII Flows are stationery at level but BSE averages are non-stationery at level. BSE averages are stationery at their first difference. In this chapter correlation test is also applied and shows that the BSE averages and FII flows are positively correlated with each other. The correlation is further verified by the direction of influence by Granger Causality test. Granger Causality test shows that Both FII and BSE Granger cause each other. In order to find out the short term causality between two time series, variance decomposition and Impulse Response function is used. Variance decomposition and Impulse response function provide the same result as the Granger Causality test provides.

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Streszczenie

ZAGRANICZNI INWESTORZY INSTYTUCJONALNI I RYNEK AKCJI W INDIACH: BADANIA ZWIĄZKU PRZYCZYNOWEGO

Aczkolwiek brak stabilności związany z przepływami kapitału portfelowego jest dobrze znany, to istnieje również obawa, że zagraniczni inwestorzy instytucjonalni mogą wprowadzać zakłócenia na rynkach krajów przyjmujących z uwagi na wywieraną na nich presję, aby zapewniać zyski kapitałowe. W tym kontekście niniejszy rozdział próbuje poznać kierunek przyczynowości pomiędzy zagranicznymi inwestorami instytucjonalnymi (FIIs) i działaniem indyjskiej giełdy. Aby ułatwić lepsze zrozumienie związku przyczynowego między przepływami FII i mającymi miejsce w tym samym czasie wynikami giełdy papierów wartościowych (BSE National Index), wybrany został okres dziewiętnastu kolejnych lat począwszy od stycznia 1992 do grudnia 2010. Do zbadania kierunku przyczynowości zastosowano test przyczynowości Grangera.

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Innovation in Services – Theoretical Approach

Abstract

The aim of this article is to present the evolution of theoretical studies on service innovation. The author also attempts to put these different approaches to service innovation into order and to indicate the possible forms of service innovation that emerge from these researches. In further part of the article the issue of the availability of statistical data and its relevance to the possible forms of service innovation, as well as some changes that has been implemented recently in order to improve this relevance, are discussed.

1. Introduction

Services dominate advanced economies, accounting for about three quarters of their gross value added and employment and they are the only part of advanced economies to have expanded in terms of employment in recent years (see OECD or Eurostat database). What is more they have increased substantially, in terms of their importance as inputs to other sectors of the economy. But the contribution that they make to innovation and competitiveness remains largely unexamined, by analysts and politicians alike.

For a long time services have been perceived as non-innovative activities. Such a perception was a result of technological approach to innovation, deriving from manufacturing innovations, that are usually based on technological content. Unfortunatelly, it is not relevant to service innovations, as in their case non-technological aspects are of greater importance. This situation, perceived by

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some researchers as a paradox, is precisely described by Gallouj: "While services (as a sector) and the service relationship (as a mode of coordination between economic agents) are now essential characteristics of contemporary economies, innovation is another. Thus modern economies are both service economies and economies of innovation. Paradoxically, they are not regarded as economies of innovation in services, that is as economies in which service firms' innovation efforts are proportional to their contribution to the major economic aggregates. It is as if services and innovation were two parallel universes that coexist in blissful ignorance of each other" (Gallouj, 2002(a), p.xii).

However, the situation is changing, and in the light of observed changes it is not possible to ignore service firms' innovation activity any more. Many service industries have now reversed their subordinate relationship with manufacturing industry in matters of technological innovation. In other words, they produce their own technical systems, either by themselves or within a power relationship favourable to them. This is the case, for example, with automatic cash dispensers, cleaning robots and cooking and refrigeration equipment for fast-food restaurants. It also applies to certain large distribution chains that exert pressure on their suppliers and impose specifications so precise that it indeed becomes possible to speak of suppliers of technology dominated by service users. Another phenomenon is the active role played by knowledge intensive services in their clients' innovation processes (particularly those in manufacturing industry). Whether the innovations relate to organisation, strategy, products, etc., these service providers assist their clients in a variety of ways, to differing degrees and at different stages in the innovation process. It is no exaggeration, therefore, to speak of "consultant-assisted" model of innovation (Bessant and Rush, 1995, pp. 97–114; Gallouj, 2002(b), p. 151). What is more we can observe the increasing convergence and interdependence between manufacturing goods and services. In a result vertical linkages that tie together different groups of manufacturing and service are becoming a crucial factor of competitive advantage in the new economy (Windrum and Tomlinson, 1999, pp. 391–408; Di Cagno and Meliciani, 2005, pp. 149–171; Guerrieri and Meliciani, 2005, pp. 489–502; Castellacci, 2008, p. 981).

In the light of these changes, the development of a comprehensive, integrative theory, that would be relevant also to service innovation, is of great importance. On the base of such a theory it should be possible to develop some new indicators, more appropriate to measure innovation activity in services. Some adjustments in this field could already be observed (Oslo Manual 2005, CIS 2008), but they are still not sufficient. Without further ones innovation

activity in services will continue to be underestimated by researchers and by politicians.

The aim of this paper is to analyze the evolution of different approaches to the issue of service innovation, and the possibilities to evaluate the importance and dynamics of different forms of service innovation on the base of available statistics.

2. The evolution of theoretical studies on service innovation

Until the 1980s very little research was undertaken on innovation in services, or indeed on services in general. The subsequent literature on innovation in services can be identified into: **technological**[1] and **non-technological approach**. A separate category constitutes a **synthesis** or **integrative approach**.

2.1. Technological approach (Flikkema, Jansen, van der Sluis, 2007, pp. 543-545; Gallouj, 2002(a), pp. 2-18)

It focuses on technological change. Innovation in services are equated or reduced to the introduction of technical systems (material transport and processing systems and, above all, information and communication systems) into service firms and organizations. These studies are by far the oldest and most numerous, which has contributed to some extent to the overestimation of the technological dimension and to the underestimation of other aspects of innovation in services. The main argument in favour of such an approach is that: service industries are becoming increasingly technology and capital-intensive and until relatively recently they were often driven primarily by the adoption of industrial technologies.

In the literature on service innovation, the technological approach is often identified with the assimilation approach, whereas according to Tether (Tether, 2006, pp. 4-6) the assimilation approach followed the period of neglect.

[1] In the literature we can also find the term "technologist", instead of "technological" approach.

Neglect approach[2] – for a long period of time services were thought to be laggards with regard to innovation – they were assumed to be uninteresting adopters of existing technologies rather than producers of new technology. Innovation were perceived relatively narrowly, both in terms of focusing on technical advances, largely embodied in machinery, equipment and other goods (such as new drugs), and the processes involved with the development and commercial introduction of new, technologically advanced goods.

In innovation studies based on neglect approach, R&D statistics and patents are used as the main measures of innovative activity. Since service firms are often observed to do very little R&D and/or obtain very few patents (despite the large number of engineers and managers now employed in service industries), in the light of such measures of innovation activity, they are generally considered to be marginal with respect to innovation.

The development of "object-based" approaches to identifying and measuring innovations only served to reinforce the understanding that services were uninteresting with respect to the production of new technologies (Pavitt 1984, pp. 343-73; Pavitt, Robson, Townsend 1989, pp. 38-67). The object based studies focused on identifying an outcome of innovation activity – that is innovation, being an object such as i.e. a new drug or a new computer system. As services tend not to produce objects directly (although they may assist in their development), the vast majority of the identified innovations were attributed to manufacturers.

Within the scope of this type of studies the one by Pavitt should be mentioned, as it is very important and highly developed one (Pavitt 1984, p. 343-73). Pavitt built his seminal taxonomy of innovative activities on the base of a huge empirical study carried out in Great Britain (on a database of nearly 2000 significant innovation introduced there between 1945 and 1979). Using a number of criteria and characteristics (particularly sources of technology, types of users and their needs, regimes of innovation appropriation, size of firm, degree of technological diversification, etc.) he broke the economy down into four categories of firms: (1) science based firms, (2) specialized suppliers, (3) scale intensive producers and (4) supplier dominated firms. He considered the first and the second category to be producers of new technologies, the third one to be both producers and demanding users of new technologies, while the fourth

[2] Much of this neglect can be attributed to the idea which dates back to Adam Smith that it is material wealth that matters, and that it is manufacturing that 'fixes' technological advance in the form of new equipment and other goods. Smith famously described manufacturing labour as productive, and services as unproductive. Although his meaning has often been misunderstood to imply services are not valuable, the implication that 'manufacturing matters' has dominated two centuries of economic thought.

one to be passively dependent on the others for the supply of new technologies. Pavitt's taxonomy was intended to be universally applicable, but it's main shortcoming is that all services were assigned to the last category, within which firms can be characterizes as follows: they tend to be small, have no R&D function and they may have difficulty in appropriating innovation through technical means, which forces them to fall back on non-technological procedures such as branding, marketing, etc.; their clients are likely to be more conscious of price than performance and their technological trajectory obeys a logic of cost-cutting. It is obvious thus, that this taxonomy cannot include all the variety of service activities and service innovations, as well. Unfortunately, this well known study consolidated the perception of services as being uninteresting, as far as innovation activity is concerned. Now such perception is less common, but it still exists and it is a major reason why innovation in services remains under-researched (Gallouj, 2002(b), pp. 144-145).

Assimilation approach (Tether, 2006, pp. 6-8; Drejer, 2004, pp. 553-554) – in the 1980s, with the continued growth of services (and the contraction of manufacturing) in advanced economies, services were increasingly hard to ignore, and a small number of researchers set out to explore this very large part of the economy. This phase of research was essentially characterized by the perception of innovation in services as fundamentally similar to innovation in manufacturing (i.e. as the production and use of technological artefacts) and thus it was attempted to study innovation in services using the conceptual tools developed to understand (technological) innovation in manufacturing – it was an attempt to assimilate services into the wider fold of innovation research and thus it is called the assimilation approach.

As an example of such an attempt, particularly bold efforts to develop a theory of innovation in services proposed by Barras, can be seen (Barras, 1986, pp. 161-73). Through research on financial services, Barras observed that contrary to the conventional pattern of innovation through the life cycle of an industry as observed by Abernathy and Utterback (1978) – in which innovation initially focuses on developing new products (and improving quality) before a dominant design emerges, after which innovation focuses on processes (in order to seek out efficiencies to reduce costs) – in (financial) services innovation appeared to first focus on processes (with a focus on the application of ICT to improve the efficiency of back-office functions), before shifting to products (partially through learning but also through the increasing ability to customize offerings, again because of the flexibility afforded by IT systems). Thus Barras not only claimed services may follow a "reverse product cycle" in their innovation activities, but that the application of ICT had brought services into the industrial era – they begin to use an industrial technology appropriate to their

information intensive activities, and reorganize important parts of their work around this. Eventually, they become important independent innovators in their own right.

Although it was clearly based on an attempt to adapt an existing understanding of innovation to services, Barras' model was highly influential, and marked a first step towards theorizing innovation in services. However, his 'one-size-fits-all' model of innovation in services has been subject to considerable criticism, especially as Pavitt introduced his taxonomy, that had strongly suggested there were multiple patterns of innovation in manufacturing, so they should be in services, as well.

A second notable attempt to assimilate services into innovation research, using the existing concepts and tools was Miozzo and Soete's adaptation of Pavitt's taxonomy to embrace services (Soete and Miozo 2001, pp. 162). Like Pavitt, Miozzo and Soete identified different classes of technological service activities into three categories:

1. Supplier dominated sectors –such firms can be found mainly in personal services (restaurants and hotels, laundry, repair services, barber, and beauty services) and in public and social services (education, healthcare and public administration). Firms in the first subsector are generally small, and their in-house R&D, engineering capability, and in-house software expertise are weak. They appropriate less on the basis of a technological advantage than on the basis of professional skills, aesthetic design, trademarks, and advertising. On the other hand, firms in the second subsector are large organizations. Overall, supplier-dominated firms make only a minor contribution to their process technology. Most innovations come from suppliers of equipment, information, and materials.
2. Scale intensive physical networks sectors and information networks sectors – we can divide it into two subsectors:
   - Scale-intensive (or production intensive) physical networks - it involves large-scale processes with considerable division of labor, simplification of tasks, and the substitution of machines for labor. Its development is closely related to the application of modern information and communication technology, initially, at least, with the aim of reducing costs. Firms heavily dependent on scale-intensive physical networks can be found in transport and travel, wholesale trade, and distribution.
   - Information networks - it includes firms dependent on information networks(finance, insurance, and communications).

In both subsectors, while technological innovations may well originate in manufacturing firms, the nature of these innovations will be strongly determined

by service use. Such "service dependent" suppliers, in turn, might provide their large service customers with specialized knowledge and experience as a result of designing and building equipment for a variety of users, often spread across a number of service activities.

3. Science-based and specialised suppliers sectors - science-based firms are no longer confined to the handful of manufacturing sectors such as pharmaceuticals and electronics. The last couple of decades have seen the emergence of an increasing number of business services closely linked to R&D, software, and the development and application of information technologies. In all these sectors, the main sources of technology are the research, development, and software activities of firms in the sector itself.

Along similar lines, and on the base of Italian data, Evangelista classified service firms into four groups (Evangelista 2000, pp. 211-213):

1. Technology Users – they are the least innovative group, and come closest to the archetype of services as being 'supplier dominated'. These firms rely on technologies bought in from external sources, usually the manufacturing and/or IT sectors. The types of activity within this group include (amongst other things) waste, land and sea transportation; security; cleaning; legal services; travel services and retail. This category accounted for about 80% of all service firms and more than half of employment. The firms in this group tend to be small.
2. Interactive and IT Services – they also constitute a large group, accounting for around a quarter of employment in services. In these sectors, innovation is achieved through close interaction with clients, rather than through internal R&D or technological acquisition. A heavy reliance is placed on developing software and/or acquiring know-how. The activities in this classification include: advertising, banks, insurance, hotels and restaurants.
3. Science and Technology Based Services - these firms are major generators of new technological knowledge, which they then diffuse to manufacturers and other services. Their innovation activities are typically located "up-stream" at the "frontend" of the innovation and knowledge generation chain, with close interactions with public and private research institutions. The activities included here are R&D services, engineering and computer and software services. Although this group accounted for less than 5% of employment in services, it contributed to 30% of service firms' total expenditures on innovation, showing they are highly innovation intensive.
4. Technical Consultancy Services – these combine characteristics of the science and technology-based services and the interactive services. They carry out internal innovation activities but draw heavily on clients' knowledge. While all services may be said to have some problem-solving

activities of one sort or another, the technical consultants' main function is the provision of solutions to meet the specific needs of their clients.

Evangelista's work broadly supports the conceptual work of Soete and Miozzo, and argues that innovation in services broadly mirrors Pavitt's conceptualisation of innovation in manufacturing. Indeed, Evangelista concluded that innovation in services shows more similarities than differences to manufacturing – there may be differences in emphasis, but it is a case of shades of grey, not black and white. However, arguably these approaches have taken a rather narrow view of innovation – there is little attention to interaction (for example through delivery innovation, which is important in services), and the focus is still on the production of new technologies.

Gallouj (Gallouj 2002(a), p.3) proposed a bit different classification of technological studies. He distinguished three groups of them:

1. The studies that focus on the economic consequences of the introduction and expansion of (informational) technologies into service firms or industries (they are called thus impact analyses) - it is the largest group in quantitative terms;
2. The studies that draw on the evolutionary approach in order to map out innovation trajectories in services – Pavitt's taxonomy and the subsequent studies based on Pavitt's one (Soete and Miozzo, Evangelista);
3. Barras' reverse life cycle model.

2.2. Non-technological approach (Flikkema, Jansen, van der Sluis, 2007, pp. 545-547; Gallouj, 2002(a), pp. 18-25)

As Gallouj highlighted: "… (material) technology is not an inevitable component of innovation. Innovation can and frequently does take place without the use of technology (a new form of insurance policy, new financial instruments, a new area of legal expertise, a new restaurant format, etc.). This does not mean that these innovations are not or cannot be based on a material technology (computer or telecommunications systems, for example) but that they may in certain cases dispense with them. Like product innovation, process innovation can also be intangible. It can consist of methods, that is it can be like the text of a play or the screenplay for a film that defines the words, action and movements of each individual involved (consultants' procedures, or the methods employed in catering). Some of these methods might be based on technical systems (computerization of recruitment methods), while others might be embodied in tools (legal expert systems), but this is not a necessary condition for

innovation. In other words, it would be wrong to take that innovation takes place only when it is embodied in a technical system. Not to accept this leads to high underestimation of service innovative capacity, so do highly "technologist" national and international indicators of R&D and innovation that are unable to capture non-technological forms of service innovations (in fact only innovation in IT services are properly reflected in these indicators)." (Gallouj 2002(b), p. 149).

Within the scope of non-technological approach we can find the notion of demarcation/distinction approach and the notion of service based approach. It should be noted that, to some extent, they are similar, as they both focus on non-technological aspects of innovation and they attempt to indicate some forms of innovation specific for services.

Demarcation/distinction approach (Tether 2006, p. 8; Drejer 2004, pp. 554-556) – this approach came to prominence from the mid-1990s and it derived from the criticism of the assimilation approach. Much of these studies focused on organizational innovation, and innovation in knowledge based-services such as management consulting, where the role of 'hard' technologies was less prominent than in the manufacturing activities, that have been the primary focus of study by innovation researchers.

Initially, this line of research argued that services are different from manufacturing, and therefore it is inappropriate to study innovation in services by merely adapting conceptual and empirical tools developed with technology-based manufacturing, as had been done by researchers working in the assimilation tradition. Instead, it called for the development of some new conceptual and empirical tools, more sensitive to the peculiarities of services – in particular their intangibility, their high dependence on people, and high levels of interaction (Sundbo and Gallouj (Sundbo, Gallouj, 2001) outlined a number of service innovation patterns derived from work in this tradition; "physical" technologies are prominent in only a few of these). Generally, the distinction line of research tended to privilege organizational and people issues, and interactivity, rather than technologies, as the key to innovation in services. These studies represent opposite approach to conventional ones, that argued that the concept of innovation should involve at least an element of technological change and should not be extended to all organizational change, as in the long run it is primarily technological change that drives increases in productivity (Drejer, 2004, pp. 556-560).

Service based approach (Gallouj 2002(a), pp. 18-25) – in this line of research, technology is also considered to be a key element in innovation in services, but it has been noticed that innovation in services cannot be reduced to technological innovation alone. In a result, the existence of particular forms of

innovation specific for services (such as ad hoc innovation, intangible products and processes, etc.) is highlighted. Within this approach we can also find some studies that attempt to produce "local theories" of innovation more closely tailored to particular service industries.

To sum up, it should be highlighted that, with time, the increasing number of researchers from a variety of perspectives studying innovation in services recognize the importance of both technological and non-technological forms of innovation, and indeed the complementarities between them. As a result, most innovation researchers, including the 'distinction researchers', now claim to be working in synthesis (or integrative) approach, which seeks to blend traditional (technological) innovation studies with new insights gained from in-depth studies of innovation in services.

Such a shift is, to a large extent, a result of increasing convergence between goods and services. This tendency, widely recognized in the literature, enhance the necessity to build up a more integrated view of the characteristics that innovation takes in manufacturing and in service industries, and to shed new light on the relationships between these interrelated branches of the economy (Castellacci 2008, p. 982).

2.3. Synthesis or integrative approach (Gallouj, 2002(a), pp. 25-26; Drejer, 2004, p. 553; Tether, 2006, p. 9; Flikkema, Jansen, van der Sluis, 2007, pp. 547-548)

The theories in this line of research do not deny the importance of technological aspects of innovation in services, but they take into account the increasing convergence between goods and services. Manufacturing industry is gradually coming to resemble the service sector - i.e. manufacturing companies more often offer a wide range of services, accompanying the sale of manufactured goods or various forms of services now constitute the main component of many industrial goods. At the same time, a reverse trend towards the industrialization of certain services, can be observed - i.e. the formalization of service activities, particularly in large service companies. In a result, modern services and manufacturing become increasingly complex and multidimensional products, including the increasing bundling of services and manufacturing into "solutions".

The very important issue related to the process of convergence is also the notion of service relationship, understood as a mode of coordination between economic agents in both services and manufacturing. Such relationship is also a key element of modern innovation activity - one of the most striking features

of innovators in modern industries is their attempt to form networks with other innovators in order to obtain access to knowledge (Zagler 2002, pp. 343).

This convergence also means that, there are opportunities in the economics of innovation for mutual enrichment between goods and services - for example, manufacturing activities can draw inspiration from service firms in the development of interactive models of innovation and different forms of innovation, considered to be specific for services, can be applied equally to manufacturing goods. That is why the construction of a general description of innovation is essential for understanding of what the notion of innovation might encompass, in both services and manufacturing industry, and the basic forms it might take.

This research focuses on issues of organizational change, social networks, the development of 'integrated solutions' and a range of other mechanisms to support innovation in services. This shift in emphasis requires incorporation of many tools and theories from outside traditional innovation studies, including organizational behaviour, social networks, marketing, strategy and communications studies. In particular, greater attention has been placed on organizational innovation and how new organizational practices may shape the innovation process in service industries.

Finally, it should be highlighted, that now most scholars working on service innovation subscribe to this approach.

The best known example of this line of research is the **characteristics approach** by Weinstein and Gallouj (Weinstein, Gallouj, 1997, pp. 537-556). It can be called the integrative one as it encompasses both goods and services, it applies both to technological and non-technological forms of innovation and it attempts to develop a general formalization of the product (good or service). This approach is based on the study by Saviotti and Metcalfe (Saviotti, Metcalfe, 1984, pp. 141-151) - according to them, the provision of any type of "product" can be described in terms of a set of characteristics that reflect, on the one hand, the internal structure of the product in question and, on the other, its external properties, i.e. the type of service being offered to users. They divide these characteristics into three main types (vectors of characteristics):

(1) The final (or use) characteristics of the good (they call it "service characteristics") - these are the characteristics of the product seen from the point of view of the end user, e.g., in the case of a car, its size, performance, comfort, safety features, etc. In general terms they constitute a definition of the services, of the utility being performed by a given good.
(2) The "internal", technical characteristics of the good – they describe the internal characteristics of the technology, i.e., the characteristics of the various technical mechanisms used to obtain the final characteristics. In

the case of manufacturing product, these characteristics are clearly defined – in a motor car, for example, they would include the type of engine (internal combustion, petrol or diesel, electric engine), transmission, suspension and so on.

(3) Process characteristics – they relate to the methods by which the good in question is produced, and the technologies and modes of organization involved (the material used, they way in which they are processed, the forms of energy, the organization of the process, etc.). Thus, they include all the technologies (in the usual sense of the term) used in the design, production and marketing of products – in the case of the motor car, the assembly line is a process characteristics.

As far as goods are concerned, the distinction between product and process is widely accepted. The same is not true of services, as here the term "product" frequently denotes a process: a service package, a set of procedures and protocols, an "act". In a result, in the case of services it is difficult to separate technical characteristics from process characteristics, and thus it is assumed that they are one and the same thing – in other words that processes in all their tangible and intangible forms are, as it were, (partial) replacements for internal technical specifications.

According to Gallouj and Weinstein (Gallouj, Weinstein 1997, p. 540), the absence of technical specifications (in the traditional sense) does not make it impossible to extend and adapt this characteristics approach to services. However, they point out, that the technical characteristics of product (a good or a service) consist of: (1) the tangible technical characteristics (particularly of information technologies, but also of logistical technologies, chemical products, e.g. in the cleaning services, etc.) used to produce the services characteristics, and (2) the intangible technical characteristics: legal or financial expertise, mathematical instruments (economic and financial modeling, operational research methods), consultant's methods or the (adaptable) standard contract used by legal advisers, for example.

In the case of services, "technologies" involved usually take an intangible form - knowledge and skills embodied in individuals (or teams) and implemented directly when each transaction occurs, rather than in physical plant or equipment. What is more, Gallouj and Weinstein propose to add competences to the above mentioned characteristics. They distinguish two types of competences:

- All the competences mobilized by the service provider – the provision of services (i.e. of service characteristics) is generally the result of a combination of two mechanisms: the utilization of (tangible and intangible) technical characteristics that are based on competences, and the

direct mobilization of competences (i.e. without any technological mediation). It also should be noted that in the case of service activities it is possible that the provision of the service may take place only through the mobilization of knowledge and competences, without a good or a set of goods (material artefact) being supplied - such services are called "pure", "intangible" services.

- All the competences mobilized by the client – one of the major characteristics of the service provision is the client's participation, in one way or another, in the production of a service (co-production, service relationship).

To conclude, the most general and most significant representation is that the provision of a service requires both the direct implementation of knowledge and competences (embodied in individual members of both the service provider's company and the client's company) and the mobilization of "technical" factors. These factors consist of knowledge that is codified and formalized in such a way that they can be used repeatedly for the provision of similar services or of services of different kinds (depending on whether they are more or less generic or specific). They may be tangible (computer or telecommunications systems) or intangible (modeling methods, legal expertise, etc.), they may be already in existence (use of widely diffused techniques) or be designed or adapted for a specific "product".

On the base of such a representation of the product, Gallouj and Weinstein define innovation as any change affecting one or more terms of one of more vectors of characteristics (of whatever kind – technical, service or competence). These changes are brought about by a range of basic mechanisms: evolution or variation, disappearance, appearance, association, dissociation. They may be "programmed" (i.e. intentional – the product of R&D, design and innovation activity) or "emergent" (i.e. the fruit of natural learning mechanisms). On such a base they indicate six types of innovations:

1. Radical innovation – the creation of a totally new product – a new system consisting of new final and technical characteristics of a new product and a new set of competences that are necessary for a new product is developed.
2. Improvement innovation – the improvement of certain characteristics, without any change to the structure of the system.
3. Incremental innovation – the general structure of the system remains the same, but the system is changed marginally through the addition of new elements to the final or technical characteristics or through the substitution of elements. Innovations based on improvement, can take a variety of forms, and may or may not be based on technical advances in the usual

sense of the term - this may involve for example: the addition of one or two new characteristics to a certain type of product, either by directly mobilizing certain competences, or by adding new technical characteristics; the improvement of certain final characteristics or a reduction in production costs by adding or changing certain technical characteristics. This kind of innovation is very important in practice, but it is difficult to define clearly the boundary between incremental innovation and improvement innovation – i.e. to distinguish the moment at which the new characteristic is added from the one at which a simple improvement is made.

4. Ad hoc innovation – the interactive (social) construction of a solution to a particular problem posed by a given client. It is a very important form of innovation in consultancy services, where the available knowledge and experience accumulated over time are harnessed and put to work synergistically to create fresh solutions and new knowledge that changes the client's situation in a positive and original way. Ad hoc innovations are often produced jointly by the service provider and the client, they usually appear during the process of delivering the service, and frequently are not recognized as innovations until after the service has been provided – thus they are a form of non-programmed innovation, that might be described as emergent, as they arise out of unpredictable rearrangement of existing knowledge and experience.
5. Recombinative innovation – it exploits the possibilities opened up by new combinations of various final and technical characteristics, derived from an established stock of knowledge, and a given technological base or existing within a defined technological trajectory. Two forms of such innovation were highlighted in the field of services: (1) the creation of a new product by combining the characteristics of two or more existing products, (2) the creation of new products by splitting up an existing product, separating out various characteristics and turning certain elements into autonomous product.
6. Recombinative innovation has now become a fundamental mode of creating innovations – it operates particularly in informational and biotechnology industries, but also lies at the heart of the innovation and R&D mechanisms in services. It should be noted that the implementation of this innovation is based on the assumption that the "product" can be broken down into clearly identified and defined elements. In the case of manufacturing industry a product and a production system is readily divisible, but in the case of service industry it is less obvious. Thus, though recombinative innovation also occurs in different kinds of service activities, they require a greater formalization of existing activities, i.e. the

development of "standardized" products and modularization of service production (Sundbo 1994, pp. 245-266).

7. The recombinative model of innovation, particularly important now, has some important implications: there is relative lack of research in classical sense (the production of new knowledge), which results in low costs of such innovation but on the other hand it causes that traditional measures (developed by national and international institutions), based on the criteria of novelty, are not relevant within the framework of this model, and that it can be easily imitated (thus it is difficult to protect it).
8. Formalisation innovation – this model, differently from the previous ones, is not based on qualitative and quantitative variation in technical or service characteristics or competences, but rather on the "visibility" and the degree of standardization of the various characteristics. It consists of putting in place the service characteristics "into order" (specifying them, making them less hazy, making them concrete, giving them a shape) and quite often also the technical characteristics - tangible (equipment, software, etc.) or intangible (e.g. methods, organization, toolboxes). It also constitutes an attempt to clarify the correspondence between these technical and service characteristics. Thus, we can say that the formalization model often precedes the recombinative model. In many services, including knowledge-intensive ones, this formalization model constitutes a genuine "natural trajectory".

These different approaches fit neatly into what might be described as natural life cycle of theoretical concerns. The technological (neglect and assimilation) approach, as well as the demarcation approach are in the phase of relative decline, whereas the service-based approach is in its mature phase-. The integrative/synthesis approach is emerging and expanding (attempts are now being made to bring goods and services together in a unified approach to innovation).

3. The appropriateness of available statistical data to theoretical research on service innovation

It is widely known that statistical data on services are much poorer than those on manufacturing goods. This is also true in case of service innovation data. On the base of technological approach to innovation, that dominated innovation studies for a long time, indicators measuring innovation activities were developed to measure innovation based on technological change. These indicators are not able to capture innovation activities within service industries,

that usually appear in different non-technological forms (with exception of IT services). In a result, we can speak of high underestimation of innovation activity within service firms.

The main source of information on firms' innovation activities in European countries is the Community Innovation Survey[3] (CIS) (Science, technology and innovation in Europe, 2011, pp. 79-92). It is designed to monitor innovation activity and to analyze the effects of innovation on the economy (including competitiveness, employment, economic growth and trade patterns). It refers to innovation activity within both manufacturing and service industries.

The first pilot survey was run in 1993, and so far six collection rounds have been launched. CIS covers the EU Member States, candidate countries and Norway.

In the interests of comparability across countries, Eurostat, in close cooperation with the EU Member States, developed a standard core questionnaire (starting with the 2000/01 round), with an accompanying set of definitions and methodological recommendations. At each survey round improvements were made and new concepts were developed and added.

According to CIS 2008, in most analyzed countries the proportion of innovative enterprises was generally higher in manufacturing than in services (the opposite was true only in Luxembourg, Hungary and Portugal) (Science, technology and innovation in Europe, 2011, p. 85). More detailed CIS data collected in Poland, show that in Poland service industries are generally less innovative that manufacturing ones (Działalność innowacyjna przedsiębiorstw w latach 2006-2009, 2010). Such a conclusion, thus evident, may seem strange, if we take into account, that high-tech services play more important role in EU economies (including Poland) than high-tech manufacturing (referring to the number of firms, value added, employment, turnover, gross operating surplus) (Wyszkowska-Kuna, 2011) – in case of knowledge intensive services, the domination of services is much higher. This proves that innovative activity of service firms is still highly underestimated.

This underestimation of service innovation capacity has one more, very important implication – service firms running innovation activity, as being perceived as less innovative than manufacturing ones, receive less financial support from public institutions. According to the latest CIS in Poland, in years 2006-2008, only 10,4% of service companies running innovative activity received public financial support, in comparison with 21,5% in case of

[3] The legal basis for the collection of these statistics is Regulation 1450/2004 of 13 August 2004 implementing Decision 1608/2003/EC concerning the production and development of Community statistics on innovation.

manufacturing industries – in more details the share of service innovative companies that received financial support from domestic institutions accounted for 4,7%, and from the EU for 6,1%; whereas the same share for manufacturing innovative companies accounted for 10,2% and 14,6% respectively (Działalność innowacyjna przedsiębiorstw w latach 2006-2009, 2010, pp. 25-26). On the base of these data, it is possible to conclude that innovative activity among service companies still gets much less attention from institutions responsible for innovation policy not only in Poland, but also in the EU.

Another important issue is an inappropriateness of available data to different forms of innovation emerging from theoretical studies on service innovation. For example, the definition of innovation used in CIS was not relevant to the forms of innovation distinguished in the characteristics approach – the one that is regarded to be of great importance now. In the latest CIS, launched in 2009, some important changes have been introduced - on the base of the Oslo Manual 2005[4] (Oslo Manual, 2005, pp. 88-89), a wider definition of innovation was implemented, including not only product and process innovations, but also organizational and marketing ones, and a distinction was made between enterprises with technological (PP) and non-technological (NPP) innovation[5].

These four types of innovation are defined as follows (Science, technology and innovation in Europe, 2011, pp. 151-152):

A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user-friendliness or other functional characteristics.

Process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to

[4] *Oslo Manual* gives methodological guidelines and defines the concept of innovation. It should be also mentioned that CIS 2008 is based on the NACE Rev.2 classification of economic activities, in accordance with Annex IV of Commission Regulation No 973/2007, whereas the previous CIS surveys were based on NACE Rev.1.1.

[5] This was for the purposes of comparability with previous data collections, since fewer questions in the harmonized questionnaire are related to organisational and marketing innovation than to product and process innovation. However, the question on innovation expenditure was still limited to product and process innovation in order to maintain continuity with earlier versions of the CIS.

decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products.

Organisational innovation is a significant change in the enterprise's business practices (including knowledge management), workplace organisation or external relations, intended to improve the firm's innovative capacity or performance, such as the quality or efficiency of workflows. It must be the result of strategic decisions taken by management; it excludes mergers or acquisitions, even if for the first time. Organisational innovations usually involve changes to more than one part of the firm's supply chain and are less technology-dependent than process innovations.

Marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Marketing innovations are aimed at addressing customer needs better, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales. It excludes seasonal, regular and other routine changes in marketing methods.

The above mentioned changes show an increasing awareness of the importance of non-technological forms of innovation, that are common in case of services. However, the question arises about the appropriateness of this new, wider definition of innovation to the characteristics approach. To analyze this, we can try to compare four types of innovation deriving from Oslo Manual 2005 and CIS 2008 to six forms of innovation deriving from the characteristics approach. The conclusions from this analysis are as follows:

- The definition of product innovation refers to the definition of radical innovation (a new product) and improvement innovation (a significantly improved product). It is arguable, if it also refers to incremental innovation, because incremental innovation means that the system is changed marginally, through the addition of new elements to the final or technical characteristics or through the substitution of elements, whereas product innovation means significantly improved product.
- According to the characteristics approach, in case of services product and process quite often means the same, thus no distinction is made between them.
- In the light of the definition of organizational innovation, it seems possible to say it may take a form of formalization innovation –new, more formalized methods are examples of organizational changes. It is possible to say that, if organizational innovation takes a form of significant change referring to external relations, it may result in the creation of ad hoc innovation.

- In the light of the definition of marketing innovation, it is possible to say it may take a form of improvement or incremental model of innovation, and if marketing innovation is aimed at addressing customer needs better, it may also result in the creation of ad hoc innovation.
- The definition of innovation presented in Oslo Manual 2005 and CIS 2008, seems not to include the recombinative model of innovation. It is very important shortcoming of this definition, because Gallouj and Weinstein claimed it is the most important form of innovation now. What is more, recombinative model has very important implications for firms' innovative activity, i.e. the low cost of such innovation.

To sum up, we can say, that the appropriateness of this new definition of innovation to the characteristics approach is still not sufficient. In a result, on the base of available data, it is still not possible to evaluate the importance and the dynamics of innovation models deriving from the characteristics approach in the whole service industry, and within particular branches of service industry.

4. Conclusions

1. In the evolution of the studies on service innovation we can observe:
   - a shift from emphasis on the technological to non-technological aspects of service innovation – in more details it is a succeeding shift from neglect approach to assimilation one, then to demarcation and service specific ones, and finally to integrative/synthesis approach;
   - an increasing awareness that services not only use innovations created in manufacturing industries, but they are also active participants of innovation process - in some cases we can even speak of suppliers of technology (in manufacturing industries) dominated by service users.
2. The necessity to develop an integrative approach is a result of increasing convergence and inter-relevance between manufacturing goods and services, and the importance of vertical linkages between them to the competitiveness of present economies. The characteristics approach is the best known and most important study in this line of research. We should expect the development of further research based on the characteristics approach, as the theory of service innovation is still in its infancy, and a comprehensive theory relating to all products is indispensable for understandig innovation activity in modern economies.
3. Among different models of innovation distinguished in the characteristics approach, an ad hoc model is indicated as specific for

services, specially for consultancy services, whereas a recombinative model, that follows a formalization model is indicated as the most important now. It should also be noted that the formalization model (being a result of formalization process that we can observe in some service industries) reflects an increasing convergence between goods and services – with the formalization process services are becoming more similar to goods.

4. On the base of technological approach to innovation, that dominated innovation studies for a long time, indicators measuring innovation activities were developed to measure innovation based on technological change. These indicators are not able to capture innovation activities within service industries, that usually appear in different non-technological forms (with exception of IT services), which results in the high underestimation of innovation activity within service firms. This situation has very important implication - service activities are considered to be less innovative than manufacturing ones, and in a result they receive less attention not only from researchers, but also from politicians, which is reflected in lower financial support from public institutions, both in Poland and in the EU. Thus, further research to develop more appropriate indicators measuring service innovation activity are key to increase the awareness of real service innovation capacity and to enhance the attention and support it receives.
5. Recently some efforts were made to improve the situation – on the base of the third edition of Oslo Manual (2005), non-technological innovations were added as a separate category and a wider definition of innovation was implemented, including not only product and process innovations, but also organizational and marketing ones (CIS 2008). These changes show an increasing awareness of the importance of non-technological forms of innovation, that are common in case of services. However, these changes are still not sufficient. The definition of innovation used in CIS, despite some positive changes, is still not clearly relevant to different models of innovation deriving from the characteristics approach. Its main shortcoming is that it does not refer to the recombinative model of innovation, that according to the characteristics approach is considered to be the most important now. Thus, some other changes are necessary to enable the evaluation of the importance and dynamics of these different forms of innovation in the whole service industry and within particular branches of service industry.

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Streszczenie

INNOWACJE W USŁUGACH – PODEJŚCIE TEORETYCZNE

Celem artykułu jest przedstawienie ewolucji teoretycznych badań nad innowacjami w usługach. Autorka podejmuje również próbę uporządkowania różnych podejść do kwestii innowacji usługowych oraz wskazać możliwe formy tych innowacji, wyłaniające się z analizowanych badań. W dalszej części artykułu, podejmowana jest kwestia dostępności danych statystycznych oraz ich adekwatności, jeśli chodzi o możliwość zastosowania do analizy różnych form innowacji usługowych. Omawiane są również wprowadzone ostatnio zmiany, mające na celu poprawę adekwatności tych danych.

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Vulnerable Groups at Lithuanian Labour Market

Abstract

Despite the economic growth and favourable situation in national labour market in 2004-2008 in Lithuania several groups of population still had restricted access to employment. The period of economic recession has revealed sore problems of vulnerable groups in the labor market. Based on statistical data and the research the dynamics of the situation of disabled, youth and older people situation in the labor market are examined in this article as well as the main obstacles to their participation.

The increased number of the research aimed to analyse the situation of vulnerable groups in Lithuania and still persisting severe problems in national labour market stimulated to inventory recently cumulated knowledge about the groups that are at the high risk for unemployment. The research review covers studies conducted in the period between 2004 and 2010. It includes surveys carried out by competent researchers by the request of public authorities or other concerned authorities as well as doctoral dissertations. The groups of socially vulnerable people most often analysed in the labour market in Lithuania include the following: disabled, youth, and older people. The review showed that special research on labour market risk groups is the valuable search of information, whereas the shortage of statistical information has been noticed in the country. Further examination of the issues of the mechanisms to integrate and reintegrate the vulnerable groups into labour market is purposeful.

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1. Introduction

The high unemployment rate was the main distinguishing feature for Lithuanian economic and social life in 2009 – 2010. For the meantime the economic stabilization and timid signs of recovery are still not encouraging the employers to expand labour costs. The situation at Lithuanian labour market remains difficult: the number of employed population decreased, the rate of wages fell, the number of unemployed remains extremely high.

The number of employees that reached a peak in the middle of 2008 in the end of that same year was 2.8 percent lower than a year ago, and in 2009 it was 10 percent lower. The employee engaged in the domestic market-oriented activities were most affected during that time. The builders ranks has melted by almost 40 percent., the sectors of domestic trade, accommodation and catering services, and mining and quarrying sector that is closely related to the construction lost about 17 percent. of employee.

Drastic economic downturn in Baltic states led to an unprecedented growth in unemployment. Jump in the unemployment rate in Lithuania in 2009 and 2010, was originally one of the largest in the European Union. The incidence of corporate bankruptcy and the extended cost reduction process in the rest of the economy contributed to greatly increase of the number of people unable to find the jobs. The Labour Force Survey carried out by Department of Statistics shows that the number of unemployed reached almost 225 thousands in 2009 and it was 2.4 times more than in 2008. In 2010 the number of unemployed people in Lithuania was 291 thousand.

The high unemployment rate and perspectives of slow economic growth stimulate people to look for work abroad. The data from variety of recruitment agencies shows that the number of people interested in working abroad the last year increased by three times. Such a mass phenomenon could have a positive influence to the unemployment rate, however, it causes a number of undesirable consequences: population aging, lower budget revenue, sluggish innovations, etc.

Given the pace of economic recovery and future growth prospects, as well as in the context of demographic situation, more careful examination of available local manpower resources is needed. In order to increase the inclusiveness of Lithuanian labour market the efforts to minimize the barriers for labour market access for vulnerable groups should be taken.

2. National economic context and the situation of vulnerable groups in labour market

Together with unfavourable demographic situation in Lithuania, the rapid growth of unemployment during economic recession caused the decrease in the number of employed population.

Table 1. Core labour market indicators

	2004	2005	2006	2007	2008	2009	2010
The total number of employed, thous.	1436.3	1473.9	1499.0	1534.2	1 520.0	1415.9	1343.7
Employment rate, total (population aged 15-64) percent	61.1	62.6	63.6	64.9	64.3	60.1	57.8
The total number of unemployed, thous.	184.4	132.9	89.3	69.0	94.3	225.1	291.1
Unemployment rate, total, percent.	11.4	8.3	5.6	4.3	5.8	13.7	17.8

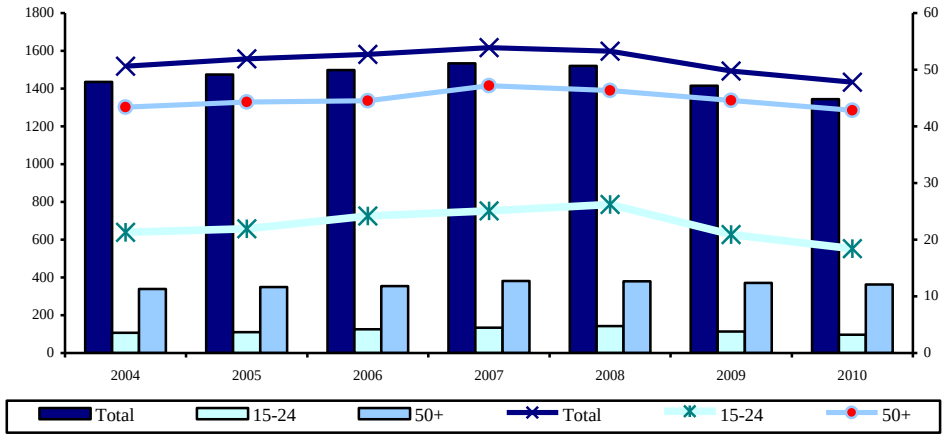
Source: Department of Statistics.

According to data from Lithuanian labour exchange in the beginning of 2010 there were 311 thousands of officially registered unemployed people. Since 2008 the proportion of unemployed men exceeds the share of unemployed women. Analysing the data from public employment services the sharp growth of number of unemployed people without vocational education and those without work experience was noticed since the beginning of economic recession.

The young people were mostly affected by decrease in job supply. The other group of population that faced severe problems in labour market was people in “before retirement” age. Though the participation rate of people above 65 was not high, it decreased even more after 2008.

Total employment rate (15-64) in Lithuania in 2010 was 57.8 % and was lower than in 2004. The youth employment rate dropped from 27%to 19% since 2008.

Graph 1. Core employment indicators by age groups

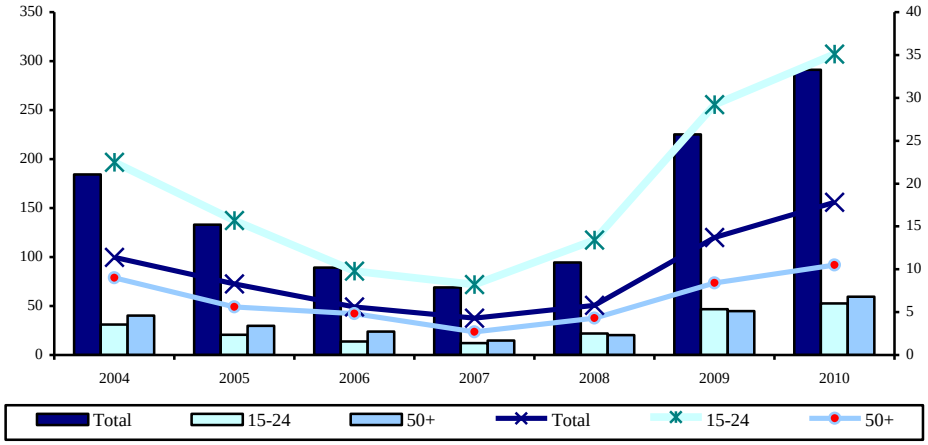


Employed people, thous. **Employment rate, %.**

Source: Department of Statistics.

The total unemployment rate rose up to 18% in 2010, while the youth (15-24) unemployment rate reached 35%. Despite the fact that unemployment rate of population older than 50 is lower than average, the lost of job for people in this age usually means drop into long-term unemployment.

Graph 2. Core unemployment indicators by age groups



Unemployed people, thousands **Unemployment rate,%.**

Source: Department of Statistics.

In Lithuania, the problems and opportunities of people vulnerable in the labour market have been explored into quite intensively. The increasing number of research of the situation of different risk groups in the labour market is supposed to be indirectly conditioned by Lithuania's obligations assumed upon its accession to the EU to contribute to the implementation of EU employment strategy objectives.

Researchers exploring into the problems of vulnerable groups in the labour market usually identify the following target groups: women, youth, older people and long-term unemployed people (Matiušaitytė, 2001) as well as specific groups of the unemployed such as older unemployed, disabled persons, people without basic education (Gruževskis et al., 2006b). Analysis of the research conducted in 2004-2010 suggests that groups of socially vulnerable people most often analysed in the labour market include the following:

(a) disabled,
(b) youth,
(c) older people.

3. Key research findings

3.1. The disabled

Analysis of the labour market of the disabled from the supply perspectives (Skučienė and Šumskaitė, 2005) leads to the identification of the following facts: working-aged disabled persons account for slightly more than a half of the total number of the disabled; persons with severe disabilities make some 10% of the total number of the disabled; two thirds of the disabled are urban residents; rural unemployment of the disabled is higher; most of working-age disabled persons are unskilled, one fourth of them have no vocational training and one tenth – no education at all (conclusions are based on the 2001 population census data and 2004 data of the Ministry of Social Security and Labour, Statistics Lithuania and Lithuanian Labour Exchange).

A complicated situation of the disabled is also evidenced by later research. Analysis of situation in labour market of people with employment difficulties and measures to improve their employability (Gruževskis et al., 2006b) suggests that as few as some 15% (28–29 thousand) of the disabled participate in the labour market, of which some 5% with a status of the unemployed. According to the Labour Exchange data, it is incomparably more

difficult for disabled persons to get employed, as compared to persons without disabilities: disabled individuals who find jobs account for as few as 2% of total registered unemployed individuals.

Rates of participation of the disabled in vocational training and reskilling programmes do not reflect high activity. Disabled women more actively participate in vocational training and reskilling programmes compared to disabled men. In addition, women participation has remained quite stable for a number of years, while men demonstrate varying rates. Women are also more active in visiting day centres (DC), as compared to men, though the number of both of them in DC activities has been growing.

Though being on quite a low level, social services to the disabled (provision of compensatory techniques, translations into sign language, adaptation of housing and environment) that are likely to contribute to better employability are constantly growing. Supplies of the aforementioned services to rural disabled people are lower compared to the urban disabled.

According to the disabled people themselves (Skučienė and Šumskaitė, 2005), the main obstacles preventing them from participation in the labour market are as follows: physical health, negative employer's attitude towards disabled people and low wages. In addition, disabled people are dissatisfied with insufficient attention paid by the labour exchange to employment of the disabled, limited mobility of the disabled and environment not adjusted to the disabled. Findings of interviews with disabled people suggest that the following measures would contribute to ensuring better participation of the disabled in the labour market: application of more flexible labour organisation forms, provision of more opportunities for upgrading of skills. A problem of workplace adjustments is faced by every tenth interviewed disabled individual. Likewise, there are impediments to business development of the disabled: insufficient information on business start-up; low level of vocational training among disabled people; insufficient professional knowledge to start business; insufficient starting-up capital; other obstacles.

Activities of social enterprises are underdeveloped in Lithuania. Žalimienė L. and Bagdonas A. recommend the following trends of the development of social enterprises: wider involvement of other social groups in addition to the disabled (usually only disabled people are employed in social enterprises; likewise, low involvement of mentally disabled people is observed); activities of social enterprises should be developed not only in large cities, but also in other territories of the country; it is reasonable to expand types of corporate activities; it is necessary to ensure economic stability of social enterprises (Žalimienė and Bagdonas, 2007).

Disabled people constitute one of regularly researched groups in the context of analysis of ALMP measures. A survey conducted in 2007 suggested that despite pessimistically seen employment opportunities, the disabled target group demonstrated the best post-ALMP employment results compared to all other vulnerable groups participating in these measures (Okunevičiūtė Neverauskienė et al. 2007a).

More serious disability and resultant lower capacity for work (0-40%) still represent a critical obstacle to labour market integration of the disabled. Disabled people with higher-degree capacity for work (40-55%) easier anchor in the labour market. Basing on survey findings (Okunevičiūtė Neverauskienė et al. 2008a), persons with lower-degree capacity for work are much more passive in the measures offered by the labour market. However, for those who decide to participate, the ALMP measures help retaining contacts with the labour market and society. Involvement of project participants in the measure definitely improves their psychological state and increases their self-confidence. The survey demonstrated that employers, who participated in the measures, notably improved their attitude towards disabled employees; previously sceptic opinion of employers as to employment of the disabled started disappearing. This fact evidences that projects of such a nature contribute to anti-discrimination approach vis-à-vis disabled people. Application of flexible forms of employment in placing the project participants for part-time employment is also an important condition for successful employment of the disabled.

The above-described research results could be supplemented with the below insights into the issues of labour market integration of the disabled. The research aimed at individual groups of the disabled (by the type of disability), as conducted in Lithuania:

Research on integration of people with hearing disabilities in to labour market (Bikmanienė et.al. 2007a) suggests that prevailing difficulties faced by people with hearing impairments in the labour market are communication-related problems. Insufficiently adequate training and workplaces not adapted to the deaf also constitute important obstacles to labour market integration of the deaf.

Employers are critical, usually negative, about labour market integration opportunities for people with mental disabilities. This implicates that fear and lack of self-confidence enhance stigma and discrimination of people with mental disabilities. Reasons of unemployment, as identified during the research, are similar (negative attitudes of the society, insufficient support from the State and public authorities, absence of mediators, etc.) (Veniūtė 2007).

As it was mentioned before, anchoring of the disabled in the labour market is badly impeded by their insufficient education and vocational training.

A research carried out by the Lithuanian Student Union (LSU), "Students with disabilities at Lithuanian universities" (Lithuanian Student Union, 2009) shows a prevailing trend of improvement in the situation of students with disabilities at universities, but the pace of such improvement could be faster. In 2010 the number of disabled students was growing slower in Lithuania as compared to the last year; Lithuanian universities remain undiscovered by foreign students with disabilities; insufficient funds are identified as the main obstacle to improving conditions for the disabled.

3.2. Youth

Youth problems and needs in relation to labour market integration appear to be best explored. An extensive study of assessment of the consequences of unemployment in Lithuanian youth was carried out by Dr. L. Okunevičiūtė-Neverauskienė in her doctoral dissertation *Assessment of the Socioeconomic Consequences of Youth Unemployment and Reduction Thereof* (Okunevičiūtė-Neverauskienė, 2006). The doctoral dissertation substantiated the existence of a close connection between the overall employment level and employment in the youth age group. The research demonstrated that youth employment was falling in a line with decreasing overall employment in 1997–2005. However, a more detail analysis of statistical data revealed that changes in the labour market had very different impact on different demographic groups – decrease in employment *most of all manifested* in people attributed to youth age group.

In addition, estimates suggest that economic loss caused by decreasing employment was also influenced by increasing *youth emigration*. In 1997–2005, the share of non-gained GDP as a result of the migration of the Lithuanian population increased from 3.5% to 7.1%, including increase in the youth group from 4.0% to 9.1%. Therefore, migration with predominance of younger individuals is an important factor slowing down economic growth in Lithuania. Findings of the research allow for analysis of broader social consequences of unemployment: 68.6% of the respondents pointed out youth crime to be a consequence of living conditions and as many as 72.8% supported the opinion that employment is the main factor reducing youth crimes.

The research conducted within the framework of the doctoral dissertation suggests that youth unemployment is a result of insufficiently efficient education, vocational training (in its broad sense), social security, labour market and economic policies as a whole. The paper argues that ensuring systematic and complex decisions is the most important thing in tackling youth unemployment problems in terms of both improving labour potential building and youth

employment measures. A flexible complex youth unemployment prevention and minimisation system should start at comprehensive schools and end up with a variety of tax privileges to employers placing young people from relevant groups.

The conclusions above are also supported and supplemented by other research carried out in the country. Sociological survey of the youth situation, as conducted in 2005, revealed quite complicated situation of youth in the Lithuanian labour market. 36% of the respondents were employed during the survey; most of unemployed young people said they were studying. Most of the employed said they were satisfied with the job; most of the respondents were employed on a full-time basis. The respondents were employed in jobs that both match and don't match their professional qualifications (36% and 39% (!) respectively). 22% of the employed respondents didn't have any qualifications at all. Most of the respondents said they work under employment contracts and 10% indicated having their own business. (Spinter tyrimai, 2005).

Exploring into particularly employment-vulnerable youth groups aged 15-29 (convicted without the sentence of imprisonment; persons treated at addiction rehabilitation centres; young dropouts), much attention is paid to vocational training and practical work experience of the respondents, as these factors play an important role in the situation of individuals in the labour market (Okunevičiūtė-Neverauskienė and Moskvina, 2008). The survey disclosed that most of the respondents didn't have vocational training and as many as 44% of them didn't have secondary education. Despite poor education, majority of the respondents declared having at least some experience of self-employment or work under employment contracts.

Inadequate vocational training, dissatisfaction with offered wage and insufficient work experience are primary factors determining unfavourable situation of youth in the labour market. Better competitive opportunities of youth in the labour market are guaranteed by higher-level education (Okunevičiūtė-Neverauskienė and Moskvina, 2008; Okunevičiūtė-Neverauskienė et al., 2007b).

Findings of the analysis of the characteristics and problems of unemployed youth target groups in relation to labour market integration (Okunevičiūtė-Neverauskienė and Moskvina, 2008) once again reiterate a determining role of vocational training and work experience in employment efforts. However, there are many other subjective factors impeding the start-up or resuming of employment. These include the lack of general competences and social skills, addictions, tendency to deviant behaviour, insufficient awareness of labour market opportunities. It is supposed that under favourable conditions in the labour market the elimination and prevention of the mentioned obstacles through combined efforts of labour market authorities and social partners (non-

governmental sector first of all) will effectively contribute to better economic activity of young individuals.

Youth is a common target group in research aimed at assessing the need for labour force. Particular emphasis is placed on a detail analysis of employers' requirements raised for the competences of present and future employees. Personal attributes play an important role for employers when admitting young individuals without vocational training (Šileika et.al., 2005). A survey of employers' attitudes conducted in 2007 (Rosinaitė et.al., 2007) also reveals the importance of general competences for labour market integration. According to employers, general competences are one of the most important factors determining successful employment.

The above-described surveys demonstrate that inadequate vocational training is the main obstacle to participation in the labour market faced by young individuals. A share of children and youth absent from the education system is not shrinking. Lithuanian prevention policy against early dropouts is aimed at children under 16, as this age is related to the obligatory learning age limit. There are quite many State's interventions foreseen to tackle the problems of early dropout of the education system. However, these interventions are not consistently integrated into a system. The reasons of early dropout are complex and relate to individual situations of a person. Therefore, for the prevention policy to be effective it is not enough to apply measures relating to the improvement of education service delivery only; it is necessary to combine them with other policies such as social, employment, crime prevention and other policies (Institute of Public Policy and Management, 2007).

3.3. Older people

The first research on the transitioning from employment to retirement was conducted by the Statistics Lithuania in the 2nd quarter 2006 (Ambrozaitienė, 2007) and covered interviews with people from 50 to 69 years of age. 2.3 thousand individuals aged 50 to 69 were interviewed during the survey. Most of the respondents (53%) were not able to say what age they plan to retire. Every third employed individual planned to retire at age of 60–64. About 10% (34 thousand) of employees planned to work until they reached 65 or as long as possible; most of them were males (60%). The survey helped to obtain information on the willingness of employed and unemployed people of this age to continue working. More than a half of individuals of the above-mentioned age would continue employment, if working conditions were better. Some 70% of the respondents would continue employment, if there were opportunities to

improve their qualifications. 52% of them would continue employment, if more flexible working hours were offered and 51% would stay longer in employment, if work and health care conditions were improved.

Data of the survey of the Statistics Lithuania shows quite high employment motivation of older people. This motivation could be even more enhanced by better vocational training opportunities (qualification improvement opportunities), wider range of available atypical forms of employment and workplace adjustments to the changed physical possibilities of older people.

The situation looks different in case of older people registered with the labour exchange. Analysis of situation in labour market of people with employment difficulties and measures to improve their employability (Gruževskis et al., 2006b) suggests that current older unemployed people registered with the labour exchange do not constitute a big reserve likely to supplement the labour market later (at pension age). The analysis was based on a sociological survey of unemployed older people (55+) registered with the labour exchange. It was observed that it is quite difficult for older unemployed people (55+) to engage in active occupational activities. The analysis of distribution of the respondents by vocational training showed that as many as 47% of the respondents had had no professional qualifications and 53% of them had acquired vocational training. Changing industrial conditions, new technologies devalue earlier acquired education diplomas and urge to acquire new professions or qualifications. It is therefore necessary to develop continuing learning opportunities for older people, to promote vocational and territorial mobility, and to assist in acquiring new and marketable qualifications or professions.

Older people registered with the labour exchange seem to represent a stratum of the least-endowed people in Lithuania. They have poor qualifications and therefore are often offered very low wages by employers. In addition, approximately every second older individual get registered with the territorial labour exchange for reasons other than job search. This is a fact of great concern. Vocational training/reskilling motivation of these people is low too. The research data demonstrate that employment of older people is also restricted by unadjusted workplaces, frequent non-compliance with occupational safety and health requirements, insufficient application of flexible forms of labour organisation. Therefore, a special emphasis should be placed on the role of social partnering in delivery of employment services to older people (55+) (Gruževskis et al., 2006b).

We can conclude that motivation of older customers of labour exchanges is poor – many of them look forward to finishing their occupational career as soon as possible and do not plan to continue participation in the labour market at

pension age. In order to enhance labour market integration of older people, it is important to create opportunities for retired individuals to continue employment without any interruption, as their employment motivation falls down later (Gruževskis et al., 2006b). This conclusion is indirectly supported by findings of the survey on the needs of older Lithuanian residents in the fields of employment, education and culture (Gruževskis et.al., 2006a) suggesting that 89% of the respondent seniors are unemployed. It's worth noting that most of the interviewed unemployed individuals at pension age were satisfied about it (61%) and only14% of them said they were not satisfied about being unemployed. The respondents' answers lead to a presumption that there is a small portion of seniors (~15%) potentially ready to return to the labour market. Accordingly, employment motivation is quite low in older people. Education and training services are relevant for older people (the survey covered 2,000 people aged 60+), but they are little interested in labour market integration opportunities (Gruževskis et al. 2006a).

Older people also represent one of the least post-ALMP (active labour market policy) employed groups of people. As we can see from the evaluation of the effectiveness of active labour market policy measures (Okunevičiūtė-Neverauskienė et.al., 2007a), lower employment after Lithuanian Labour Exchange ALMP measures (supported employment, aided creation of jobs), as compared to 50+ individuals, is seen only in the long-term unemployed. It's worth noting that the mentioned two attributes of support for employment are characteristic at the same time for a big portion of ALMP participants, and this even more aggravates the process of labour market integration for them. The survey also demonstrates that older people especially underrate their opportunities in the labour market (Okunevičiūtė-Neverauskienė et.al. 2007a).

4. Conclusions

Employment situation of vulnerable groups reflects rather poor level of inclusiveness of the Lithuanian labor market. The increased demand for labor during the economic growth facilitated participation of vulnerable groups only partially, and the economic downturn showed that those groups are least able to compete for jobs. The conducted research obviously demonstrated a complex character of problems faced by persons in risk groups in the labour market. The research disclosed the lack of institutional cooperation, thus opening wide opportunities for analysis in the area of management and public policy sciences. There are grounds to suppose that supraindividual factors have considerably bigger effects on the labour market situation of risk groups than it is currently

believed. The structural changes of national economy suggest that labour supply and demand balance in Lithuanian labour market will be uneven. Emigration process and shortcomings of national education and training system could be indicated as the main reasons for the lack of qualified labour force. Also the long term unemployment will hamper the process of adjustment.

Results of various measures used for the evaluation of social projects constitute an important source of qualitative information, but it is necessary to create a reliable and expeditious monitoring system for persons in risk groups with the view to more objective nationwide evaluation of the situation. For example, for the analysis of the trends of dynamics of labour market situation of the disabled, it is important to rely on statistical data. However, relevant information on the situation of this risk group is badly missing. It's worth noting that evaluation of the labour market situation, as provided by the Statistics Lithuania in the 2006 review of social integration of the disabled on 27 July 2007, is confined to labour exchange data only. There are no other sources of information as to unemployment of disabled people, while employment data is not available at all. In such a situation, every special research dealing with the problems of labour market integration of the disabled is a source of valuable information. It's worth noting that, in a rapidly changing social and economic space, there is bad shortage of expeditious information describing nationwide labour market situation of persons in all risk groups (not only that of the disabled).

Despite sufficiently analysed reasons of unemployment of different groups vulnerable in the labour market, there is a lack of more in-depth information to enable development of more effective unemployment prevention mechanisms. While admitting that vocational training is of exceptional importance for the situation and employment perspectives of people facing difficulties in the labour market, researchers underemphasise the process of vocational training itself. Likewise, it's worth noting that monitoring of participation of vulnerable groups in education and training is actually absent at all. Scarce and fragmentary data suggests poor participation of disabled, older people and other persons in risk groups in the process of lifelong learning.

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Streszczenie

GRUPY PROBLEMOWE NA LITEWSKIM RYNKU PRACY

Pomimo wzrostu gospodarczego i pomyślnej sytuacji na litewskim rynku pracy w latach 2004-2008 kilka grup społecznych nadal miało ograniczony dostęp do zatrudnienia. Okres recesji uwydatnił kolejne problemy osób należących do grup zwiększonego ryzyka. W niniejszym artykule dokonano analizy sytuacji osób niepełnosprawnych, młodych i starszych na rynku pracy oraz głównych przeszkód dla ich aktywności zawodowej w oparciu o dane statystyczne oraz wyniki innych badań.

Zwiększona liczba opracowań, których celem jest analiza sytuacji grup zwiększonego ryzyka na Litwie oraz utrzymujące się problemy na narodowym rynku pracy zachęcają do podjęcia próby zestawienia najnowszej wiedzy dotyczącej osób o wysokim prawdopodobieństwie bezrobocia. Przegląd badań obejmuje prace powstałe w okresie pomiędzy rokiem 2004 a 2010. Analizie poddano zarówno opracowania przygotowane przez specjalistów na zlecenie władz publicznych i innych właściwych podmiotów, jak również te powstałe w ramach rozpraw doktorskich. Do grup znajdujących się w szczególnej sytuacji na rynku pracy, które były najczęściej analizowane na Litwie, zaliczyć możemy: osoby niepełnosprawne, młode i starsze.

Przegląd wykazał, iż badania ukierunkowane na ocenę sytuacji grup problemowych są cennym źródłem informacji, istnieje natomiast niedobór danych statystycznych w tym zakresie. Wskazana jest dalsza analiza mechanizmów umożliwiających integrację i reintegrację grup problemowych.

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European Works Councils Experiences

Abstract

In September, 2011 there was 15th anniversary of the implementation of the first EU directive creating European Works Councils (EWCs). This is also the year when the new version of the directive was put in force, i.e. Directive 2009/38/EC. EWCs are a form of indirect employee participation on European level which guarantees workers the right to information and consultation. The employees' representatives of all undertakings of transnational company were given the opportunity to voice their opinion about the decisions to be made by central management of the company. In this article three major topics are discussed: the role of European Works Councils in EU countries, the range of these institutions of employee participation on European level and changes in EWCs' functioning introduced by the new EWC directive. The main aim of the paper is to present diverse patterns of these institutions as well as to attempt the evaluation of EWCs effectiveness and their influence on the system of industrial relations in Europe.

1. Introduction

EWCs meant as a base to build common European identity among employees are an object of heated discussion in academic and trade unions circles. There are two contrary views in this debate. According to the pessimistic one, EWCs are neither "European" nor "councils". In suggesting that they are not "European", the opinion is underlined that EWCs are too heavily "coloured"

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by the national systems of industrial relations of the countries where the headquarters of transnational companies are located. Taking into consideration the second charge that EWCs are not works councils in fact, statutory weakness of these institutions is underlined. This is because the management have not real consultations with EWCs or do not ask EWCs' opinion before taking important decisions (Marginson, Sisson 2004, pp. 229-230). According to the optimistic view, EWCs promote the international union of employee communication and cooperation and can gradually develop from weak and mostly symbolic information institutions towards creating the European collective identity (*European Works Councils Experience…* 2006, p. 4).

The adoption of the directive establishing EWCs by the Council of the European Community on 22 September, 1994 was then a kind of breakthrough in the field of the development of European industrial relations. It was a great success, now still under-used by some EWCs. Although EWCs have limited influence on the operation of transnational companies, they are definitely highly profitable for both employees and trade unions as well as for the plants of transnational companies. The main aim of the paper is to present diverse patterns of these institutions as well as to attempt the evaluation of EWCs effectiveness. Section 2 shows long and painful process of creating the EWC directive, lasting over 20 years. Basic objectives of the directive as well as its main regulations have been presented in section 3. Section 4 outlines the range of EWCs and pace of their establishing since the directive adoption. Four basic types of EWCs and their roles in transnational companies are discussed in section 5. Fundamental changes that the new directive introduced, concerning the scheme of EWCs creating and operating, were listed in section 6. Last section provides the summary and final remarks.

2. Difficult process of creating EWCs Directive

The process of creating EWCs Directive was hard and long-lasting. It started in 1970s when the first version of the statute of the European Company was prepared. As early as then the necessity to include a social aspect in the integration of European economies was noticed. However, discrepancies concerning employee representation in supervisory bodies of such a company effected in restraint of the preparations for over 20 years.

The project of so called Vredeling directives dated 1983 was an important stage in the process of regulating standards of employee representation rights to information and consultation on European level. However, the document was highly controversial due to the fact that it defined employers' duties in

transnational companies very rigidly and precisely. There were two types of the duty to information: simple and detailed. The simple one was designed to be implemented in the form of detailed statements presented at least once a year by the management of the parent company to the management of the final company in such matters as financial condition of the company, its structure, employment and investments. The detailed duty was adopted each time the management of the parent company wanted to take decision having serious consequences to the staff of the final company. Such circumstances appeared particularly in the case of closure the workplaces, the change of production profile or the implementation of new technologies (Wratny 1994, p. 16). The project met a strong objection from both employers organizations and some governments of the European Community countries (especially the United Kingdom), which resulted in resigning from works on the directive.

The following step in creating EWCs was passing the Social Card of the European Community in 1989. One of its chapters concerning information, consultation and employee participation defined employees and employers right to free organization as well as the right to create structures acting on behalf of them. The European Commission worked on the document and finally, on 5 December, 1990, the project of directive establishing EWCs in transnational companies was presented. Jacques Delors, the then president of the European Commission, initiated the meetings between employers and unionists, setting backgrounds to social dialogue on European level, which indicates his significant contribution in the process of creating EWCs. Due to comments concerning the project of the directive, it was simplified and in this shape presented by the European Commission in September, 1991. The changes proposed included mainly trade unions interests, for example employment ratio limits in the plants in different countries were liberalized allowing establishing EWCs in some circumstances.

The wish to follow the ideas proposed in the Social Card was covered in Maastricht Treaty signed in February, 1992. The document obliged the European Commission to support partners in the social dialogue in matters like working conditions, information and consultation with employees. Due to the UK's objection, the procedure was accepted to exclude this country both from signing Maastricht Treaty and its arrangements, which set a precedent to employ similar solutions while enacting the EWCs directive. As a result, after 20 years of discussions, the European Commission accepted the directive establishing European Works Councils on 22 September, 1994.

3. Basic assumptions of the EWCs Directive

The main object of the directive was improvement of employee information and consultation in transnational companies[1] located within the EU as well as in Norway, Liechtenstein and Iceland, i.e. countries being members of so called European Economic Area. At the beginning the directive covered 17 countries – without the UK, excluded from Maastricht Treaty before[2]. The EU enlargement in May, 2004 caused that after that date the directive regulations operated in up to 28 countries. Since January, 2007, when Romania and Bulgaria entered the EU, the number of countries covered by the directive has increased to 30.

The central management is obliged to secure conditions and funds needed to set EWC or adopt the procedure of informing and consulting the employees[3]. The management is also responsible for initiating such negotiations on their own or on application written by at least 100 employees employed in no less than two companies located in at least two different member countries. Negotiations leading to creating EWC are run between the central management and a special negotiation body composed of employee representatives from different undertakings of one particular transnational company. The negotiations are followed by a written agreement which should particularly define:

- a list of undertakings being part of a group of companies of the EU range covered by the directive,
- the composition of EWCs, number of members and a term of office,
- EWC functions and its rights to information and consultation,
- place, frequency and duration of EWC meetings,
- funds and material resources granted to EWC,
- duration of validity of the agreement (EWC Directive No 94/45/WE, articles 5.1 and 5.3, article 6.2).

EWC consists of employees from EU companies who are chosen or appointed either by employee representatives from among them or, when the

[1] Transnational company is the one which employs at least 1,000 people in EU countries and, at the same time, employs 150 people in at least two of these countries (article 2 of the directive no 94/95).

[2] After UK accepted the directive in 1997, the number of countries covered by the directive increased to 18.

[3] Establishing EWCs is not obligatory and they may be created alternatively to other procedures designed for information and consultation the employees (article 1.2 of the directive no 94/95).

representative body does not exist, by the whole staff. The choice or appointment is conducted following the legislation or the practice accepted in the country. The EWC staff should have representatives from all the member countries. Moreover, EWC should have the opportunity to co-opt more representatives, proportionally to the number of employees in plants or companies. EWC framework is limited to information and consultation in the areas concerning EU companies or at least two of their undertakings located in different member countries.

EWC meetings with the central management of transnational company are held at least once a year as plenary sessions. Their subject matter is mainly a discussion over issues concerning the changes to be made in the company structure, its economic and financial condition, anticipated progress of activities, production and sale, merger, closure or transfer of the plants or mass layoffs. In special circumstances effecting on employees interests, EWC Committee[4] or, when there is no such a body, EWC has the right to call an extra meeting with the central management of transnational company (Koczur, Korus 2003, pp. 130-136).

Member countries define the rules of chairmanship during information and consultation sessions. EWC members before the meeting with the central management have right to call preparatory meetings without the management to fix the agenda and exchange information with employees representatives from different countries. Moreover, both EWC and EWC Committee may use the competence of their experts to help in performing their duties efficiently. The expenses of EWC operating are covered by the central management of transnational company. The costs particularly include meetings organization, interpreters service as well as accommodation and transport for EWC members (Appendix, no 4, 6 and 7).

EWCs Directive was an example of quite flexible approach to information and consultation procedures because it gave the opportunity to contract voluntary social partner agreements. According to article 13.1 of the directive, its provisions could not be adopted in EU companies or group of companies if on the date of Directive implementation[5] they had already had agreements covering all employees and guaranteeing them transnational right to information and consultation. Such defection of the directive provisions was aimed at giving privilege to these transnational companies which appointed representative bodies

[4] EWC in cases justified by the number of its staff can select Committee which is a body securing EWC operating in periods between the sessions. Committee has also coordinative duties, communicates with EWC members, prepares sessions etc.

[5] I.e. till 22 September, 1996 (it was so called two-year period of transition).

at transnational level although were not obliged to do so. On the other hand, the directive was profitable for employers because within two years they could contract agreements not compatible with the directive regulations. Managements of transnational companies broadly took advantage of this opportunity as this allowed them to avoid regulations that concerned calling special negotiating bodies or conducting negotiations (Skupien 2008, p. 129).

Member countries were obliged to prepare appropriate regulations and create administrative conditions necessary for Directive implementation within two years since its accepting. For 14 EU countries and 3 countries of the European Economic Area the deadline for adjusting the directive to their national legislation was on 22 September, 1996 whereas for the UK – on 15 December, 1999. Next 10 EU countries were obliged to implement the directive before joining the EU, i.e. before 1 May, 2004. For the other two entering countries, Romania and Bulgaria, this date was set for 1 January, 2007.

Table 1. The implementation of EWC Directive to national legislation

Country	**Method of implementation**	**Date**	**Country**	**Metho of implementation**	**Date**
Austria	Act	17.X.1996	Sweden	Act	9.V.1996
Belgium	Collective	6.II.1996	the UK	Act	15.I.2000
Denmark	Act	22.V.1996	Italy	Collective	6.XI.1996
Finland	Act	9.VIII.1996	Cyprus	Act	2002
France	Act	12.XI.1996	The Czech Republic	Act	2000
Greece	Decree	20.III.1997	Estonia	Act	12.I.2005
Spain	Act	24.IV.1997	Lithuania	Act	19.II.2004
Holland	Act	23.I.1997	Latvia	Act	1.VII.2001
Ireland	Act	10.VII.1996	Malta	Act	2002
Iceland	Act	22.III.1996	Poland	Act	5.IV.2002
Liechtenstein	Act	16.VI.2000	Slovakia	Act	1.IV.2002
Luxembourg	Act	28.VII.2000	Slovenia	Act	20.VI.2002
Germany	Act	28.IX.1996	Hungary	Act	2003
Norwey	Collective	30.XI.1995	Romania	Act	19.VII.2005
Portugal	Act	24.IV.1997	Bulgaria	Act	2006

Source: Skorupinska 2009, pp. 171-172.

As far as the original 15 EU countries and 3 countries of the European Economic Area are concerned, the deadline for the directive implementation has only been kept in the following: Denmark, Finland, Ireland, Iceland, Norway, Sweden and Belgium. After 22 September, 1996 next countries adjusted the directive regulations to national legislations: France, Austria, Greece, Spain, Holland, Germany, Portugal, the United Kingdom and Italy. Luxembourg and Liechtenstein did so almost six years after the directive adoption[6]. Out of the ten following member countries, Estonia was the only one that did not keep the deadline for Directive implementation (see table 1). Poland passed EWCs bill on 5 April, 2002. All these ten countries decided to employ the implementation solutions applied before in most of the old EU members, i.e. based on parliamentary legislative instruments. The two newest EU members, Romania and Bulgaria, have kept their implementation deadlines (Skorupinska 2009, pp. 169-170).

4. The range of European Works Councils

In September, 1994, when Directive no 94/45/WE was adopted, there were 49 EWCs. Till the end of the next year the number increased up to 124. In 1996 as many as 397 new EWCs were established. That year was the last one when procedures allowed creating EWCs on the basis of voluntary agreements. Figure 1 shows this radical increase in EWCs number in that period. Contrary to year 1996, in 1997 only 51 EWCs were established. The slowdown in EWCs spreading was visible in years 1998-2000, when no more than 70-80 new institutions of employee participation appeared each year. The rate of increase was even slower in the period 2001-2008 (30-50 EWCs every year). In 2009 only 13 EWCs appeared. According to data of the European Trade Union Institute, 969 EWCs were operating at the end of September, 2010 (out of 1,175 originally established)[7].

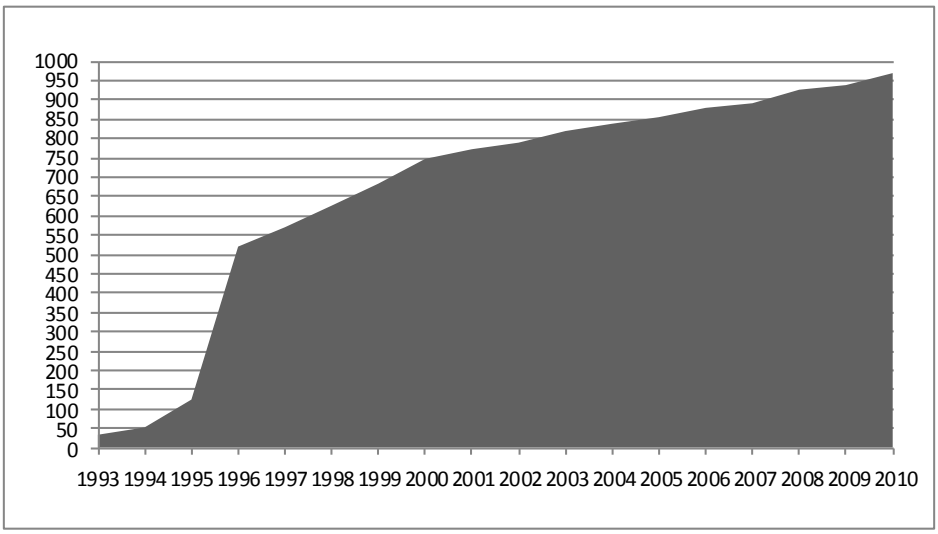
At first, in 1995, the directive regulations concerned 1,152 transnational companies. In 2000, when the UK accepted the directive and adopted it to the national legislation, the number of companies covered by the directive increased

[6] The European Commission have prosecuted these two countries to the European Court of Justice for disobedience in implementing the EU regulations. The Court proceedings were remitted after passing by these countries suitable acts implementing the directive.

[7] The remaining EWCs stopped operating due to taking over or joining the transnational companies where they had existed. Years 1999-2001 were the time when the most EWCs were dissolved – over 20 each year.

to 1,835. The EU enlargement in May, 2004 resulted in further spread in the directive coverage – at the end of 2005 there were 2,204 such companies. This number means that EWCs operating at the time existed in only 35% of companies, where they should have been established according to the directive regulations (*European Works Councils – Facts ...* 2006, p. 28). Nowadays the scale of transnational companies covered by the directive where EWCs operate reaches 38%. On the other hand, operating EWCs now represent almost 18 million people employed within the EU, i.e. much over half of all employees of transnational companies potentially covered by the directive (Jagodzinski 2011, p. 7).

Picture 1. The range of EWCs (the number of EWCs operating in a specific year)



Source: www.ewcdb.eu (the database on EWCs, ETUI).

What is noticeable, Polish EWC representatives appeared much earlier than the EU directive was implemented in Poland. As soon as in 1995 Polish employee representatives from Thomson and Benckiser were invited to EWC meetings as observers. In the following years Polish representation in EWC gradually enlarged and our representatives started working in EWCs not only as observers but also as full EWC members. Moreover, Polish unionists, especially from NSZZ "Solidarnosc", were pioneers on the field of EWCs among trade unions from the Central and Eastern Europe. Even before the Polish access to the EU, they were very active in negotiations concerning establishing or renewing EWCs agreements (Thomson Multimedia, Electricite de France). First trainings regarding both the regulations of the EU directive and EWCs rules were conducted by "Solidarnosc" as soon as in 1995. They have also set up an

Internet website about EWCs (www.erz.solidarnosc.org.pl). It is estimated that nowadays Polish representatives are members of 187 EWCs.

5. Role and effectiveness of EWCs

It is difficult to clearly assess the EWCs effectiveness. As institutions EWCs were result of restructuring so it may be assumed that the way they operate in such circumstances is a kind of an exam of their functions, i.e. if they actually improved the condition of employees right to information and consultation. The analysis of agreements establishing EWCs suggests that most EWCs seem to have quite good opportunities to obtain regular information and to consult matters regarding restructuring with central management.

While assessing the EWCs potential of influence, some other features should be taken into account. One of extremely important things is the note pointing that employee information and consultation should occur at the beginning of decision-making process to enable EWCs present their opinion. However, this note seldom appears in the agreements. The regulations of Directive no 94/45 are vague, particularly in the definition of consultation. This has two opposite effects: on one hand it allowed employers to accept the directive, but on the other, it became cause of numerous disagreements in everyday application of the directive. Furthermore, significant is fact that agreements usually restrict the EWCs activities to "transnational" matters, at the same time interdicting them from discussing national affairs. EWCs representatives also indicated that several issues could not be debated at their meetings because central management of transnational company claimed that the issues included secret data (Skorupinska 2009, pp. 208-209).

Employers also have reservations about EWCs. For them, the institutions are important component of the European integration process on one hand, but on the other, they restrict the economic effectiveness of transnational companies. Employers claim that competitive activities of the corporation may be reduced when it has a partner representing the staff supported by unionists on European level. In such cases the corporation may be forced to maintain production in less profitable plants (Gardawski 2007, pp. 33-34). Furthermore, management complains about the costs and time committed to preparations of documents and, generally, EWCs plenary meetings.

However, in most cases employers accepted EWCs although were not interested in expanding their role beyond information and consultation as framed in the directive no 94/45/WE. As the years went by, employers began to notice

advantages of existence these institutions of employee participation on European level. Management treats EWCs as an important instrument to discuss matters concerning corporation culture, to increase employee involvement and to communicate with them, especially about problems having negative consequences for them. Owing to EWCs, employees are better informed, which results in better understanding of management decisions and this, consequently, allows the management enjoy wider approval of their activities.

The view of EWCs is extremely diverse. According to Lecher's classification[8], there are four types of EWCs: symbolic, service, project-oriented and participatory. They differ in abilities to operate effectively, which is a consequence of dynamic interaction in four areas, i.e. between EWC and central management, within EWC among its representatives, between EWC and national levels of information and consultation, and, finally, between EWC and trade unions. "Symbolic" EWCs are characterized by low level of information, lack of formal consultation as well as minimal communication between EWC, its representatives and central management meanwhile plenary sessions. As far as "service" EWCs are concerned, the representatives exchange information but they do not try to elaborate common policy. "Project-oriented" EWCs are institutions in which representatives concentrate on systematic development of their home structures and abilities independent of central management. "Participatory" EWCs are actually involved in the process of consultation and negotiation with the central management (Carley, Hall 2006, p. 37).

Surely, many EWCs are just symbolic institutions restricting their activities to annual sessions with central management when they get general knowledge on the condition of transnational company. Waddington's research (2006 p. 43) conducted in 2005 showed that only one in four EWCs was informed about the restructuring decisions before the management finally made them and only one in five EWCs was regularly consulted about such matters. This means that 75% of EWCs questioned representatives were not informed about restructuring decision of the management neither before it had been made nor after it had been accepted. In case of consultation, the rate exceeds 80%. Generally, EWCs operate mainly on the field of communication and consultation, as it is defined in the Directive 94/45. Carley and Hall in their survey (2006) suggest that very few EWCs had any effect on the restructuring process in transnational companies. Yet, there are EWCs or EWC Committees (for instance in LPGD, Draka, Unilever, Group4Falck) significantly involved in the restructuring process.

[8] See more in: Lecher, Platzer, Rüb, Weiner 2001.

This is because EWCs build their effectiveness through everyday activities allowing them to go beyond formal competence. Throughout the years some EWCs (better developed and older) extended their powers to negotiations. Together with the central management they concluded a kind of a written arrangement regarding the restructuring. EWCs were co-signatories of such agreements usually together with international and national trade unions. These joint agreements signed on European level can be regarded as a form of negotiations on transnational collective agreements, as they define the guarantee scope for employees stricken with restructuring.

6. The review of the Directive

Debate concerning the necessity to amend the EWCs directive have been held since late 1990s between the European Commission, European trade unions and European employers organizations. The debate was justified by the legal obligation that the European Commission had, which required the assessment of both directive operation and state of its transposition in member countries till September, 1999. The other reason for the debate on the directive amendment were bad practices in many transnational companies. Their managements often made restructuring decisions disregarding EWCs right – clearly stated in the directive provisions - to information and consultation. Such attitude presented by managements of transnational companies effected in numerous employee protests and led to critical opinions voiced by the European Parliament. There was another reason for the debate on the directive. The EU legislation regarding employee participation has developed so it became necessary to synchronize the employees rights included in several directives (Skupien 2008, pp. 293-295). Moreover, the EU enlargement caused that some directive regulations became a bit outdated as well as EWCs operation became more complicated[9].

The European Trade Union Confederation (ETUC) proposed the first list of amendments to the directive in December, 1999, and launched a broad union campaign aimed at advancing its revisal. The unionists opted mainly for strengthening EWCs legal power through, for instance, specifying the definition of "information and consultation". Furthermore, they demanded not only appreciating their contribution in establishing and coordination of EWCs

[9] After 1 May, 2004 the number of EU members increased to 25. The provisions of directive no 94/45 restricted the membership of special negotiation body to 17 at the same time guaranteeing at least one place to employees representatives from each country where the transnational company runs its business.

activities but also setting frames for wide training programs for EWCs employee representatives. Besides, ETUC suggested decreasing employment thresholds which permit to create EWCs in transnational companies employing up to 500 people within the EU, on condition that at least 100 of them were in two member countries. Other demands regarded, for instance, increasing the frequency of EWCs meetings with central managements, reduction of periods for negotiating agreements, opportunity to enlarge EWCs boards of experts, legal guarantees for EWCs in case of breaking the directive conditions. As opposed to unionists, representatives of European employer institutions, UNICE[10] and CEEP[11] were skeptical about the suggestions of directive amendment (Wratny 2010, p. 93).

Against the ETUC and European Parliament's position, the EU Commission decided to suspend the activities on the directive revision. The dialogue was continued after accepting next three directives concerning employee participation in the management[12]. The European Commission has also begun consultations with social partners, but, with their lack of cooperation, presented its own project of the directive revision in July, 2008. Finally, the directive was enacted on 6 May, 2009, and its major purpose is strengthening the employee right to information and achieving real social dialogue on supranational level.

According to Monacko from the Social Development Agency in Brussels (SDA), the amended directive appeared too late. Many transnational companies negotiated the limitations of the previous directive and began a successful dialogue with employee representation in EWCs. On the other hand, the new directive can facilitate such dialogue in other companies and improve the effectiveness of EWCs on European level. In fact, the expectations regarding the revised directive were higher. However, the changes made are positive (*Europeizacja stosunków…* 2009, p. 29). They are as follow:

- The introduction of the definition of information as well as precision and strengthening the right to consultation. The EC Directive dated 22 September, 1994, did not have the definition of "information" while consultation meant only "the exchange of opinions and starting the dialogue between employee representatives and central management". In the new

[10] UNICE - Union of Industrial and Employers' Confederations of Europe (BusinessEurope, since 2007).

[11] CEEP – European Centre of Employers and Enterprises providing Public services.

[12] I.e. Council Directive of 8 October 2001 supplementing the Statute for a European company with regard to the involvement of employees; Directive of the European Parliament and the Council of 11 March 2002 establishing a general framework for informing and consulting employees in the European Community; Council Directive of 22 July 2003 supplementing the Statute for a European Cooperative Society with regard to the involvement of employees.

directive the definition of consultation has been expanded by a note relating to the time, manner and matter, which allows employee representatives to voice their opinion to the management on the basis of the information given (article 2 g). Moreover, the directive appendix states that EWCs have the right to demand a response with reasons to any presented opinion from the management.

- Appreciation of the trade unions involvement in negotiating the EWCs agreements. According to article 5.4, "negotiation body can file a petition for calling their experts who can be representatives of recognized trade unions operating on the EU level". Furthermore, trade unions gained the right to be informed about the membership of negotiation body and opening negotiations establishing the EWCs (article 5.2.c).
- EWCs gained the opportunity to decide the subject-matter of the plenary sessions in connection with transnational character of the matters discussed. Although the definition of transnational information did not change much when compared with the old directive provisions, it has been extended in section 16 of the new directive preamble. According to this note "transnational matters are the ones which, irrespectively of the number of member countries involved, are significant for all European employees in the meaning of potential effects". It means that EWCs have information and consultation rights in questions having even possible consequences for employees, regardless of the country of their employment.
- Clear defining the central management duties to convey the information necessary to start the negotiations establishing EWCs, particularly the information regarding the structure of the company or group of companies and the number of their staff (article 4.4). It is highly probable that such note can be useful in making the negotiation process more efficient and, consequently, increase the number of EWCs in the future.
- Article 10.4 of the directive states that members of both the special negotiation body and the EWC gain the right to trainings, with no deductions from salary.
- The new directive also defines the relations between the EWCs and information and consultation institutions on the national level. This regulation was introduced in order to avoid ambiguities during conveying the information to different institutions of participation. Before the directive revision the managements often took advantage of these inconsistencies. Article 12 of the new directive states that the agreement establishing the EWC should include procedures of both exchanging the information and cooperation with national institutions of information and consultation.

7. Conclusion

European Works Councils are institutions deeply diversified in their functions and role in transnational companies. The thing is that they do not operate for all they are worth within the directive regulations. In most cases they neither play a significant role nor are particularly influential in making decisions by the central managements. They operate mainly as information or information-consultation institutions. However, there are EWCs which have not only "symbolic" or "service" functions and become deeply involved in the operation of transnational companies, especially in restructuring. These "participatory" EWCs even negotiate so called transnational collective agreements with central managements.

EWCs are an essential feature of the European companies view – about 18 million people employed in the EU have their representatives in 969 EWCs. They vitally influenced the shape of industrial relations in Europe, went towards the improvement of transnational information and consultation as well as the internationalization of trade unions cooperation. Directive of the Council 94/45 considerably accelerated the process of enacting next EU directives concerning the employee participation in the management. The researches show that EWCs are highly beneficial for not only employees, trade unions, particular plants but also for the management. These benefits are: access to information relating the situation and plans of the transnational company, exchange of experience between the EWC representatives, direct contacts with the central management representatives, increase of trade unions prestige with respect to their national managements, rise of status of the particular plant in the concern, improvement of communication between the management and employees and, finally, increase in employees commitment.

New directive 2009/38 brought in several improvements in EWCs regulations but failed to include all the propositions raised before. For instance, it does not guarantee the right to preparatory or summary meetings in addition to the plenary ones or it defines the note concerning supplying the EWCs representatives with essential agents too vaguely. However, the directive creates new opportunities which can potentially quicken and facilitate establishing new EWCs as well as strengthen the existing ones. The deadline for the implementation of the new directive to the legislation of member countries was on 5 June, 2011. Now, we need to wait for the effects of new regulations and evaluate if the main purpose of directive 2009/38 – strengthening the role and increase of EWCs effectiveness – was reached.

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Dyrektywa Rady 94/45/WE z dnia 22 września 1994 r. w sprawie ustanowienia Europejskiej Rady Zakładowej lub trybu informowania i konsultowania pracowników w przedsiębiorstwach lub w grupach przedsiębiorstw o zasięgu wspólnotowym

Dyrektywa 2009/38/WE Parlamentu Europejskiego i Rady z dnia 6 maja 2009 r. w sprawie ustanowienia europejskiej rady zakładowej lub trybu informowania pracowników i konsultowania się z nimi w przedsiębiorstwach lub w grupach przedsiębiorstw o zasięgu wspólnotowym

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Streszczenie

DOŚWIADCZENIA EUROPEJSKICH RAD ZAKŁADOWYCH

We wrześniu 2011 r. minęła 15 rocznica wejścia w życie pierwszej unijnej dyrektywy powołującej Europejskie Rady Zakładowe (ERZ). W tym roku także zaczęła obowiązywać nowa wersja tej regulacji, tzn. dyrektywa 2009/38/EC. ERZ są formą reprezentacyjnej partycypacji pracowniczej na poziomie europejskim, która gwarantuje pracownikom prawo do informacji i konsultacji. Reprezentanci załogi otrzymali możliwość wyrażania swoich opinii o projektowanych decyzjach centralnego kierownictwa przedsiębiorstwa transnarodowego, które odnoszą się do pracowników we wszystkich zakładach tego przedsiębiorstwa. Niniejszy artykuł koncentruje się trzech głównych obszarach: roli Europejskich Rad Zakładowych w krajach UE, zasięgu tych instytucji partycypacji na poziomie europejskim i zmianach w funkcjonowaniu ERZ spowodowanych wprowadzeniem nowej dyrektywy. Głównym celem artykułu jest przedstawienie różnych rodzajów tych instytucji oraz próba oceny efektywności ERZ i ich wpływu na system stosunków przemysłowych w Europie.

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Influence of the Climate Policy of the European Union on the Competitiveness of Pollution-generating Sectors of the Polish Economy in the Context of Sustainable Development

Abstract

The text analyses the influence of the EU climate policy on the competitiveness pollution-generating of sectors of the Polish economy. Study of literature and the results of the questionnaire survey, carried out in 2008 in enterprises located in Poland and representing the steel, glass, aluminium and cement industries became a basis for formulating conclusions concerning the consequences of the climate policy already implemented and planned after 2012.

The EU climate policy, particularly the common system of emission allowances trade, makes the enterprises face new developmental barriers. The expected increase in production costs will not only slow down the production dynamics, but may also entail lowering the competitiveness of Polish companies compared to companies from outside the EU, to which the greenhouse gasses emission limits do not apply. Adverse consequences for employment and for regional development should also be considered indisputable. If that was accompanied by an emission leakage outside the EU, achieving the global purposes of the climate policy would also become questionable.

The businesses surveyed represent industries which are pollution generators by their nature and even ecologically-oriented technological progress is incapable of ensuring considerable emission reductions without general switching of the economy to renewable energy sources.

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1. Introduction

Systematically conducted research proves that there is a considerable multidimensional influence of man upon the natural environment, including the Earth's atmosphere and the climate. In most cases the changes occurring are assessed as negative, which encourages undertaking operations aiming at stopping the escalation of unfavourable tendencies and at restoring the disturbed balance in the ecosystem. At present, most attention on the international forum is devoted to counteracting climate changes triggered by the economic activity of man. These issues are very complex, and, as the current experience indicates, it is extremely hard to reach agreement regarding the schedule, as well as the form and the addressees of the operations proposed. The shaping of international climate policy and its influence on the development is a vast research area, and the present paper only analyses a small fragment of it. On the basis of available literature and of questionnaire surveys carried out in 2008 in companies, located in Poland, and representing steel industry, aluminium metallurgy, glass works and cement industry, it has been possible to formulate essential conclusions concerning the influence of the EU climate policy upon the possibility of realization of sustainable development.

2. The issues of climate change

Climate is one of the most crucial factors determining the functioning of societies and economies, as well as the entire ecosystem on the Earth. It is a complex phenomenon, commonly defined as the entirety of the weather conditions typical of a given area, including the average course of the annual rhythm of their changes over a longer period. A new paradigm of "changeable climate" starts to be used in climatology. It is accepted as a result of observation of various phenomena and objects. Interesting evidence is provided by paleoclimatology which tries to discover the changes in the Earth's climate from the data buried in the traces of biological, chemical, geological processes occurring in the recent and more distant past. Climate is influenced by numerous phenomena occurring in the earth's atmosphere, related to the solar radiation, energy balance, water circulation and air circulation, as well as by geographical factors such as: the latitude, elevation above sea level, land relief, or the character of base soil. The influence of man is also significant, mainly by means of the intensity and the character of his economic activity. Currently, scientific research related to climate is carried out by numerous research centres worldwide, which has been reflected in rich literature (Schönwiese 1997,

Wiąckowski 2000, pp. 37-54). From our point of view it is essential to become aware of the relationship between the climate and the functioning of social and economic systems. Until the Industrial Revolution this relation had a one-way character - it was the climate that influenced the man and his activity. At present we are also dealing with an opposite influence; in particular, burning fossil fuels and the changes in the way soil is used cause the warming up of the climate.

According to the definitions adopted in the Climate Convention, a climate change denotes a change in the climate caused indirectly or directly by the activity of man which changes the composition of the earth's atmosphere and which is distinguished from the natural changeability of the climate observed in comparable periods, whereas negative effects of climate change are considered to be the changes in the physical environment or the biocoenosis, caused by a climate change, which have significant harmful influence upon the composition, immunity or productivity of naturally controlled ecosystems, or upon the operation of socioeconomic systems, or upon the health and the prosperity of man.

For further considerations we assume that we regard the warming up of the climate as scientifically proven. Considerable acceleration of climate warming up is triggered by anthropogenic causes – about 80% of it a consequence of using fossil fuels, and the remainder is a result of deforestation (Climate Change 2001).

Its main cause is considered to be an increase in the concentration of greenhouse gases in the atmosphere, mainly of carbon dioxide, methane, nitrogen suboxide, and several other so-called industrial gases. Those gases have different effects on the global warming according to their concentration in the atmosphere and their physical properties. They are opaque to different lengths of heat radiation and they mutually complement their effects. Their life period in the atmosphere is also different, and, depending on the gas, it ranges from 6–7.5 years for methane to over 100 years for carbon dioxide and chlorofluorocarbides (CFCs), and as many as 150 years for nitrogen suboxide (Flannery, 2007, pp. 153 – 213).

3. Climate protection and sustainable development

Sustainable development is a type of socio-economic development, carried out by man in the technosphere, according to the anthropocentric perception of the world. It has an inter-generation dimension, and therefore it can only be achieved while maintaining balance between satisfying the needs of

the future generations and the needs of the people living at present. Sustainable development integrates all the activities of man and is aimed at liquidating inequalities in satisfying the needs on a global scale. It is currently the most advanced concept of organising the global economy and so far the only one that takes up the issues of preventing an ecological catastrophe on a global scale (Borys (ed.) 1999, Borys (ed.) 2005).

Sustainable development requires thinking in human, economic and ecological categories at the same time. Omitting any of these elements means straying off the path of sustainable development. Protection of the Earth's climate should be one of the mainstays of sustainable development. This will only happen if social and economic issues are considered in the development of climate policy parallel to purely ecological problems. Nowadays in European Union the Sixth Environment Action Programme of the European Community entitled "Environment 2010: Our Future, Our Choice" is realized. It covers the period from 22 July 2002 to 21 July 2012. The programme is based on the Fifth Environment Action Programme, entitled "Towards Sustainability".

The Sixth Environment Action Programme focuses on four priority areas:

1. climate change;
2. biodiversity;
3. environment and health;
4. sustainable management of resources and wastes.

It requires use of a whole range of instruments and measures to influence decisions made by business, consumers, policy planners and citizens. To reach the goals, five main avenues for strategic action was proposed: improving the implementation of existing legislation, integrating environmental concerns into other policies, working in partnership with business, empowering citizens and changing their behaviour, and taking account of the environment in land-use planning and management. Considering the priority character of the sustainable development concept in forming the EU policy, the planned changes to the climate policy should be scrutinised from the point of view of their consistency with this leading concept.

4. Climate policy of the European Union

The European Union has included its actions for climate protection in its priorities and it is taking an active part in the development of international cooperation in this area. The necessity to reduce greenhouse gases emission follows from many directives and decisions of the EU concerning different

economy sectors and it is one of the elements of actions for long-lasting and sustainable development. Some of the regulations were formulated as early as in the 1970s and 1980s, when climate protection issues were not an object of broad discussions. At present, often amended appropriately, they are also used to implement climate policy. Today, the EU is on the road to realising the most advanced international cooperation related to the Kyoto Protocol. Not only has the EU undertaken obligations exceeding the average level of emission reduction (8% instead of 5.2%), but it has decided to start trading transferable CO_2 emission permits. Under the Directive 2003/87/EC of the European Parliament and the Council, member states have been obliged to establish national schemes for distribution of CO_2 emission allowances. According to the Directive the membership country must include five principal economy sectors into the system, according to specific thresholds. The trade only involved CO_2 initially, but for the period after the year 2012, the European Commission has proposed including other sectors and gasses in the system. It should be stressed that the obligation to reduce greenhouse gasses emissions by 8% within the EU – 15 framework has been distributed among member states unevenly. It has been adopted under the Council's decision 2002/358/EC that the states which have the greatest economic distance to make up for will be allowed to increase their emissions in 2008 – 2012 relative to 1990: Portugal by about 27%, Greece by about 25%, Spain by about 15% and Ireland by about 13%. In return, other states have committed themselves to increase reductions in emission: Luxembourg by about 28%, Germany and Denmark by about 21%, Austria by about 13% and Great Britain by about 12.5%. Due to this arrangement and due to establishing an emission allowances trading market, it may be stated that the climate protection policy in the EU has a communal character and it has started a new stage of cooperation between countries in the process of integration.

The situation of new member states was not included in the Directive, but those countries have had to join the system and develop their own national CO_2 emission allowances distribution schemes for 2005 – 2007, and then 2008 - 2012, that is for the first accounting period of the Kyoto Protocol[1].

Since the moment the market for CO_2 emission allowances trading was created in January 2005, the interest in emission allowances has been rising dramatically and it has reached a turnover of 2 million tonnes daily. The price of allowances also rose from the initial level of 9 EUR per tonne to 35 EUR per

[1] In Poland the first National CO_2 Emissions Allowances Distribution Scheme was prepared by the Ministry of the Environment in 2004. At present, activities are carried out on the basis of the National CO_2 Allowances Distribution Scheme for 2008 – 2012 for the community emission allowance trading scheme which was adopted by the Council of Ministers on 1 July 2008.

tonne in June, followed by a fall to 23 EUR in November (www.pointcarbon.org). As experts have calculated, in the case of some coal-powered electric power stations the allowance to produce a kilowatt-hour of electric power is more expensive than the very coal used for that purpose. High prices encourage allowance purchasers to use compensating credit (offset), which represent reductions in pollution achieved due to clean development programs implemented in developing countries. Industrial enterprises responsible for CO_2 emissions can use a certain number of such credits as a cheaper substitute for emission permits (Wayt Gibbes 2005, pp.112-115).

Parallel to gaining experience from the functioning of already accepted arrangements, a debate on the shape of the climatic policy after 2012 is carried on. Many emotions are aroused in the EU by the so-called climate–energy package, the most important elements of which are the instruments proposed on 23 January 2008: the Directive of the European Parliament and Council changing the directive 2003/87/EC in order to establish and expand the Community greenhouse gasses emission allowance trading scheme (COM (2008) 16 final, Brussels 23.01.2008), the Directive of the European Parliament and Council on geological storing of carbon dioxide and changing the Council's directives of 85/337/EEC, 96/61/EC, the directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and the decree (EC) No. 1013/2006, (COM (2008) 18 final, Brussels 23.01.2008) and the Directive of the European Parliament and Council on promoting using energy from renewable resources (COM 2008, 18, final, Brussels 23.01.2008).

Common goals of the energy and climate policies were adopted during the spring summit in March 2007. They are commonly known as "3 x 20" because they include:

- increasing energy efficiency by about 20% until year 2020,
- increasing the share of energy from renewable resources to 20% of the total final power consumption in the EU till 2020 and increasing to 10% the percentage of biofuels in fuel consumption in transport,
- a reduction of greenhouse gasses emission by at least 20% compared to 1999.

The Community also considers it possible to introduce a reduction aim as high as 30% on condition that other developed countries commit themselves to a comparable emission reduction, and selected developing countries contribute to it proportionally to their own potential.

The main focus of the energy and climate package is on the future form of the EU emissions trading system. In the run-up to the agreement there was a lot of debate in Europe about how emission permits could be awarded to industries

which are very energy-intensive or which are particularly reliant on exports. Companies threatened to relocate their operations to non-EU countries if they had to buy all their emission permits at auction. The EU was determined to avoid this, as it would inevitably lead to increases in emissions, due to "carbon leakage". As a result, compromise was found whereby certain industries were made exempt from the auction system. All other sectors of industry were told that, as of 2027 at the latest, emission permits will only be auctioned and no longer given out free-of-charge. The aim is to reduce industry emissions by 20 per cent by 2020 compared to 2005. A new phase of emissions trading will commence in 2013, in which the number of permits will be gradually reduced. Rising prices should then offer companies an incentive to stop auctioning permits but instead to invest in greener and lower-emission technologies (Hood, 2010).

EU demonstrates strong determination in playing the role of leader in climate protection policy on international level. It was observed during consecutive meetings of Parties of Kyoto Protocol (Bali 2007, Poznan 2008, Copenhagen 2009, Cancun 2010, Durban 2011).

In 2010 the EU continued their efforts in the sphere of European energy and climate policy. As the Lisbon Strategy expired in 2010, the European Council adopted a successor strategy, "Europe 2020": a new European strategy for employment and growth. Its aim is to encourage a greener economy which uses fewer resources and is more competitive. Up to now the EU has played a leading role in the area of green technologies, and would like to maintain and extend this role. In this way Europe can use resources even more effectively and by that can become more competitive. Part of the Strategy is to take over the EU's "20-20-20" climate and energy package which came into force in 2009. The idea behind this is that an economy using fewer resources has financial advantages. So the European Commission has calculated savings of 60 billion Euro by 2020 on oil and gas imports. Achieving the goal of using 20 per cent renewable energy by 2020 could produce 600,000 new jobs. And if on top of this the EU's 20 per cent increased energy efficiency target is met, this could mean more than a million new jobs (http://ec.europa.eu)

The Europe 2020 goals will be driven forward by seven European Commission flagship initiatives. The "Resource-Efficient Europe" initiative in particular contains important points such as the Commission's plans to create a single European electricity grid and smart grids. It also plans to draw up an action plan on energy efficiency and specifically encourage electric mobility. Every member state has to present its domestic targets and planned actions in support of these plans.

5. Evaluation of EU climate policy in the light of the questionnaire survey

The purpose of the questionnaire survey was to obtain information on how companies assess the current EU climate policy, and to determine the influence of the changes in legal regulations in this respect which are planned after 2012 (Burchard-Dziubińska, Lipińska 2008). Questionnaire forms were sent out to all the enterprises in the cement, metallurgy, steel, aluminium and glass industries which either are currently required to participate in the EU ETS system, or will be after 2012. The research carried out met with moderate interest, but it can be assumed that the replies obtained are representative because of the notable similarities between the replies given, particularly within individual sectors. A total of 18 questionnaire forms were analysed, and they included 5 companies in the cement industry, one company in the aluminium industry, and 6 companies in the steel and glass industries each. Half of the companies surveyed employ up to 500 people, and one-third employ between 500 and 1000 people. Fourteen of the enterprises surveyed are private companies, the majority of which are private companies with a share of foreign capital. The most important findings obtained in the questionnaire survey are as follows:

Fourteen of the companies surveyed regarded the proposed changes in the EU climate policy as an evident threat to their development, and 10 of them also indicated that it was a threat to the competitiveness of the Polish economy. It is worth noting that only 4 enterprises (representing the cement industry) indicated that operations related to the assessment of the effects of adjusting to the new climate policy had been undertaken. Thirteen enterprises (72%) gave an affirmative answer to the question whether the company limited the greenhouse gases emission between 2000 and 2007. In 11 cases (61%) the reduction was achieved as a result of modernisation in the company, in 6 cases (33%) it was a result of decommissioning some installations, in 4 cases it was a result of a periodic shutdown of the installation, and in 1 case it occurred due to a change in the production profile. Enterprises representing the cement and glass industries demonstrated the most modernisation investments. The situation looks the grimmest in the steel industry, especially as it is in this industry that the oldest installations still in operation come from the 1920s! Compared to 1999, the biggest CO_2 emission reduction was demonstrated by enterprises representing the steel industry – 34.2% on average (in one company it was as much as 50%), while the figure was 14.4% in the cement industry and 16.3% in the glass industry.

Modernisation, to be carried out between 2008 and 2012, leading to greenhouse gases emission reduction, is planned in 5 companies only, and on average it will bring a 10% emission reduction compared to 2005.

The question whether new installations are planned to be commissioned between 2008 and 2012 was answered in the affirmative by 8 companies (44.4 %). The fuels used will be: gas, black coal and solid waste. The resulting expected average greenhouse gasses emission increase converted to CO_2 will be 30% for the entire group researched, with the most substantial rise by 48.3% occurring in the glass industry. It will also be the most diversified in this sector - from 10 to 80%.

Only one company is planning to carry out modernisation in 2013 – 2020, leading to a reduction in greenhouse gasses emission, and achieving a 20% emission reduction in this way; 15 companies (83%) have no such plans, and in two companies a decision has not been made yet.

Commissioning new installations between 2013 and 2020 is planned in 3 companies, and in one of them the expected increase in greenhouse gasses emission converted to CO_2, compared to 2005, will be as high as 140%. 12 companies (66%) reported no plans to commission new installations, and in 3 enterprises a decision has not been made yet.

Only 2 companies plan to decommission installations between 2013 and 2020; in one case the emission reduction is going to be as much as 99% (sic!), and 35% in the other. The planned decommissioning of installations is generally not related to the necessity to reduce greenhouse gasses emission.

The participation in the emission allowances trade system in 2005 - 2007 was considered advantageous by 3 companies, and unfavourable also by 3 companies, 8 (44 %) considered it neutral, and 4 companies were not required to participate in the system. The largest number of answers indicating a neutral character of the requirement to participate in the system was given by cement mills and glassworks. It certainly results from allotting greenhouse gasses emission allowances on the basis of historical data.

In the case of the present accounting period as many as 15 enterprises recognised the requirement to participate in the system as unfavourable. Within the group of enterprises examined it constitutes 100% of the companies required to participate in the system!

If it is necessary to purchase 20% of CO_2 emission allowances and if their prices increase by €10 compared to the present level, the expected increase in the unit price of the main product is very much diversified amongst the industries, and it averages:

- cement industry 17.3%
- steel industry 0.3%
- aluminium industry 3.0%
- glass industry 2.8%.

The greatest discrepancies in the estimated price increase were demonstrated by enterprises in the cement industry. It ranges from 2 to 40.6 %. Companies in the other industries demonstrate a similar sensitivity to the increase of the price of emission allowances.

If it is necessary to purchase 20% of CO_2 emission allowances at a price of €20 per tonne of CO_2, the estimated production cost increase per annum is also very different amongst the industries and it averages:

- cement business 17.2%
- steel industry 3.5%
- aluminium industry 6.0%
- glass industry 4.5%.

Notable divergences can also be seen between the companies themselves:

- cement industry between 7 and 45.1%
- steel industry between 0.3 and 17%
- glass industry between 1 and 10%.

It indicates a highly varied sensitivity of the companies to the need to purchase CO_2 emission allowances, even if this duty covers only 20% of the planned emission. In view of the danger that high-emission production may be transferred to third countries, as well as the technical, economic and social problems related to further emission reduction in the sectors researched, applying preventive mechanisms is considered. Among the enterprises surveyed the most support was given to the proposal to allot, free of charge, up to 100% of CO_2 emission allowance allotments after an enterprise has demonstrated (and it has been approved by the European Commission) that a limit of economically acceptable changes to the production technology, related to CO_2 emission reduction, has been reached. A proposal to subsidise, from EU funds, investments aimed at implementing technologies characterised by lowest greenhouse gasses emission and the lowest power consumption as well as detecting and storing CO_2 came second, whereas the third place went to the proposal to grant legal entities income tax relieves to outweigh the drop in the profit resulting from the need to purchase CO_2 emission units at an auction. Six companies were in favour of treating an importer as an enterprise from the sector threatened with an emission leak and of subjecting it to the requirement to purchase CO_2 emission allowances at an auction, in the amount required to produce the merchandise put on the market, on conditions corresponding to average emission from this sector for the entire EU e.g. in 2013. The companies generally did not support the proposal to label products according to the amount of greenhouse gasses converted to CO_2, related to the manufacturing and transporting a unit of a product in order to apply compensation fees. According

to all the respondents the factors which most hinder the leaking of production outside the EU are: high transport costs (19 % of total of indications), high investment costs and restrictions on import from outside the EU (17.9 % each), followed by exchange rate risk (11.9 %) and long investment period (10.7 %).

A diversity in replies between different industries can be seen. All respondents representing the cement industry chose high transport costs; high investment costs and restrictions on import from outside the EU were each indicated by 80% of respondents, and long investment period and exchange rate risk were each selected by 60% of respondents. In the case of the steel industry 100% of respondents considered the restrictions on import from outside the EU to be the major factor hindering the leakage of production; the next factor is high investment cost, indicated by 83% of respondents, followed by high transport costs and a good matching of the structure of the supply to the current demand on the domestic market, which were chosen by 66% of the companies examined. High transport costs, and a long investment period, instability of the world market, the exchange rate risk and restrictions of import from outside the EU are the factors hindering the transfer of production in the aluminium industry. Within the glass industry, 100% respondents indicated high transport costs, and high investment costs were indicated by 66% of respondents, followed by exchange rate risk chosen by 50% of the businesses examined.

The enterprises surveyed demonstrate an extremely varied potential for performing the essential operations required to adapt to the EU climate policy after 2012. Only two enterprises acknowledged that they could do it on the basis of their own financial resources (one each from the cement industry and the steel industry), 3 enterprises stated that it was feasible with the use of a bank loan (one each from the cement industry, steel industry and glass-making industry). The variant consisting in obtaining subsidies from the public purse amounting to not less than 50% of the anticipated adaptation costs received the greatest recognition among the companies surveyed, but as many as one-third of the respondents, including as many as 60% of the cement industry companies, considered it impossible to meet the obligations resulting from the adaptation requirements.

Summarising data from the research, the climate policy of the EU, and the Community system of emissions allowances trade in particular, have a clearly restrictive character. It makes the enterprises face new development barriers which can hamper their economic activity. Clearly, however, the system lacks mechanisms which could be an incentive to undertake pro-ecology activities. All the enterprises surveyed, irrespective of the type of industry, indicate threats resulting from the climate policy implemented at present and planned after 2012.

They concern primarily:

- slowing down the dynamics of production,
- increasing the costs of running the businesses, in case it is necessary to purchase emission allowances,
- lowering the competitiveness of Polish enterprises vis-à-vis companies from outside the EU, to which the limits of greenhouse gasses emission do not apply.

If the expected increase in electric energy prices resulting from the implementation of the climate policy is taken into consideration, the anxieties expressed should be considered justified. Not only do they concern a decrease in profitability of production, but also problems with maintaining manufacture in general, which would obviously be followed by a reduction of employment, breaking cooperative links, and consequently, slowing down the development pace of regions. Many companies undertook a considerable modernisation effort in the past decade. Considering the long investment cycles in the industries examined, the substantial costs of the modernisation, and the transferring of the point of reference to 2005, these companies could be at a particular disadvantage. The readiness to move production abroad to countries with lower ecological standards, declared by some enterprises, must be recognised as threatening from the point of view of the effectiveness of the climatic policy on a global scale. It would involve the so-called emissions leakage outside the EU, which would mean a fiasco of the efforts undertaken by the EU to protect the world's climate.

The enterprises surveyed represent industries which are pollution-generating by their nature. Obviously, in their case we are also dealing with ecologically–oriented technological progress; however, the potential of emissions reduction related to it should not be overrated.

6. Conclusion

Climate protection policy is not implemented in an economic, social and institutional vacuum. The development of methods and instruments for its implementation should be subject to certain principles and it should be evaluated according to clear criteria compatible with the idea of sustainable development. Therefore, apart from the possibility to implement it, special attention should be paid to ecological effectiveness and economic and social effects. In the case of the regulations already in effect and the ones planned with reference to pollution-generating sectors, such as the cement, steel, glass and aluminium

industries, one can recognise serious threats to their competitiveness, with the ecological effect being insignificant or even negative, if an emission leak occurs due to a transfer of production outside the EU. The problem of the influence of the environmental protection policy on the competitiveness of individual industries and entire economies was recognised a long time ago. The temperature of the discussion of this issue has risen considerably since the operations for the protection of the world climate were intensified, because it made people aware of the huge differences between countries, in terms of the range of energy consumption of production converted into a unit of GDP, and in the amount of greenhouse gases emission relative to the scale of production, and also relative to the different proportions of utilisation of fossil fuels and energy from renewable sources. A decrease in competitiveness of companies located in Poland compared to manufacturers from non-EU countries, particularly from China, Russia and Ukraine, may have an indirect adverse effect on the labour market and may slow down the development and economic growth. Products of the cement, steel, glass and aluminium industries are characterised by a larger price flexibility of the demand than in the case of energy. Therefore, a drop in demand for products made in Poland or in the EU may be expected, as well as an increase in purchase of cheaper equivalents imported from outside the EU. Moving the production abroad to countries which are not required to participate in the emission allowance trade system should be considered extremely detrimental. Since many enterprises from the industries covered by the expanded EU ETS system are reaching the limit of feasible emission reductions in this generation of installations, applying further CO_2 emission limits to them should be contemplated with much consideration. The path of emission reduction should be known in many years' advance (e.g. 20 years) so that it is possible to rationally plan investments, which are long-term and expensive in the industries analysed. Functioning of a free market of "green certificates" and facilitating realisation of JI and CDM-type projects also seem reasonable. Then the cost account would be decisive in the choice of the form of fulfilling protective operations. Subsidising should primarily apply to the development of new, energy-efficient technologies and using the energy from renewable resources. Support for already existing companies should be limited to the cases of protection of workplaces in installations reaching the end of their useful life due to technical reasons, according to EU regulations concerning the scope of public aid.

The projected changes in the EU climate policy of the, unquestionably very valuable from the point of view of the protection of the world's climate, can nonetheless turn out to be a considerable threat to the further development, not to say the existence, of particularly pollution-generating sectors of economy, especially in the case of their unilateral introduction.

The consequences may also have a macroeconomic character, including generating a tendency to increase the inflation, a negative effect on the budget revenue from excise duty, and including a slowing down of the pace of GDP growth.

Nowadays, ambitious goals of European climate policy are more and more often criticised. Unfortunately, implementing of common climate policy, stimulating economic development of all members of the EU, is not possible. Moving the production of the cement, steel, glass and aluminium industries abroad to countries which are not required to participate in the emission allowance trade system should be considered extremely detrimental. Since many enterprises from the industries covered by the expanded EU ETS system are reaching the limit of feasible emission reductions in this generation of installations, applying further CO_2 emission limits to them should be contemplated with much consideration.

The consequences may also have a macroeconomic character, including generating a tendency to increase the inflation, a negative effect on the budget revenue from excise duty, and including a slowing down of the pace of GDP growth.

Taking into consideration behaviour of non-EU countries, one may say that the global goal of the climate policy is constantly escaping from us. Even the most ambitious greenhouse gases reduction plans of the EU is not going to manage to change the global situation because of diminishing part of EU in global emission (10 %). Carbon leakage is a real threat. It means that production, and therefore greenhouse gases emission, are going to be moved from one place to another, jeopardising reaching of the climate policy goals. Problems associated with accomplishing the mission of protecting the climate are of prime importance just days before negotiations in Durban. The projected changes in the EU climate policy of the, unquestionably very valuable from the point of view of the protection of the world's climate, can nonetheless turn out to be a considerable threat to the further development, not to say the existence, of particularly pollution-generating sectors of economy.

Not being able to achieve the ecological goal, the economic one comes to first place. An optimistic approach should be applied when it comes to improving competitiveness by eco-innovation leading to low carbon economy.

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Streszczenie

WPŁYW POLITYKI KLIMATYCZNEJ UNII EUROPEJSKIEJ NA KONKURENCYJNOŚĆ POLUTOGENNYCH SEKTORÓW POLSKIEJ GOSPODARKI W KONTEKŚCIE ZRÓWNOWAŻONEGO ROZWOJU

W tekście przedmiotem analizy jest wpływ polityki klimatycznej UE na konkurencyjność polutogennych sektorów polskiej gospodarki. Analiza literatury i wyniki badań przeprowadzonych w 2008 r. w zlokalizowanych na terenie Polski przedsiębiorstwach reprezentujących hutnictwo żelaza, szkła, aluminium oraz przemysł cementowy stanowią podstawę do sformułowania wniosków dotyczących konsekwencji już prowadzonej i planowanej po 2012 r. polityki klimatycznej UE. Polityka klimatyczna UE, zwłaszcza wspólnotowy system handlu pozwoleniami do emisji, stwarzają dla przedsiębiorstw nowe bariery rozwoju. Oczekiwany wzrost kosztów produkcji, może nie tylko spowolnić dynamikę produkcji, ale także obniżyć konkurencyjność polskich przedsiębiorstw w stosunku do przedsiębiorstw spoza UE, które nie muszą dostosowywać się do redukcji emisji gazów cieplarnianych. Pod uwagę należy brać także konsekwencje dla zatrudnienia i rozwoju regionalnego. Jeśli wystąpiłby również wyciek emisji poza UE osiągnięcie globalnych celów polityki klimatycznej stałoby się bardzo wątpliwe. Branże uwzględnione w badaniu są ze swej natury polutogenne i nawet proekologiczne przemiany technologiczne nie są w stanie zapewnić redukcji emisji bez generalnego przestawienia się gospodarki na odnawialne źródła energii.

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TOMASZ GRABIA[*]

The Okun Misery Index in the European Union Countries from 2000 to 2009

Abstract

The aim of the article is to present alternative measures of the economic system's efficiency, taking into consideration, in particular, the values of the so called Okun misery index being the sum of inflation and unemployment rates.

The study is composed of four main parts and a summary. The first part, introduction, discusses various measures of the economic system's efficiency that are used in practice. Part two emphasises that the GDP per capita according to purchasing power parity still remains the most popular among those measures. Further, it presents the ranking of the European Union countries taking that measure into account, the research period being 1999-2009. Part three points out that it is also the level of poverty (misery) that determines the economic system's efficiency. That level can be measured by means of various indicators, among others, the so called HPI-2 index calculated by the UN. It will be the Okun misery index, however, computed as the sum of inflation and unemployment rates that will be presented as an alternative being of interest from the macroeconomic point of view. The ranking of the European Union member states according to that measure in the 2000-2004 and 2005-2009 periods will be provided in part four. The article will end in a summary containing synthetic conclusions drawn from earlier observations.

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1. Introduction

Specialist literature offers numerous alternative criteria for the assessment of the economic system's efficiency. That efficiency may be influenced, among others, by the effectiveness of resource allocation, consumer satisfaction, distribution of income, technical progress, cultural and social development (Kosztowniak 2010, p. 70). Its good measure would undoubtedly be an indicator being a weighted average of each of those determinants. However, it would have a serious disadvantage as it would not allow for the precise quantification of some of the above-mentioned categories.

In consequence, the GDP per capita according to purchasing power parity still remains a frequently used measure of the economic system's efficiency although it is beyond all doubt that it suffers from numerous drawbacks. Firstly, it is a mere averaged value that does not reflect actual distribution within the society, and thus offers no information about disproportions of income distribution. Secondly, the GDP can only be measured as a category of economic growth. Hence, it provides no data on qualitative changes in the economy reflected by the category of economic development. Thirdly, the value of the GDP per capita is overestimated as it takes into account consumption of harmful goods such as tobacco products, alcohol, and drugs. The higher the legal consumption of those goods is, the higher the GDP occurs. Fourthly and finally, the current GDP is not a good measure of future growth perspectives if its structure is unknown. Considering long-term economic growth, the higher the share of investment and human capital expenditures in the GDP occurs, the better the situation becomes (Acocella 2002, p. 196-197).

Along with the above-mentioned drawbacks brought to notice by Acocella, there are also others that ought to be mentioned because even precisely computed GDP or GNP values do not answer a question about social costs borne in order to achieve those values. It may turn out that upward trends in the measures result from environmental pollution or increased numbers of working hours, which considerably reduces citizens' comfort of living. Moreover, those measures do not, in principle, take into account any activities carried out outside the market such as work performed on one's own and to satisfy one's own needs (Mankiw & Taylor 2009, p. 44-46).

It is also worth emphasising that the GDP and GNP are usually calculated for a particular year or quarter. Hence, they are the so called streams. Therefore, production as well as income may reach relatively high values in a given period but that does not have to be so for earlier accumulated assets that constitute a resource. In such a case the level of economic well-being of a particular country may be lower than in another despite the fact that its GDP or GNP have higher values.

Those deficiencies of the GDP per capita as a measure of the economic system's efficiency are partly overcome by computing the so called Social Development Index (or the HDI – Human Development Index). It was introduced by the UN and based on three principal elements of human life: longevity, level of knowledge, and standard of living (Acocella 2002, p. 196). Thus, along with the national product per capita, it also takes into consideration life expectancy, educational attainment (a mean of years of schooling for adults aged 25 years and older, and expected years of schooling for children of school going age), and living standard[1] (Tanzi 2006, p. 9).

Such a structure of the HDI prevents it from reflecting the reality in a precise manner due to the fact that it includes, along with actual values, also estimated and expected ones. Moreover, it does not eliminate all the above-mentioned drawbacks of the GDP per capita. Thus, yet another option may be the so called Measure of Economic Welfare (MEW). It was created by Nordhaus and Tobin in the 1960s. They added estimated values of production in the grey area of the economy, as well as those equivalent to the value of free time, public infrastructure (parks, roads), and consumer durables (furniture, jewellery), to the traditionally computed national product reduced by depreciation. They recommended that estimated values of environmental pollution, national defence expenditures, and costs of commuting to work be subtracted from the value calculated in that way (Kwiatkowski 2000, p. 347).

2. Ranking of the EU-27 Countries According to the GDP per Capita in the 1999-2009 Period

Due to considerable time and cost necessary to calculate the MEW indicator, it has not become a global measure commonly used in economic analyses to make international comparisons. Therefore, the simplicity of the GDP per capita according to purchasing power parity is, in that context, its huge advantage offsetting serious drawbacks of that measure. Thanks to that it remains one that is most popular and most commonly used for comparison purposes. Table 1 presents the ranking of the European Union countries (EU-27) according to that measure in 1999, 2004, and 2009. The presentation of data for those three years, each time at a five-year interval, allows to observe changes occurring in the last decade.

[1] According to UN calculations, in 2010 Norway was the leader of the ranking of countries arranged according to their HDIs, followed closely by Australia and New Zealand. Further positions in the first tenth were occupied by: the United States, Ireland, Liechtenstein, the Netherlands, Canada, Sweden, and Germany. Poland ranked 41st in that classification. The last, 169th position was held by Zimbabwe (*Human Development Report 2010*, p. 145-146).

Table 1. Gross Domestic Product at Purchasing Power Parity per Capita in the European Union Countries

Year	1999		2004			2009		
Place	Country	GDP[a] (EU-27= 100)	Place	Country	GDP[a] (EU-27= 100)	Place	Country	GDP[a] (EU-27= 100)
1	Luxembourg	237	1	Luxembourg	253	1	Luxembourg	267
2	Denmark	131	2	Ireland	142	2	Ireland	131
	Netherlands	131	3	Netherlands	129	3	Netherlands	130
	Austria	131	4	Austria	127	4	Austria	122
5	Ireland	126	5	Denmark	126	5	Sweden	120
	Sweden	126		Sweden	126	6	Denmark	117
7	Belgium	123	7	U. Kingdom	124	7	Belgium	116
8	Germany	122	8	Belgium	121		Germany	116
9	U. Kingdom	118	9	Germany	116		U. Kingdom	116
10	Italy	117		Finland	116	10	Finland	111
11	France	115	11	France	110	11	France	107
	Finland	115	12	Italy	107	12	Spain	104
13	Spain	96	13	Spain	101	13	Italy	102
14	Cyprus	87	14	Greece	94	14	Cyprus	98

15	Greece	83	15	Cyprus	90	15	Greece	95
16	Malta	81	16	Slovenia	86	16	Slovenia[c]	86
	Portugal	81	17	Malta	77	17	Czech Rep.	80
	Slovenia	81		Portugal	77	18	Malta	78
19	Czech Rep.	69	19	Czech Rep.	75		Portugal	78
20	Hungary	55	20	Hungary	63	20	Slovakia	72
21	Slovakia	50	21	Estonia	57	21	Hungary	63
22	Poland	49		Slovakia	57	22	Estonia	62
23	Estonia	42	23	Poland	51	23	Poland	61
24	Lithuania	39	24	Lithuania	50	24	Lithuania	53
25	Latvia	36	25	Latvia	46	25	Latvia	49
26	Bulgaria	27	26	Bulgaria	34	26	Romania[b]	42
27	Romania	26		Romania	34	27	Bulgaria[c]	41

[a] Gross Domestic Product at Purchasing Power Parity per Capita

[b] In 2007

[c] In 2008

Source: Author's own work based on: http://epp.eurostat.ec.europa.eu

The table indicates that Luxembourg was the undisputed number one of the ranking in all the three analysed years. Throughout the decade in question EU leaders included also Ireland, the Netherlands, Austria, Sweden, and Denmark, although, in the case of the last of the listed countries, a dwindling position in the ranking can be clearly observed (the fall from the 1999 second position to the sixth one in 2009).

Another group of countries is composed of those having a slightly lower GDP per capita which, however, is still higher than that computed for the whole area. That group, both at the beginning and at the end of the examined period, was led by Belgium closely followed by: Germany, the United Kingdom, Finland, France, and, despite a definitely downward trend, Italy. In 2004 that group was joined by Spain.

Table 2. Real GDP Growth Rate in the European Union Countries

Real GDP Growth Rate[a]					
Place	**Country**	**Period 2000-2004**	**Place**	**Country**	**Period 2005- 2009**
1	Estonia	8,0	1	Slovakia	5,5
2	Latvia	7,5	2	Poland	4,7
3	Lithuania	6,9	3	Bulgaria	3,9
4	Ireland	6,1	4	Romania	3,7
5	Romania	5,4	5	Czech Republic	3,5
6	Bulgaria	5,1	6	Cyprus	3,0
7	Greece	4,5	7	Lithuania	2,7
	Hungary	4,5		Luxembourg	2,7
9	Luxembourg	4,2	9	Slovenia	2,6
10	Slovakia	4,1	10	Malta	2,3
11	Slovenia	3,7	11	Greece	2,2
12	Spain	3,5	12	Latvia	2,1
13	Cyprus	3,4	13	Estonia	1,8
14	Czech Republic	3,2	14	Spain	1,7
	Poland	3,2	15	Austria	1,6
16	Finland	3,1	16	Ireland	1,5
17	Sweden	3,0	17	Netherlands	1,5
18	United Kingdom	2,9	18	Belgium	1,1

19	France	2,1		Finland	1,1
20	Belgium	2,0		Sweden	1,1
21	Austria	1,8	21	France	0,8
22	Netherlands	1,7	22	Germany	0,6
23	Italy	1,5		Hungary	0,6
	Denmark	1,5	24	United Kingdom	0,5
	Portugal	1,5	25	Portugal	0,4
26	Germany	1,1	26	Denmark	0,3
27	Malta	0,4[b]	27	Italy	- 0,4
EU-27		2,2	EU-27		0,9

[a] Average Annual Real GDP Growth Rate (constant prices)

[b] Average Annual Real GDP Growth Rate (constant prices) in 2001-2004

Source: Author's own work based on: http://epp.eurostat.ec.europa.eu

The GDP in Greece and Portugal, i.e. the last two member states of the old EU (EU-15), was a little below 100% of the product per capita in the whole EU-27. The latter was outstripped by some of the new EU members that joined the EU in 2004, namely by Cyprus and Malta (from 1999 on) and, later, also by Slovenia (from 2004 on) and the Czech Republic (from 2009 on).

Yet another group of countries includes those that, in the last examined year, achieved a product per capita below ¾ but above ½ of the value computed for the whole area. That concerns such countries as: Slovakia, Hungary, Estonia, Poland, and Lithuania. Even a half of the value of the GDP per capita for the whole area was not achieved by only three countries: Latvia and the newest member states, i.e. Romania and Bulgaria.

The analysis of the rankings for the three selected years allows to state that there were rarely significant differences in the positions of particular countries despite the fact that the research period was the entire past decade. However, it is worth noticing that disproportions among particular countries were definitely decreasing, which was actually not the case only for Luxembourg increasingly outdistancing the other countries. The trend is proved, for instance, by the fact that between 1999 and 2009 Poland fell from the 22nd to the 23rd position although, over that period, the value of its GDP per capita increased from a little below a half to more than 60% of the value calculated for the EU-27. Similar trends occurred for the other catching-up countries considered to include all those that joined the EU in the 21st century. The decreasing disproportions must have certainly been connected with more rapid

economic development in those countries as compared with developed ones. That can be observed by, among others, the analysis of table 2. The table indicates that in the first half of the past decade the Baltic States (Estonia, Latvia, and Lithuania) experienced the most rapid development, followed by Ireland, Romania, and Bulgaria, while in the latter half of that period the fastest growth took place in Slovakia, Poland, the Czech Republic, and, again, in the least developed countries – Bulgaria and Romania.

3. The Okun Misery Index as an Alternative Measure of the Economic System's Efficiency

The level of poverty (misery) is undoubtedly one of the factors of crucial importance for the assessment of the economic system's efficiency. If poverty strikes a significant part of the society, that definitely proves that the system lacks in efficiency. In practice, however, it is quite difficult to define a precise measure of poverty. One of the most popular among such measures is the Human Poverty Index – HPI-2 developed by the UN. That index characterises the level of the intellectual and economic development of the society. It includes such disaggregates as: the probability at birth of not surviving to the age of 60, the percentage of adults lacking functional literacy skills, the percentage of people living below the poverty line, and the rate of long term unemployment (*Human Development Report 2007-2008*, p. 355)[1]. It is beyond all doubt that each of the above-mentioned factors plays a vital role in the assessment of the economic system's efficiency. However, similarly to the MEW and HDI, their serious drawback is that they cannot be precisely quantified.

In that context, especially from the typically macroeconomic point of view, an interesting alternative seems to be the so called Okun misery index. It is computed as the sum of unemployment and inflation rates.

Unemployment and inflation should be considered to be among the most undesirable phenomena in every economy. It is beyond all doubt that the higher the unemployment and inflation are, the worse the economic situation of an average citizen becomes. In the case of high unemployment it is not only more difficult to find a job but one should also expect lower average remuneration. High inflation entails a decrease in the purchasing power of received nominal

[1] According to UN calculations, in 2008 Sweden was the leader of the ranking of 19 selected OECD countries arranged according to their HPIs, followed closely by Norway and the Netherlands. Further positions in the first tenth were occupied by: Finland, Denmark, Germany, Switzerland, Canada, Luxembourg, and Austria (*Human Development Report 2007-2008*, p. 242).

income. Therefore, it is believed that both a higher unemployment rate and a higher rate of inflation constitute an economic and social cost. Hence, in that sense, the sum of unemployment and inflation rates may also constitute a kind of a poverty index. Such an approach was proposed for the first time by Arthur Okun and thus that indicator is sometimes also called the Okun index.

At this point it ought to be emphasised that it is extremely difficult to simultaneously combat both inflation and unemployment. However, it is not out of the question on the assumption that the state's macroeconomic policy stimulates supply. Such steps taken by the state would, ceteris paribus, contribute to an increase in domestic production which is conducive to a fall in unemployment as well as, in consequence of increased competition in the market, to a drop in prices. However, the state's actions that consist in increasing the total supply are not possible in the short term when monetary and fiscal policy instruments may, in principle, serve only to affect the total demand. Still, in that case, one should be aware that it is not possible to simultaneously pursue two opposite goals because an increase in the total demand will cause an, at least temporary, increase in production and fall in unemployment (assuming that there are unused capacities in the economy) but, at the same time, also a rise in inflation. On the other hand, a reduction in the aggregate demand will contribute to a drop in inflation but at the expense of a temporary increase in unemployment.

In the theory of economics such a relationship is called the Phillips curve. Its shape indicates that such a combination of unemployment and inflation is available which, from the social and economic point of view, will mean the lowest sum of costs associated with those phenomena (Niskanen 2002, p. 193). However, the choice of an optimum combination must always be painful: lower unemployment at the cost of higher inflation or lower inflation at the expense of higher unemployment. Thus, to a large extent, the choice depends on priorities decided on by the state.

Irrespective of those priorities, both a higher unemployment rate and a higher rate of inflation can be treated as an economic and social cost necessary to be borne by the country and its citizens. The larger the number of people without jobs and the higher the rate of an increase in the general level of prices are, the higher the cost to be paid. The co-occurrence of high unemployment and

high inflation is termed stagflation in economics[2]. Thus, the sum of rates of intensity of those adverse phenomena may be regarded as a kind of a stagflation rate. Alternatively, as proposed by Acocella, that measure may be called the macroeconomic misery index (Acocella 2002, p. 217) or, as suggested by Lovell and Pao-Lin, the economic discomfort index (Lovell & Pao-Lin, 2000, p. 1).

On one hand, the simplicity of that index as a measure of the poverty scale is certainly its advantage. On the other hand, however, it may rather be seen as its drawback. Therefore, the poverty index constructed in such a way comes in for criticism mainly due to the very fact of excessive generalisation that may, unjustifiably, be conducive to the sense of social discomfort where there are no grounds for that. That is the case because, when taking only inflation and unemployment rates into account, merely a simplified utility function can be determined. Therefore, it is often suggested that it would be reasonable if that measure also included, among others, the rate of economic growth and an index of a situation in the stock exchange. Moreover, the Okun index was based on a controversial assumption that indifference curves for an average citizen indicating aversion to inflation and unemployment, are straight lines with a slope of -1, which means a constant marginal rate of substitution equal to 1 (Lovell & Pao-Lin 2000, p. 2). Hence, it was presumed that a rise in unemployment by 1 percentage point is always as disadvantageous as an increase in inflation by 1 percentage point – irrespective of the economy's initial situation. Still, it is difficult to agree with that assumption as it seems that the relationship describing willingness to accept a rise in one variable in exchange for a fall in the other without a change in the sense of discomfort depends, to a large extent, on the initial situation concerning unemployment and inflation. If the first of the variables is low, an increase in unemployment by 1 percentage point will presumably be accepted in exchange for a decrease in inflation by, for example, 1 or 2 percentage points. If, however, unemployment is high, its rise by 1 percentage point will certainly be accepted only in exchange for a considerable (e.g. by 4 percentage points) drop in inflation (Acocella 2002, p. 219).

Finally, the discussed index does not take into account adverse effects of deflation which improves the value of the index despite the fact that it actually

[2] If a rise in both the analysed variables is additionally accompanied by economic decline, such a situation is often referred to as slumpflation (Kołodko 1987, p. 144). Specialist literature offers, however, also an alternative interpretation of the above-mentioned terms. According to that, *stagflation* is defined as a situation where economic stagnation, usually characterised by high unemployment, is accompanied by rising inflation. Hence, pursuant to that definition an unemployment rate does not have to show an upward trend. However, if that is so, and, simultaneously, the inflation rate also goes up, *slumpflation* occurs (Belka 1985, p. 73). An overview of various definitions of *stagflation* can be found, among others, in: (Wojtyna 1988, p. 12-13).

results in a decrease in the total demand. Hence, in the opinion of the author, considering the positive consequences of low inflation, an alternative macroeconomic misery index should be proposed in the form of the sum of the unemployment rate and inflation rate deviations (both upward and downward) as compared with the target rate of inflation set at e.g. 2%[3].

The above-presented comments indicate that the Okun misery index does not have a clear scientific framework. Nevertheless, its values may often have considerable practical importance and determine, for instance, election results, which was proved in practice in numerous cases. A simultaneous strong rise in unemployment and inflation on an international scale occurred mainly in the 1973-1974 and 1979-1980 periods. In each of those periods the increase in the macroeconomic misery index was associated with a sharp rise in crude oil prices. However, the blame for the situation was attributed, first and foremost, to the then governments which, consequently, often lost power. Examples of governments that fell victim to citizens' dissatisfaction with the increasing misery index may include: Gaullist government replaced with Giscard d'Estaing's one in 1974 as well as Dutch liberals ousted from power by left-wing politicians. A similar situation occurred in 1982 when the conservative CDU/CSU union replaced the SPD party in the Federal Republic of Germany, liberals rose again to power in Denmark, and election was won by socialists led by François Mitterrand in France. The 1990 fall of Margaret Thatcher is often attributed to a fast increase in the misery index, too (Burda & Wyplosz 2000, p. 27)[4].

4. Ranking of the EU-27 Countries According to the Okun Misery Index in the 2000-2004 and 2005-2009 Periods

The already performed analysis indicates that, despite a great number of critical but fair comments on the Okun misery index, it has considerable practical advantages. Therefore, it seems interesting to present its values for all

[3] The inflation target was established at that level by the European Central Bank. On the other hand, the National Bank of Poland set that target at 2.5%.

[4] It is worth stressing that various macroeconomic indicators are used in models that serve to prepare election forecasts in the United States. One that came to especially great prominence was a forecasting formula devised by Fair where explanatory variables of the future election result include, among others, the rate of economic growth (affecting the condition of the labour market) and the inflation rate. Based on such a model, Fair incorrectly forecast the election result in 1992. However, in the case of subsequent elections (in 1996, 2000, and 2004) the model allowed to produce correct forecasts of results (Samuelson & Nordhaus 2009, p. 183-185).

the current member states of the European Union (EU-27). One-year analyses might, however, obfuscate the picture a bit due to the occurrence of a random term in the form of e.g. seasonal adverse weather conditions in some countries. Thus, data concerning that index is provided for two five-year periods, namely 2000-2004 and 2005-2009. Table 3 presents the EU-27 countries' ranking for those periods based on the first sub-aggregate of the macroeconomic misery index constituted by the mean (five-year average) unemployment rate, while table 4 offers a ranking for the same periods based on the five-year average rate of inflation being the other sub-aggregate of the Okun index.

Finally, table 5 presents a collective classification according to the complete misery index in the period in question. The table indicates that the macroeconomic misery index was lowest in the United Kingdom in the first half of the examined period but a very similar value of the index was also observed in Luxembourg, the Netherlands, Austria, and Denmark, while it was only slightly higher in Sweden, Cyprus, Ireland, and Portugal. The worst level of the discussed measure was recorded in Lithuania (despite very low inflation – see table 4), Estonia, Latvia, and, in particular, Bulgaria, Poland, Slovakia, and Romania.

The 2005-2009 period was characterised by a little lower index for the entire area as it dropped, despite a slight increase in inflation, from 10.8 to 10.4. The majority of the ranking's leaders of the first half of the period maintained their leading positions also in the second half of the analysed period when the first three places were occupied by the Netherlands, Denmark, and Austria respectively, followed closely by Cyprus, Luxembourg, the United Kingdom, Ireland, and Sweden.

Table 3. Unemployment Rate in the European Union Countries

Annual average Harmonized Unemployment Rate					
Place	**Country**	**Period 2000-2004**	**Place**	**Country**	**Period 2005-2009**
1	Netherlands	3,4	1	Netherlands	3,5
	Luxembourg	3,4	2	Denmark	4,3
3	Ireland	4,2	3	Austria	4,8
4	Austria	4,6	4	Cyprus	4,9
5	Denmark	4,7	5	Luxembourg	5,0
	Cyprus	4,7	6	Slovenia	5,7
7	United Kingdom	4,8		United Kingdom	5,7
8	Portugal	5,6	8	Czech Republic	6,3
9	Hungary	6,0	9	Romania	6,7
	Sweden	6,0		Malta	6,7
11	Slovenia	6,7	11	Ireland	6,8
12	Romania	7,3		Finland	6,8
13	Malta	7,4		Sweden	6,8
14	Belgium	7,9	14	Italy	7,2
15	Czech Republic	8,0	15	Bulgaria	7,7
16	Finland	8,1	16	Belgium	7,8
17	Germany	8,5	17	Lithuania	7,9
18	Italy	8,6	18	Estonia	8,0
19	France	9,2	19	Hungary	8,5
20	Greece	10,5		Portugal	8,5
21	Spain	10,6	21	Germany	8,6
22	Estonia	11,0	22	Greece	9,0
23	Latvia	11,5		France	9,0
24	Lithuania	13,5	24	Latvia	9,8
25	Bulgaria	15,8	25	Poland	10,7
26	Slovakia	18,5	26	Spain	12,0
27	Poland	18,8	27	Slovakia	12,2
EU-27		8,8	EU-27		8,1

Source: Author's own work based on: http://epp.eurostat.ec.europa.eu

Table 4. Inflation Rate (HICP) in the European Union Countries

Annual average Inflation Rate (HICP)					
Place	**Country**	**Period 2000-2004**	**Place**	**Country**	**Period 2005-2009**
1	Lithuania	0,6	1	Netherlands	1,6
2	United Kingdom	1,2	2	France	1,7
3	Germany	1,5	3	Germany	1,8
4	Finland	1,8		Finland	1,8
	Sweden	1,8		Ireland	1,8
6	Austria	1,9		Sweden	1,8
7	France	2,0	7	Portugal	1,9
	Belgium	2,0		Austria	1,9
9	Denmark	2,1	9	Denmark	2,0
10	Czech Republic	2,5	10	Italy	2,1
	Italy	2,5	11	Cyprus	2,2
	Malta	2,5		Belgium	2,2
13	Luxembourg	2,8	13	Malta	2,5
14	Netherlands	3,0		United Kingdom	2,5
15	Cyprus	3,1	15	Czech Republic	2,7
16	Spain	3,2		Luxembourg	2,7
	Latvia	3,2		Spain	2,7
	Portugal	3,2	18	Slovakia	2,8
19	Greece	3,4	19	Poland	2,9
20	Estonia	3,5	20	Slovenia	3,0
21	Ireland	4,1	21	Greece	3,1
22	Poland	4,3	22	Hungary	5,1
23	Bulgaria	6,4	23	Estonia	5,2
24	Slovenia	6,9	24	Lithuania	5,5
25	Hungary	7,2	25	Romania	6,8
26	Slovakia	7,8	26	Bulgaria	7,1
27	Romania	26,0	27	Latvia	8,4
EU-27		2,0	EU-27		2,3

Source: Author's own work based on: http://epp.eurostat.ec.europa.eu

The worst stagflation indices were still observed in: Poland (even despite a substantial fall in unemployment – see table 3), Bulgaria, Slovakia, and Latvia. Due to an increase in unemployment, that group was also joined by Spain for which it meant a fall by 5 ranks. A similar decline in the ranking was recorded for the United Kingdom (although it still remained one of the leaders) and Hungary. An even worse drop (by 6 positions) occurred in the case of Portugal. On the other hand, the most significant progress was recorded in Slovenia (a rise by 7 ranks) and, despite its still poor position, in Romania (a climb by 6 places). As for the other countries, their ranks were similar to those of the preceding five-year period.

As for the ranking taking into account the deviation from the target proposed in the preceding point (instead of the rate of inflation), a slight improvement in their positions would be observed for countries that were closest to the set reference value, i.e., first of all, France, Belgium, Austria, and Denmark in the 2000-2004 period, and Denmark, Portugal, Austria, and Italy in the 2005-2009 period respectively, while countries characterised by very low inflation, i.e. mainly Lithuania, the United Kingdom, and Germany would face a slight decline in their positions in the first half, and the Netherlands – in the second half of the examined period. Thus, there would mainly be cosmetic changes in the ranking. A more notable exception, however, may be the fall of the United Kingdom to as low as the fifth position in the 2000-2004 period. Hence, the United Kingdom would be outstripped by Luxembourg, the Netherlands, Austria, and Denmark, although differences expressed in percentage points would be very small.

Table 5. Stagflation Rate (Okun Misery Index) in the European Union Countries

Annual average Stagflation Rate[a]					
Place	**Country**	**Period 2000-2004**	**Place**	**Country**	**Period 2005-2009**
1	United Kingdom	6,0	1	Netherlands	5,1
2	Luxembourg	6,2	2	Denmark	6,3
3	Netherlands	6,4	3	Austria	6,7
4	Austria	6,5	4	Cyprus	7,1
5	Denmark	6,8	5	Luxembourg	7,7
6	Sweden	7,8	6	United Kingdom	8,2
	Cyprus	7,8	7	Ireland	8,6
8	Ireland	8,3		Finland	8,6
9	Portugal	8,8		Sweden	8,6
10	Belgium	9,9	10	Slovenia	8,7

	Finland	9,9	11	Czech Republic	9,0
	Malta	9,9	12	Malta	9,2
13	Germany	10,0	13	Italy	9,3
14	Czech Republic	10,5	14	Belgium	10,0
15	Italy	11,1	15	Portugal	10,4
16	France	11,2		Germany	10,4
17	Hungary	13,2	17	France	10,7
	Slovenia	13,6	18	Greece	12,1
19	Spain	13,8	19	Estonia	13,2
20	Greece	13,9	20	Lithuania	13,4
21	Lithuania	14,1	21	Romania	13,5
22	Estonia	14,5	22	Hungary	13,6
23	Latvia	14,7		Poland	13,6
24	Bulgaria	22,2	24	Spain	14,7
25	Poland	23,1	25	Bulgaria	14,8
26	Slovakia	26,3	26	Slovakia	15,0
27	Romania	33,3	27	Latvia	18,2
EU-27		10,8	EU-27		10,4

[a] Annual average Harmonized Unemployment Rate + Annual average Inflation Rate (HICP)

Source: Author's own work based on: http://epp.eurostat.ec.europa.eu

It is worth noticing that the proposed rankings of the EU countries made up on the basis of alternative macroeconomic misery measures are quite similar to the ranking reflecting the countries' positions based on the GDP per capita according to purchasing power parity (see table 1). In both the cases leaders include Luxembourg, Denmark, the Netherlands, Austria, the United Kingdom, and Sweden, while lowest ranking countries are Hungary, Slovakia, Estonia, Poland, Lithuania, Latvia, and, in particular, Romania and Bulgaria. The other countries, as a rule, occupy positions somewhere in the middle of the rankings as regards both their products per capita and Okun misery indices. Therefore, the latter measure confirms the generally lower quality of life in countries with low GDPs per capita (despite differences occurring also within that group of countries). It is absolutely not out of line with the fact that those countries are catching-up ones and develop most rapidly among all countries in the area (see table 2) as the faster economic growth usually results in higher inflation. The reason for the more rapid economic growth is often a stronger increase in work

productivity which, consequently, prevents a fall in unemployment and, through the so called Balassa-Samuelson effect, additionally pushes up inflation.

5. Conclusion

The performed analysis allows to draw the following conclusions:

1. There is no one and only, perfect measure of the economic system's efficiency. Those used include, among others, the Measure of Economic Welfare, as well as the Human Development Index and the Human Poverty Index calculated by the UN. A drawback of such measures is that they require considerable time and cost to calculate. Also, their weights are of the discretionary nature and it is not possible to precisely quantify their particular sub-aggregates.
2. In that context, the GDP per capita according to purchasing power parity still remains the most popular measure used in international comparisons. Despite its lack of a distinct scientific framework, an interesting alternative may be offered by the so called macroeconomic misery index (the Okun misery index) being the sum of unemployment and inflation rates or, in the proposed modified form, the sum of the unemployment rate and deviation of the inflation rate from a target set by the central bank.
3. Throughout the examined decade divided into two five-year periods macroeconomic misery indices computed in the above way appeared to be lowest mainly in Luxembourg, Denmark, the Netherlands, Austria, the United Kingdom, and Sweden. All those countries are the so called old EU members belonging to the EU-15 group. As for the lowest ranking countries, those are new EU members (which joined the EU in 2004 or 2007), i.e. Hungary, Slovakia, Estonia, Poland, Lithuania, Latvia, and, in particular, Romania and Bulgaria.
4. Okun misery index levels show great similarity to those of the GDP per capita according to purchasing power parity. According to the latter measure, leaders of both the first and second half of the examined period include the same countries that occupied best positions in the ranking based on the macroeconomic misery index. A similar situation occurred with respect to the lowest ranking ones.
5. Nevertheless, the comparison of the two analysed sub-periods indicates that there is convergence consisting in the so called catching up with the old EU member states by new members of the Community. That is clearly noticeable in the case of both the GDP per capita and the Okun misery

index irrespective of its calculation manner. It ought to be presumed that the convergence will intensify in the future although its rate need not be especially fast.

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Streszczenie

WSKAŹNIK UBÓSTWA OKUNA W KRAJACH UNII EUROPEJSKIEJ W LATACH 2000-2009

Celem artykułu było przedstawienie alternatywnych mierników sprawności działania systemu gospodarczego, ze szczególnym uwzględnieniem kształtowania się tzw. wskaźnika ubóstwa Okuna będącego sumą stopy inflacji oraz stopy bezrobocia.

Opracowanie składa się z czterech części zasadniczych i podsumowania. W punkcie pierwszym omówiono różnorodne mierniki sprawności systemu gospodarczego wykorzystywane w praktyce. W części drugiej podkreślono, iż nadal najpopularniejszym z nich jest PKB per capita według parytetu siły nabywczej. Zgodnie z tym miernikiem przedstawiono ranking państw Unii Europejskiej w latach 1999-2009. W punkcie trzecim podkreślono, że o sprawności systemu gospodarczego decyduje także poziom ubóstwa. Może być on mierzony różnymi wskaźnikami, m.in. tzw. indeksem HPI-2 obliczanym przez ONZ. Jako ciekawą z makroekonomicznego punktu widzenia alternatywę ukazano jednak miarę wskaźnika ubóstwa Okuna obliczanego poprzez zsumowanie stopy inflacji i stopy bezrobocia. Ranking państw Unii Europejskiej według tej miary w okresach 2000-2004 oraz 2005-2009 zaprezentowano w części czwartej. Całość zamknięto podsumowaniem, w którym zawarto syntetyczne wnioski z przeprowadzonych obserwacji.

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Social Aspects of New Technologies – the CCTV and Biometric (Framing Privacy and Data Protection) in the Case of Poland

Abstract

The purpose of this paper is to review the institution responsible for the protection of personal data within the European Union and national example - Polish as a country representing the new Member States. The analysis of institutional system - providing legal security of communication and information institutions, companies and citizens against the dangers arising from the ongoing development of innovative new technologies in the European Union and Poland. This article is an attempt to analyze the possibility of using security systems and Biometry CTTV in Poland in terms of legislation. The results of the analysis indicate that, in terms of institutions Poland did not do badly in relation to the risks arising from the implementation of technology. The situation is not as good when it comes to the awareness of citizens and small businesses. This requires that facilitate greater access to free security software companies from data leakage or uncontrolled cyber-terrorist attacks. With regard to the use of security systems, CCTV and biometrics, Poland in legal terms is still early in the process of adapting to EU Directive. The continuous development of technology should force the legislature to establish clear standards and regulations for the application of CCTV technology and biometrics, as it is of great importance in ensuring the fundamental rights and freedoms of every citizen of the Polish Republic.

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Introduction

This article is an overview[1] of institutions and legal regulations on the European and national level guaranteeing the security of communications and information of businesses as well as citizens. Its objective is the undertaking of efforts to perform a basic analysis of the institutional and legal system in terms of guaranteeing the security of the above entities against threats on the part of a progressing world. The average citizen of the European Union does not know what is happening with his or her personal date when making airline reservations, opening a bank account, or uploading a photograph to a social network service—and all the more so, has no knowledge of how to permanently remove it.

Monitoring information about oneself, access to personal data, changing such data or eliminating it are all fundamental rights that must be guaranteed in today's world of digital media. It is for this reason that it is important for the administrative bodies of the European Union, individual countries, and regions to guarantee security to as high a level as possible as well as for them to propagate knowledge on the subject. The intention of this paper is also a basic analysis of problems facing business entities in connection with technological progress and the potential for stopping threats.

To a significant extent, this article fits in with the COM(2010) 609 Communication from the European Commission on the strategy intended to protect personal data in all areas of policy, including the enforcement of the law, while at the same time decreasing bureaucracy for companies and guaranteeing the free flow of data in the European Union. As a result of public consultations, the European Commission has taken it upon itself to modify legislation in this field by the end of 2011. It is also for this reason that this article is intended to foster further discussion on possibilities for better regulation and legal solutions aimed at improving security against threats stemming from technological progress.

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[1] The base of this article are results of research done by the Polish team of the University of Lodz within the international Project organized within the 7th Framework Programme of the EU. Project full title: *Privacy Awareness through Branding of Security Organisations*; Grant agreement no.: *230473;* Technical University Berlin (coordinator of the Project); Interdisciplinary Center for Technology Analysis and Forecasting at Tel Aviv University; Turku School of Economics, Finland Futures Research Centre ; Lancaster University, Department of Organization, Work and Technology; Vanderbilt University, Department of Human and Organizational Development and University of Lodz. The aim of PATS is to increase privacy awareness across various sectors, from firms to government agencies, focusing especially on the development and use of Closed Circuit Television (CCTV) and biometrics. http://pats-project.eu/

Part I. Legal and Institutional Aspects

1. European Institutions Guaranteeing the Information and Communication Safety of Businesses, Companies, and all European Union Citizens

Talk of security within the framework of the European Union began at the moment of its establishment. Article 5 of the Treaty Establishing the European Economic Community (Treaty of Rome), signed on March 25, 1957, provided the basis for regulating this matter, so important to the unity of the Community.

"Member States shall take all appropriate measures, whether general or particular, to ensure fulfillment of the obligations arising out of this Treaty or resulting from action taken by the institutions of the Community. They shall facilitate the achievement of the Community's tasks. They shall abstain from any measure which could jeopardize the attainment of the objectives of this Treaty"[2].

General conditions guaranteeing the security of the European Union seen as a whole are contained in the following documents:

- Treaty on the Functioning of the European Union, Article 16,
- Charter of Fundamental Rights of the European Union, Article 8,
- Directive 1995/46/EC of the European Parliament and of the Council,
- Directive 2000/31/EC of the European Parliament and of the Council,
- Directive 2005/58/EC of the European Parliament and of the Council,
- Directive 2006/24/EC of the European Parliament and of the Council, and
- Directive 2009/136/EC of the European Parliament and of the Council.

The Data Protection Directive of 1995 is a milestone in the history of the security of personal data in the European Union. The Directive encompasses two of the oldest and equally important aspirations in the process of European integration. On the one hand, there is protection of fundamental rights and fundamental liberties of the individual, especially the legal basis for the protection of data. On the other hand, there is the implementation of the internal market, which in this case means the free flow of personal data. After fifteen years, this dual purpose is still in effect, just as the principles written into the

[2] Treaty Establishing the European Economic Community, 1957, Article 5, Journal of Laws of the European Union, EUR–LEX, http://eur-lex.europa.eu/pl/treaties/index.htm#founding, November 20, 2010.

Directive remain in force. However, the rapid development of technology coupled with globalization have resulted in far–reaching changes to the world around us, ushering in new challenges in the area of personal data protection[3].

Vice–President of the European Commission Viviane Reding, European Commissioner for Justice, Fundamental Rights and Citizenship, stated that the protection of personal data is a fundamental right and that it is for this reason that, in order to guarantee this right, it is necessary to have clear and consistent regulations in the area of data protection. She went on to say that the European Union's own regulations must be brought up to date in terms of challenges stemming from new technology and globalization, and that in the upcoming year the Commission shall develop new legal acts to strengthen the rights of the individual, while simultaneously guaranteeing the free flow of data within the framework of a unified European Union market by eliminating bureaucratic barriers[4].

It is for this reason that the Communication of the European Commission of November 4, 2010—COM(2010) 609—proposes the following strategy for the modernization of the European Union legal framework in the area of data protection, where several objectives have been formulated to be served by:

- Strengthening of individual rights so as to limit the accumulation and utilization of personal data to an absolute minimum,
- Expanding the extent of the unified market by decreasing bureaucratic burdens on companies and guaranteeing identical conditions of competition,
- Examining regulations governing data protection in collaboration with the police and judicial services in criminal cases, so that the data of individuals in these fields are also protected,
- Guaranteeing a high level of protection in the case of data transfer outside the European Union by improving procedures for international data transfer as well as making them more efficient, and
- Greater effectiveness in the enforcement of regulations by strengthening the position and increasing the powers of data protection bodies as well as their further harmonizing.

[3] Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions: A comprehensive approach on personal data protection in the European Union, COM(2010) 609 final, Brussels, November 4, 2010.

[4] "Twoja Europa" [Your Europe] Internet portal, "Personal Data Protection in the European Union" [in Polish], http://www.twojaeuropa.pl/2156/ochrona-danych-osobowych-w-ue---nowa-strategia, December 1, 2010.

Below is a proposed list of concrete Agencies directly responsible for the implementation of decisions derived from the provisions of European Union law relating of the protection of personal data.

ENISA – European Network and Information Security Agency

The prime purpose of ENISA is to enhance the capability of the Community, the Member States, and as consequence the business community, to prevent, address, and respond to network and information security problems.

To this end, ENISA is focusing its activities on:

- Advising and assisting the Commission and the Member States on information security and in their dialogue with industry to address security–related problems in hardware and software products,
- Collecting and analyzing data on security incidents in Europe and emerging risks,
- Promoting risk assessment and risk management methods to enhance the capability to deal with information security threats, and
- Awareness–raising and cooperation between different actors in the information security field, notably by developing public–private partnerships with industry in this area.

ENISA is headed by Dr. Udo Helmbrecht, Executive Director, who is responsible for all questions related to Information Security falling within the Agency's area of activity. The work of the Agency is overseen by the Management Board. This Board is composed of representatives from the European Union Member States and the European Commission as well as industry, academic, and consumer organization stakeholders. Moreover, the Executive Director is responsible to the European Parliament, the Council of the European Union, and the Court of Auditors.

As ENISA's budget is derived from the budget of the European Union, its expenditures remain subject to normal European Union financial checks and procedures[5].

[5] European Network and Information Security Agency, "General Information on ENISA," http://www.enisa.europa.eu/media/faq-on-enisa/general-faqs-on-enisa, November 21, 2010.

EUROPOL – European Police Office

Europol is the law enforcement agency of the European Union. Its aim is to help achieve a safer Europe by supporting the law enforcement agencies of European Union member states in their fight against international serious crime and terrorism.

A staff of more than 620 at Europol headquarters in The Hague, Netherlands, works closely with law enforcement agencies in the twenty–seven European Union member states as well as in non–European Union partner states such as Australia, Canada, the United States, and Norway.

International crime and terrorist groups operate worldwide and make use of the latest technology. To ensure an effective and coordinated response, Europol needs to be equally flexible and innovative, and make sure its methods and tools are up to date. EUROPOL has state–of–the–art databases and communication channels offering fast and secure capabilities for storing, searching, visualizing, and linking information.

Gathering, analyzing, and disseminating this information entails the exchange of large quantities of personal data. Europol sets and adheres to the highest standards of data protection and data security[6].

The Directorate of Europol is appointed by the Council of the European Union (Ministers for Justice and Home Affairs). It currently consists of Director Rob Wainwright (United Kingdom) and Deputy Directors Tom Driessen (Netherlands), Michel Quillé (France), and Eugenio Orlandi (Italy).

EDPS – European Data Protection Supervisor

The position of European Data Protection Supervisor (EDPS) was created in 2001. The responsibility of the EDPS is to make sure that all European Union institutions and bodies respect people's right to privacy when processing personal data. When European Union institutions or bodies process personal data about an identifiable person, they must respect that person's right to privacy. The EDPS makes sure they do so and advises them on all aspects of personal data processing. "Processing" covers activities such as the collecting of information, recording and storing it, retrieving it for consultation, sending it, or

[6] European Police Office, "EUROPOL Profile,"
http://www.europol.eu/index.asp?page+facts&language=en, November 21, 2010.

making it available to other people, as well as blocking, erasing, and destroying data.

There are strict privacy rules governing these activities. For example, European Union institutions and bodies are not allowed to process personal data that reveals racial or ethnic origin, political opinions, religious or philosophical beliefs, and trade–union membership. Nor may they process data on health or sexual orientation, unless the data is needed for health care purposes. Even then, the data must be processed by a healthcare professional or other person who is sworn to professional secrecy. The EDPS works with Data Protection Officers in each European Union institution or body to ensure that the data privacy rules are applied. In 2009, Mr. Peter Hustin was reappointed as European Data Protection Supervisor and Mr. Giovanni Buttarelli nominated as the Assistant Supervisor. Their mandate will run until January 2014[7].

The European Ombudsman

The position of European Ombudsman was created by the Treaty on the European Union (Maastricht, 1992). The Ombudsman acts as an intermediary between the citizen and European Union authorities. He is entitled to receive and investigate complaints from European Union citizens, businesses and organizations, as well as from anyone residing or having their registered office in a European Union country. The Ombudsman is elected by the European Parliament for a renewable term of five years. This corresponds to Parliament's legislative term. Nikiforos Diamandouros, the former national ombudsman of Greece, took up the post of European Ombudsman in April 2003 and was re–elected in January 2005 for a successive five–year term.

He helps uncover "maladministration" in European Union institutions and bodies. "Maladministration" means poor or failed administration. In other words, "maladministration" occurs when an institution fails to act in accordance with the law, or fails to respect the principles of good administration, or violates human rights. Some examples are:

- Unfairness,
- Discrimination,
- Abuse of power,

[7] EUROPA Gateway to the European Union, "European Union Institutions and Other Bodies: European Data Protection Supervisor," http://europa.eu/institutions/others/edps/index_en.htm, November 21, 2010.

- Lack or refusal of information,
- Unnecessary delay, and
- Incorrect procedures.

The Ombudsman carries out investigations following a complaint or on his own initiative. He operates completely independently and impartially. He does not request or accept instructions from any government or organization[8].

2. Legal and Institutional Aspects of Guaranteeing the Information and Communication Security of Businesses, Companies, and Citizens in Poland

Alvin Toffler, the American writer known for his work on digital communication and the corporate revolution considers the *flow and exchange of information as becoming the leading creative and power factor of Man*. It is for this reason that information and economic security of the state are so important to so many countries in the 21st century, and are becoming a priority in national safety. Poland is also aware of this problem. This is particularly seen in the "National Security Strategy of the Republic of Poland" document [in Polish]. Fighting threats to government tele–information and telecommunication systems is intended to act against computer crime as well as other hostile acts aimed against the telecommunication infrastructure, including the prevention of attacks on the components of that infrastructure. Of special importance is the protection of nonpublic information held or transferred in electronic form. An important task is the development and implementation of transparent principles of access by duly authorized state bodies to contents sent by electronic means. This requires the continuous adapting of the provisions of laws governing telecommunications so they meet current reality in spite of rapid technological progress and take into account the security of Poland[9].

[8] Ibid., "The European Ombudsman," October 21, 2010.

[9] "National Security Strategy of the Republic of Poland" [in Polish], page 2, http://www.mon.gov.pl/pliki/File/zalaczniki_do_stron/SBN_RP.pdf, November 22, 2010.

Regulations Governing Personal Data Protection on a National Level in Poland[10]

Legislation

- Constitution of the Republic of Poland (Articles 47 and 51),
- Act of August 29, 1997 on Personal Data Protection (uniform wording in the Journal of Laws of 2002, No. 101, item 926, with subsequent amendments), and
- National legal acts in the realm of personal data protection.

Procedural Regulations

- Executive acts supporting the Act on Personal Data Protection,
- Directive of the Minister of Internal Affairs and Administration of December 11, 2008 on the model form for submission of a database for registration by the Personal Data Protection General Inspector (Journal of Laws of 2008, No. 229, item 1536),
- Directive of the President of the Republic of Poland of November 3, 2006 on conferring the Statutes of the Office of the Personal Data Protection General Inspector,
- Directive of the Minister of Internal Affairs and Administration of April 29, 2004 on documentation for the processing of personal data, and technical and organizational conditions to be met by equipment and information systems serving the processing of personal data, and
- Directive of the Minister of Internal Affairs and Administration of April 22, 2004 on model forms for the named authorization and official identification of inspectors of the Office of the Personal Data Protection General Inspector.

Below is a proposed overview of institutions responsible for the implementation of the above legal acts in the area of personal data protection. They are also obliged to guarantee the security of institutions and companies

[10] Generalny Inspektor Ochrony Danych Osobowych [Personal Data Protection General Inspector], *Prawo* [Law], http://giodo.gov.pl/138/id_art/1975/j/pl, November 23, 2010.

against the spreading of danger resulting from the implementation of new technologies within the territory of the Republic of Poland.

Institutional aspects

MON – Ministry of National Defense

This Ministry is the principle body in Poland with responsibility for the security of its citizens—not only in terms of information or the economy, but also militarily. Although pursuant to the Constitution of the Republic of Poland, the President of the Republic of Poland is the Commander–in–Chief of the Armed Forces, Article 134 of the Constitution states that in times of peace, the President is the head of the Armed Forces through the Ministry of National Defense. It is for this reason that the Ministry is such an important body in matters of security[11]. The Minister responsible for managing the Ministry is Bogdan Klich.

Legislative provisions define the Minister of National Defense as being the primary state administration body in the area of national defense. The Minister manages the Ministry of National Defense, which mainly signifies the whole of activities of the Armed Forces of the Republic of Poland. It is the Minister who develops guidelines for the security of the country and is the overall head in matters relating to the common responsibility for defense.

Among the detailed tasks of the Ministry of National Defense are[12]:

- Managing the whole of activities of the Armed Forces in times of peace and developing national security guidelines, including proposals relating to the development of the Armed Forces as well as its structures,
- Implementing general assumptions, decisions, and guidelines of the Council of Ministers with respect to national security,
- Providing general supervision over the performance of security tasks by bodies of the state administration, state institutions, local government, economic entities, etc. to the extent as assigned by the Council of Ministers, and

[11] Sejm [Parliament] of the Republic of Poland, Constitution of the Republic of Poland, http://www.sejm.gov.pl/prawo/konst/polski/kon.htm, November 30, 2010.

[12] The Ministry of National Defense, "Tasks," http://www.mon.gov.pl/pl/strona/1/LG_1_2, November 30, 2010.

- Providing general management in matters dealing with the common obligation of national defense, the concluding of international agreements as stemming from decisions of the Council of Ministers relating to the participation of Polish military contingents in international peace missions and humanitarian operations as well as in military exercises conducted jointly with other countries or international organizations.

Two departments in the Ministry look over communication and information security—the Department of Information Technology and Telecommunications and the Department of Protection of Nonpublic Information.

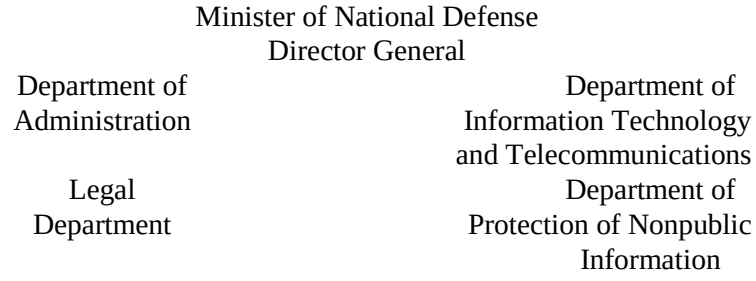
The **Department of Information Technology and Telecommunications** plans, oversees, coordinates, and identifies directions of development of information technology and telecommunications in the Ministry and functions as the organizer of the military telecommunication system. It is responsible for the functioning of information technology and telecommunications in the Ministry as well as for collaboration with the NATO, European Union, and public administration systems. It is the relevant cell with respect to defining technological standards for information technology and telecommunications in the Ministry and for developing and implementing standards as well as documents regulating the processes of design, implementation, operation, use, and maintenance of such systems[13].

The **Department of Protection of Nonpublic Information** coordinates and oversees the implementation of tasks relating to the protection of nonpublic information as well as the protection of facilities by the security divisions of organizational entities. It monitors the observance of regulations governing nonpublic information and military facilities and defines general, organizational, and technical requirements for systems serving the protection of such information as well as protection of the facilities of organizational units. It implements tasks related to providing office services for organizational cells[14].

[13] Ministry of National Defense, Department of Information Technology and Telecommunications, http://www.diit.mon.gov.pl, November 30, 2010.

[14] Ministry of National Defense, Department of Protection of Nonpublic Information, http://www.mon.gov.pl/pl/strona/1/LG_1_2, November 30, 2010.

Figure 1. Location in the Structure of the Ministry of National Defense



Source: Ministry of National Defense, Department of Information Technology and Telecommunications, http://www.diit.mon.gov.pl, November 30, 2010.

MSWiA – Ministry of Internal Affairs and Administration

As a part of its operations, this Ministry bears responsibility for the drafting of the legal, organizational, and technological foundations for the development of an information society as well as the development of directions and strategic programs for such development in the state. Its actions in the area of information security are implemented by the Information Society Department and the Office of Protection of Nonpublic Information.

The former is particularly responsible for the coordination of ventures linked with the development of an information society as undertaken by institutions implementing public tasks, especially the management of matters related to education in the area of implementing modern information technology solutions and the building of an information society as well as the related financing of projects in the area of the development of an information society by outside sources. The Director of the Information Society Department is Włodzimierz Barciński. He is directly responsible before Piotr Kołodziejczyk, the Undersecretary of State[15].

The latter Department involved in information security is the Office of Protection of Nonpublic Information. Its Director is Jarosław Rocławski who is directly responsible before Jerzy Miller, the Minister of Internal Affairs and Administration. The main tasks of this body include the managing of matters related to the performance of tasks by the Ministry as derived from the

[15] Ministry of Internal Affairs and Administration, Departments, http://www.mswia.gov.pl/portal/pl/78/6004/Departament_Spoleczenstwa_Informacyjnego.html, November 30, 2010.

provisions of the Act of January 22, 1999 on the Protection of Nonpublic Information, and it is in this field that it is primarily involved in:

- Administration of TEMPEST grade tele–information systems,
- Managing the NATO Contact Center, including supervision over the functioning of encoding systems—NATO e–mail, NATO telephone communications, and BERYL tele–copying communications,
- Participation in the drafting of international agreements in the area of the protection and exchange of nonpublic information, and
- Monitoring and training Ministry staff members in the area of observance of the provision of the Act of January 22, 1999 on the Protection of Nonpublic Information in Ministry Organizational Cells.

GIODO – Personal Data Protection General Inspector

Wojciech Rafał Wiewiórowski, Doctor of Law, is filling the post of Personal Data Protection General Inspector in the 4th term. The jurisdiction of the Personal Data Protection General Inspector is defined by the Act of August 29, 1997 on the Protection of Personal Data (uniform wording in the Journal of laws of 2002, No. 101, item 926, with subsequent amendments).

The Personal Data Protection General Inspector is empowered to:

- Monitor agreement between data processing and regulations governing the protection of personal data,
- Issue administrative decisions and adjudicate complaints in matters relating to the execution of regulations governing the protection of personal data,
- Manage a register of databases as well as provide information on registered databases,
- Review draft legislation and directives involving the protection of personal data,
- Initiate and undertake efforts in the area of improving the protection of personal data, and
- Participate in the work of international organizations and institutions concerned with questions of the protection of personal data.

In the event of any violation of regulations governing the protection of personal data, the General Inspector orders the reinstatement of a state in agreement with the law either by virtue of his office or upon application by the interested party by way of administrative decision. Specifically:

- Elimination of infringement,
- Supplementing, up–dating, correcting, granting access, or blocking access to personal data,
- Applying additional means securing the accumulated personal data,
- Stopping the transfer of personal data to third countries,
- Securing data or transferring them to a different entity, and
- Eliminating the personal data.

Should it be discovered that action or negligence on the part of the manager of an organizational unit, its staff, or a private individual who is the administrator of the data demonstrates the features of crime as defined in the act, the General Inspector directs notification of the commission of a crime to the body established to pursue crime, attaching evidence documenting the suspicion[16].

ABW – Internal Security Agency

The Internal Security Agency is a special service established to protect the constitutional order of the Republic of Poland. The range of its tasks concentrates on the protection of the internal security of the state and citizens. As a special service it is subject to civilian control. Its operations ore overseen by the Prime Minister and monitored by the *Sejm* [Parliament]. The responsibilities and powers of the Internal Security Agency are defined by the Act of May 24, 2002 on the Internal Security Agency and Foreign Intelligence Agency[17]. Primary responsibility for managing the Internal Security Agency lies with Brigadier General Krzysztof Bondaryk. The Internal Security Agency performs its tasks through the following activities:

a) Fighting terrorism, especially cyber–terrorism,
b) Counterespionage,
c) Fighting the proliferation of WMD,
d) Fighting economic crime,
e) Fighting organized crime,

[16] Personal Data Protection General Inspector, "Tasks and Jurisdiction," http://www.giodo.gov.pl/138/id_art/1975/j/pl, November 31, 2010.

[17] Internal Security Agency, http://www.abw.gov.pl/portal/pl/2/4/Agency_Bezpieczenskta_Wewnetrznego.html, November 31, 2010.

f) Fighting corruption,

g) Protection of state secrets, and

h) Analyses and information.

With respect to studies into the security of information and communications carried out in this report, several tasks managed by the Internal Security Agency are worth a closer look.

A) Cyber–Terrorism

There is no univocal definition for *cyber–terrorism*. The term first appeared in 1979 when a Swedish ministry included it in its strategy aimed at national threats. Looking further, a possible solution is to use the definition as assumed by specialists from the Academy of National Defense who, in their "Analysis of the Systemic Phenomena of Cyber–Terrorism" [in Polish], define it as a "politically motivated attack or threat of attack on computers, networks, and information system in order to destroy infrastructure, intimidate, or compel governments or people to meet far–reaching political or social objectives" (Sienkiewicz, Świeboda, Lichocki 2008).

An attack on one element of the system may disrupt the functioning of other elements (the "domino" effect) because they are all so closely interlinked.

The most serious source of threat to the tele–information network, apart from imperfect technical solutions, is purposeful actions. These may take on the form of:

- The disruption of system operations,
- Unauthorized introduction or copying of data, and
- Breaking through security, thus taking over control over individual components of the infrastructure—e.g. in the event of war.

The special services of hostile states or terrorist organizations may reach for the latter method. In their turn, organized crime groups may be interested in stealing data or making unauthorized modifications—e.g. in the systems and networks of financial institutions.

The Internal Security Agency bears responsibility for guaranteeing the security of key state systems and tele–information networks. To this end,

Internal Security Agency structures include the Governmental Computer Security Incident Response Team[18].

B) Counterespionage

Foreign intelligence strives to acquire nonpublic information, while camouflaging its operation and choice of people it works with. It undertakes efforts to procure knowledge on politicians, state defense systems, critical infrastructure, strategic economic entities, and scientific–technical centers[19].

On the one hand, tasks related to state security involving counterespionage encompass the protection of entities that may be the subject of interest on the part of foreign intelligence services. On the other hand, the monitoring of actions taken by such services within the territory of the Republic of Poland, especially so as to identify and neutralize efforts at procuring information using methods in contravention of the law. This may take place by way of[20]:

- Efforts at making contact with government employees,
- Efforts at procuring information designated as secret,
- Efforts at procuring dual–use technologies and goods, and
- Activities in the economic sphere (especially in the power engineering sector) that may threaten the economic foundations of the Republic of Poland.

The security system is primarily concentrated on:

- Central and local government administration offices,
- Economic entities of significance in terms of the primary interests of the Republic of Poland, and
- Scientific and technical centers involved in research on dual–use technologies.

The **Governmental Computer Security Incident Response Team** (CERT) was established on February 1, 2008. The basic task of this team is guaranteeing and developing the capacity of public administration entities of the Republic of Poland to protect themselves against cyber–threats, particularly

[18] Internal Security Agency, "Cyber–Terrorism," http://www.abw.gov.pl/portal/pl/88/306/Cyberterrorism.html, November 31, 2010.

[19] Ibid., "Counterespionage."

[20] Ibid.

taking into account attacks aimed at infrastructure encompassing tele–information systems and networks whose destruction or disrupting may be a threat to human life or health, national and environmental heritage of significant expanse, or cause serious material losses as well as disruption of the functioning of the state. The Governmental Computer Security Incident Response Team operates within the framework of the Tele–Information Security Department of the Internal Security Agency (ABW)[21].

The Governmental Computer Security Incident Response Team is primarily involved in:

- Coordination in reacting to incidents,
- Publication of alerts and warnings,
- Servicing and analysis of incidents (including the gathering of evidence performed by teams of court experts and assessors),
- Publication of notifications (security bulletins),
- Coordination of reaction to security gaps,
- Conducting security tests, and
- Responding to incidents in networks encompassed by protection through the ARAKIS–GOV System.

BBN – National Security Bureau

The National Security Bureau, managed by Brigadier General (Retired) Professor Stanisław Kozieja, Ph.D., Habil., serves the President of the Republic of Poland by providing assistance and support in the performance of tasks in the realm of security and defense. These tasks stem from the fact that the President is the highest–ranking representative of the Republic of Poland and guarantor of continuity of state authority as defined in the Constitution of the Republic of Poland. The President also oversees the observance of the Constitution, guards the sovereignty and safety of the state, and the inviolability and integrity of its territories[22].

[21] Governmental Computer Security Incident Response Team, http://www.cert.gov.pl/portal/cer/27/15/O_nas.html. November 31, 2010.

[22] National Security Bureau, "National Security Bureau Mission," http://www.bbn.gov.pl/portal/pl/18/1287/Misja_BBN.html, December 1, 2010.

With respect to information and communication security, it is the Department of Nonmilitary Security (DBP) and the Plenipotentiary for Nonpublic Information Protection Division that bear responsibility.

Among primary tasks facing the Department of Nonmilitary Security (DBP), directed by Lucjan Bełza, are:

- The accumulation of information on internal and external nonmilitary threats to national security, with special stress on public and social–economic safety as well as the development of relevant assessment in this area,
- Participation in developing strategic concepts and tasks for state structures in nonmilitary fields of national security, especially public, information, social, and economic safety, and
- Monitoring, analysis, and assessment of running government service activities, especially those of the Intelligence Agency, Internal Security Agency, Central Anticorruption Bureau, Military Intelligence Service, Military Counterintelligence Service, Government Protection Bureau, Corrections Service, Border Guard, Polish Fire Brigade, and the Police.

The scope of tasks of the Plenipotentiary for Nonpublic Information Protection Division, directed by Sylwester Żedecki, include:

- Guaranteeing the security of nonpublic information in the Bureau, including physical protection,
- Guaranteeing the security of tele–information systems and networks in the Bureau, where nonpublic information is created, processed, stored, and transmitted,
- Monitoring the security of nonpublic information and observance of regulations on the security of such information in the Bureau,
- Periodic review of records, materials, and document circulation in the Bureau,
- Development of security plans for nonpublic information in the Bureau as well as the overseeing of their implementation, and
- The training of Bureau personnel in the area of nonpublic information security.

Intelligence Agency

The Intelligence Agency, like many contemporary intelligence agencies, including foreign ones, strives to achieve a natural and efficient fit in the democratic structures of a modern citizens' society. This objective is serves by

transparency, to a greater degree than in the past, in areas that do not infringe against the security interests of the state or fundamental rules governing the operations of intelligence services. These always include the absolute protection of sources and personnel as well as assets, resources, and intelligence operations[23].

The Agency's main objective is the procurement of public as well as nonpublic information outside Poland's borders. From the point of view of the information and communication safety of Poland, the Intelligence Agency may warn of possible cyber–terrorism attacks or electronic espionage through its services. Its main tasks are the procurement, analysis, processing, and transfer of information that may be of significance to the safety of the Republic of Poland, its international standing, and its economic and defense potential to the relevant bodies.

Government Security Program

As of 2007, the Government Security Program is a program aimed at collaboration between the Internal Security Agency and Microsoft. Its purpose is the facilitating of joint actions by public administration bodies in the area of computer security and the mollifying of the effects of attacks on public information infrastructure. Collaboration also serves the support of government administration bodies in effective reaction to threats against national and public security as well as against the economy, through common ventures and the exchange of information.

Public administration institutions of many countries throughout the world that are responsible for reacting to events tied with computer security, the protection of key information technology infrastructure using Microsoft technology, and information technology security are a party to the Microsoft Government Security Program. It is within the framework of this program that representatives of bodies and offices responsible for supervision over the safety of the most important information technology system sin Poland receive the opportunity to familiarize themselves with tested procedures for reacting to emergency situations caused by electronic attacks, viruses, and attempts at unauthorized entry into the system. Moreover, the project is aimed at the group of public administration entities taking direct part or coordinating actions vital to the security of critical tele–information infrastructure, primarily the Internal Security Agency, Ministry of Internal Affairs and Administration, Ministry of

[23] Intelligence Agency, http://www.aw.gov.pl/pol/witamy.html, December 1, 2010.

Justice, Ministry of Transportation, and the Office of Electronic Communications[24].

3. The Protection of Regional Companies and Institutions Against Hazards Stemming from the Implementation of New Information–Communication Technologies

The **ARAKIS–GOV System** is an early–warning system alerting of threats in the Internet. The system is an example of the effective collaboration of the state, through the Department of Tele–Information Security of the Internal Security Agency and research institutions operating within the framework of NASK of CERT Poland. ARAKIS–GOV was created to meet the needs for support in protecting the tele–information resources of state administration on a central level as well as on the local level and that of economic entities as a result of the expanding of the ARAKIS System as created by CERT Poland to encompass additional functionality.

ARAKIS–GOV is not a typical security system and in no case can it replace the functionality of standard network security systems such as firewalls, antivirus software, and IDS/IPS[25].

However, due to its specifics, it may be successfully applies as a supplement to the above systems delivering information on:

1. New threats (global) appearing in the Internet, including:
   - Newly identified self–propagating threats such as worms,
   - New types of attacks observed from the level of a large number of sites,
   - Network traffic activity trends at specific ports, and
   - Activity trends of viruses sent by electronic mail.
2. Local threats linked with a concrete, protected site:
   - Lack of up–to–date antivirus vaccines,
   - Infected hosts in internal networks,
   - Leaking edge configurations in firewall systems, and
   - Attempts at scanning public address space both from the Internet and internal networks.

[24] Microsoft Polska, Press Center, http://www.microsoft.com/Poland/centrumprasowe/prasa/07_10/06.mspx, December 1, 2010.

[25] Governmental Computer Security Incident Response Team, ARAKIS–GOV System, http://www.cert.gov.pl/portal/cer/4/310/System_ARAKISGOV.html, December 2, 2010.

Moreover, the tools implemented in the system can make possible the comparison of network traffic statistics seen from the level of a protected site with the global picture as derived form all installed sensors with geographical imaging of the locations of suspicious traffic. At the same time, a unique feature of the ARAKIS–GOV System is the fact that it in no way monitors the content of information exchanged between protected institutions and the Internet. System detectors are installed outside the protected internal networks of the institutions on the side of the Internet[26]. Currently, the system sensors are installed in over sixty government offices on a central as well as local level. There is also the possibility of completely free use of the system by many institutions and economic entities.

Economic Entities

Economic entities are exposed to many threats stemming from the implementation of new technologies. The greatest threat is primarily the informatization of companies. Currently, the problem is not just spam as most users have learned to ignore unsolicited information and anti–spam filters watch over just about every mail server or viruses that are taken care of by event the simplest, free antivirus programs.

The main problem for corporations is a Distributed Denial of Service (DDoS) attack. An example of such an attack may be the attack on servers in Estonia on April 27, 2007, where the tele–information network was thrust to a critical stage. The web pages of the government, the chancellery of the president, and the main newspapers were blocked, while bank networks and those of the Estonian police were brought down. Estonians were cut off from access to information in the Internet as well as from access to banks and money. The outcome of this cyber–attack was the complete paralysis of ATMs, electronic mail, Internet portals, and the cellular phone network[27]. DDoS attacks are one of the most serious types of attacks against which it is impossible to safeguard, while at the same time they are capable of making life difficult, even in the largest companies. Often, "cyber–terrorists" threaten such attacks to extort money from companies in exchange for desisting from the attack.

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[26] Ibid.

[27] Aleksander Ścios, Gazeta Finansowa, *Cyberpułapka? Estonia, Gruzja… Polska* [Cyber–traps? Estonia, Georgia … Poland?], http://www.gazetafinansowa.pl/index.php/wydarzenia/kraj/3821-cyberpulapka-estonia-gruzja-polska.html, December 2, 2010.

Another problem facing companies is the leaking of data. Most data leaks are the result of negligence or purposeful actions by users who may have access to data within the framework of the company network. The company's most important resource—its workers—can also cause the gravest harm. Tools serving as protection against such threats offer interactive alerts relating to peripherals. They allow IT managers to define dialogue boxes that appear on the computer user's screen in the event of work on confidential data. Such windows teach workers the principles of procedures involving confidential data, increase the awareness of problems linked with security, and allow the company to receive worker support in the battle with data leaks. Dialogue boxes warning workers against threats serve as a basis for administrators to define and adapt warnings to workers and define steps taken by them in the event of security violations[28].

When a worker wants to purposefully steal data—e.g. by copying to a external medium or transmission by e–mail—there are DLP systems registering such events. Unfortunately their application is expensive and for this reason, with the exception of very large companies with the highest requirements with respect to security, most organizations do not have the funds, human resources, and often even the need to implement DLP systems on a major scale[29].

Another problem is the transfer of the personal data of the workers themselves to other companies providing outsourcing services. The Act on the Protection of Personal Data burdens companies with several obligations. These also involve the personal data of workers. Many companies forget that entrusting an outside company with bookkeeping, which involves the transfer of the personal data of workers, requires the conclusion of a written agreement regarding the entrusting of data for processing. An employee cannot be required to provide any data other than those indicated in the Act[30].

[28] Mariusz Szewczyk, *Biuletyn Bezpieczeństwa Informatycznego* [Information technology safety bulletin], http://www.dataq.pl/Rozwiazania/Bezpieczenstwo/Biuletyn-bezpieczenstwa/LeakProof-ochrona-przed-wyciekiem-danych, December 2, 2010.

[29] Józef Muszyński and Patryk Królikowski, *Net World*, "DLP – Zapobieganie wyciekom danych" [DLP: Preventing data leaks], http://www.network.pl/artykuly/349862_4/DLP.zapobieganie.wyciekom.danych.html, December 3, 2010.

[30] Andrzej Janowski, *Gazeta Podatkowa*, No. 705.

4. Summary

In terms of institutions, Poland does not fare badly with respect to threats stemming from the implementation of technologies. A good example is the ARAKIS–GOV System and the Government Security Program developed jointly by the Government and scientific and research institutions. The situation is not as good when it comes to the awareness of individual citizens and smaller companies. This necessitates the facilitating of broader access to free programs securing companies against data leaks or uncontrolled cyber–terrorist attacks by companies. Unfortunately, companies lacking greater knowledge on the above threats often make little of the problem and in order to avoid additional costs make security arrangements on a very basic and limited level.

Part II. – Current provision regarding the use of CCTV and Biometrics in Poland

1. Introduction

In the first section will be described **the legal provisions in regard to CCTV surveillance, taking into account the laws and the practice**. This section will close with some words on technical standards, CCTV Monitoring Systems and the Technical Security Employee License.

Afterwards will be explained **the main regulations affecting biometric technologies**. In this field Poland is still at the beginning of the process of adjustment to EU Directive.

Closed Circuit Television (CCTV)

"CCTV stands for 'closed circuit television.' It is a television system comprised of a camera or a set of cameras monitoring a specific protected area, with additional equipment used for viewing and/or storing the CCTV footage. The term itself originates from the fact that, as opposed to broadcast television, CCTV is usually a 'closed' rather than 'open' system with a limited number of viewers. CCTV has been traditionally used for surveillance in specific locations with increased security needs such as banks, airports, and military installations. In addition, in industrial plants, CCTV equipment has been used to remotely

observe processes, for example, in hazardous environments. Increasing use of CCTV in public places has caused debate over public surveillance versus privacy"[31].

Pursuant to Article 23 of the Civil Code, where "personal rights such as health, liberty, dignity, freedom of conscience, surname and pseudonym, image, secrecy of correspondence, immunity of residence, and creativity involving science, art, inventiveness, and rationalization, all fall under the protection of civil law regardless of any protection provided by other regulations." Thus, the right to a person's image is among the basic personal rights of a person[32].

The Act on Protection of Personal Data makes up superior–level legislation governing regulations on the processing and safety of a person's image in CCTV systems. Specifically, Article 7, Clause 2, and Article 23, Clause 1, worded as follows:

"Article 7. Whensoever's the Act makes mention of:

"2) Data processing, this shall be understood as any operation performed on personal data such as collection, recording, storage, analysis, modification, providing access, and elimination, and especially operations performed in information technology systems,

"2.a.) Information technology system, this shall be understood as an assembly of mutually collaborating equipment, programs, and procedures for information processing as well as programming tools applied for the purpose of data processing,

"2.b)The securing of data in information systems, this shall be understood as the implementation and use of applied technical and organizational measures guaranteeing the protection of data against unauthorized processing."

Article 23, Clause 1. The processing of data is only allowed when:

"1) The person to which the data pertain grants permission, unless it is a question of the elimination of data relating to that person,

"2) It is vital for the performance of rights or the meeting of obligations as stemming from the provisions of the law,

"3) It is vital for the performance of an agreement, when the person to which the data pertain is a party or when it is vital in order to undertake action prior to the conclusion of the contract as demanded by the person to which the data pertain,

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[31] European Data Protection Supervisor Glossary, http://www.edps.europa.eu/EDPSWEB/edps/site/mySite/pid/73, dated January 6, 2011.

[32] Article 3, The Civil Code – Act of April 23, 1964, Chancellery of the *Sejm* [Parliament] of the Republic of Poland, http://isap.sejm.gov.pl/Download?id=WDU19640160093&type=3.

"4) It is vital for the performance of legally defined tasks performed for the public good,
"5) It is vital for the meeting of legally justified objectives performed by data administrators or data users and such processing in no way infringes against the rights and freedoms of the person to which the data pertain"[33].

An employer may oversee employees, but must take care that their privacy is not violated. Article 11.1. of the Labor Code states that "a person's personal rights, especially health, liberty, dignity, freedom of conscience, surname and pseudonym, image, secrecy of correspondence, immunity of residence, and creativity involving science, art, inventiveness, and rationalization, all fall under the protection of civil law regardless of any protection provided other regulations."

Successive provisions concerning the protection of privacy may be found in Article 49 of the Constitution:

"The freedom and privacy of communication shall be ensured. Any limitations thereon may be imposed only in cases and in a manner specified by statute."

Moreover, pursuant to the Constitution, an employee has the right to disclose his or her data only in line with his or her wishes (Article 51). The obligation of disclosing specific data may only be derived from legislation.

In order not to infringe against an employee's right to privacy, the employer should inform him or her of monitoring in the work bylaws or employment contract. Moreover, the placement of cameras at locations where an employee would be justified in expecting respect for his or her privacy—e.g. lavatories and changing rooms—is forbidden.

It is assumed that the monitoring of employees signifies operations undertaken in order to gather information concerning employees by subjecting them to direct observations as well as indirect observation by electronic means. Since recordings from such monitoring are also stored and processed on cassettes or discs, monitoring is subject to the Act on the Protection of Personal Data. Thus, the data administrator (the employer) must make a special effort to make sure that the recorded material is secured against access by unauthorized parties (Article 36, Clause 1 of the Act). What is more, the employer must also remember that information gathered in such a way may only be stored for the length of time as necessary for the purposes of monitoring (Article 26, Clause 1, Sub-clause 4 of the Act). Furthermore, only persons who were previously duly

[33] The Inspector General for Personal Data Protection, Act on the Protection of Personal Data of August 29, 1997, with subsequent amendments, http://www.giodo.gov.pl/plik/id_p/473/j/pl/ (accessed on January 6, 2011).

authorized by the employer may have access to the processing of data (Article 37 of the Act) and the obligation of registering persons so empowered rests with the employer (Article 39, Clause 1 of the Act).

The absence of legal regulations relating to monitoring in the work place impedes the identification of clear limits on the actions of employers. However, efforts are being made to define requirements to be met in the monitoring of employees.

It is assumed that monitoring must be in agreement with the law, which signifies that it cannot take on forms violating the law. Moreover, monitoring may only be carried out for justified reasons—e.g. protection of information technology systems or the prevention of actions on the part of employees that may harm to work place. In introducing monitoring, the employer must also be guided by principles of proportionality (adequacy). This signifies that the means undertaken must be in proportion to the objective to be achieved when using employee monitoring, and this must be done in a manner interfering in the employee's privacy to least possible extent.

One of the arguments applied by employers is use of video recordings to protect employees. Thanks to such an "approach" the employer may monitor employees while simultaneously protecting them against robberies (fuel stations, banks, hotels), for example.

Greater detail in CCTV use is seen in concrete regulations concerning specific locations for camera installation. Legislation identified in this area includes:

- Act on Municipality Security Forces—the monitoring of cities (Journal of Laws of June 23, 2009) "In connection with the performance of tasks as defined in Clause 1 of Article 10, security forces have the right to observe and register with the application of technical means of images in public places when such activities are necessary for the performance of tasks and in order to:

  "1) Record proof of crimes or misdemeanors,

  "2) Prevent disturbances of the peace and order in public places, and

  "3) Protect municipal and public facilities.

  The Council of Ministers shall define the manner of performance of actions as discussed in Clause 2 by way of Directive, taking into account the need for guaranteeing effective observation and registration by way of technical

means of images of occurrences in public places as well as the need to respect human dignity and observance and protection of human rights[34]".

- Act on the Safety of Mass Public Events of March 20, 2009 (Journal of Laws No. 62, item 504).
- Act of August 22, 1997 on the Protection of People and Property (Journal of Laws of September 26, 1997) concerning requirements relating to companies managing operations involving security as well we relating to the licensing of people performing the installation of CCTV equipment.

Unfortunately, in the case of work places, there is a lack of judicial precedent that might be helpful is defining absolute grounds as to application. The monitoring of employees with the help of cameras registering images is not forbidden. However, it is assumed that there are certain rules that employers should keep in mind. It should be remembered that:

- Cameras may not be placed at locations where the employee may reasonably expect that privacy be respected—e.g. lavatories and changing rooms, and
- The employer should warn subordinates that they may be within the range of cameras, where rules in this respect should be defined in the work bylaws or among the provisions of the employment contract.

Video monitoring (like all other methods of monitoring employees) involves data processing as understood by Article 7, item 2 of the Act on Protection of Personal Data, hereinafter referred to as the "Act" (as in Journal of Laws 2002, No. 101, item 926, with subsequent amendments). For this reason, the data administrator (employer) should take special care to make sure the recorded material is secured against falling into unauthorized hands (Article 30, Clause 1 of the Act). What is more, the employer must also remember that information procured in this way may only be stored for a period of time as needed for monitoring purposes (Article 26, Clause 1, Sub clause 4 of the Act)[35].

CCTV Systems: Basic Qualities and Requirements

In Polish terminology, closed circuit television is a fragment of television's applications in the monitoring and protecting of people and

[34] Act Changing the Act on Municipality Security Forces, the Act on Polish Forces, and the Traffic Code (Journal of Laws No. 97, item 803).

[35] Gospodarka.pl web pages: "Monitorowanie pracowników" [Monitoring employees], http://www.prawo.egospodarka.pl/34089.Monitoring-pracownikow-co-wolno.2.34.3.html (accessed on January 6, 2011).

facilities. The installation of closed circuit television requires the highest technical culture as well as the ability to foresee even highly improbable events. In systems related to security, each and every installer and user must be absolutely aware of the fact that equipment with parameters deemed poor when compared with the tasks assigned may, in the future, prove a threat to property or even human life. This also involves problems caused by failure.

The Technical Security Employee License

Installation of closed circuit television requires a license.

License – Certification for the performance of tasks related to the protection of people and property that should be held by every employee providing services in this field. A 1st Level License grants rights to install systems. A 2nd Level License also grants rights to perform design work. Ways of receiving certification and licenses, required documents, and the model forms of the relevant IDs are contained in the Directive of the Minister of Internal Affairs and Administration of June 4, 1998 concerning model forms and procedures for issuing licenses to physical security and technical security personnel as well as types and frequency of issuing of opinions on security personnel by law enforcement bodies (Journal of Laws of June 26, 1998).

A **license** covering economic activity in the area of rendering technical security services must be held by the company providing security services for facilities that are obligated to have security—the list of such facilities may be found in the Act of August 22, 1997 on the Protection of People and Property (Journal of Laws of September 26, 1997)[36].

CCTV Monitoring Systems Used in Security– The EN 50132–7 Standard

The **EN 50132–7 standard** discusses the process of design, execution, and acceptance of industrial systems. Its guidelines are important in that it is difficult to build a good system without applying the algorithms they contain. Each installer, or even each investor, should have a copy.

Due to the responsibility borne by such systems, it is important to apply tested algorithms for building systems. Such solutions may be found in the

[36] INNEX web pages, "Telewizja przemysłowa. Wymagania" [CCTV: Requirements], http://www.innex.pl/?urzadzenia:wymagania (accessed on January 6, 2011).

above standard. The following procedures for designing CCTV systems are recommended:

- Specification of user requirements,
- System design,
- Equipment selection,
- System installation and start–up,
- Release of the system to the customer, and
- Maintenance (keeping the system operative).

The formulation of detailed operating requirements prior to commencement of the project allows for proper design as well as optimum selection of equipment, keeping requirements and costs in mind[37].

2. Biometrics

Rapidly developing biometric technology is finding increasingly broad application in the public security sector as well as outside it. Equipment using biometric identifiers to identify people or to verify their identity is consistently improving with each passing year. Scientists are pointing to the possibility of replacing qualities used most often today (such as fingerprints) with new properties of the human body that are more difficult to fake (such as the iris or blood vessels of the palm). Raising the level of security and decreasing the risk of forging identity are the advantages of biometric identifiers that are behind their growing popularity in documents and various types of systems. However, it must be remembered that there is a price to pay for the introduction modern security. In this case, it is the partial loss of anonymity expressed in consent for the storage of such sensitive information in computer systems[38].

The term *biometry* is derived from the Greek, where *bios* means "life" and *metron* means "to measure." Thus, this is the science concerned with identifying people on the basis of their individual qualities such as fingerprints, irises, etc[39].

[37] Deenhor web pages, "Telewizja przemysłowa – informacje" [CCTV: Information], http://www.deenhor-poznan.pl/cctv_telewizja_przemyslowa_informacja.html (accessed on January 6, 2011).

[38] Polski Serwer Prawa [Polish Legal Server], "Biometria korzyści, koszty, zagrożenia" [Biometry: Benefits, costs, and threats], http://lex.pl/?cmd-artykul,6503 (accessed on January 6, 2011).

[39] K. Krasowski and I. Sołtyszewski, "Biometria – zarys problematyki" [Biometry: Introduction], *Problemy Kryminalistyki* [Questions of Forensics], 252/06, p. 39.

The only document within the territory of the European Union, and therefore also within Poland, where the application of biometric technology is obligatory is the passport (introduced by way of Directive No. 2252/2004 of the Council of the European Community). In Poland, this obligation is regulated by the Act on Passport Documents of July 13, 2006. The chief argument against biometric technology is the matter of data storage. The European Union level legislator left the storage of biometric data with the member states.

Poland, pursuant to the Act on Passport Documents of July 13, 2006, defines the manner of storage of biometric data (Article 50a and Article 53), where it may be stated that such data (fingerprints) are stored only until such a time as the passport is issued or the application rejected. Biometric data are subsequently destroyed.

"**Article 50a.**
"1. Biometric data in the form of fingerprints shall be stored as passport records until such a time as the passport issuing body makes an entry into such records confirming acceptance of the duly made passport document.
"2. In the event of the issuing by the passport issuing body of a negative decision regarding the issuing of a passport document, biometric data in the form of fingerprints shall be stored as passport records until such a time as that body makes an entry into such records including information as discussed in Article 50, Clauses 2 and 5."
"**Article 53.**
"1. In addition to centralize records and passport records, the passport issuing body maintains documents serving as the basis for the issuing or refusal to issue or cancellation of passport documents in the form of files.
"2. In the case of documentation as discussed in Clause 1, biometric data in the form of fingerprints shall not be stored"[40].

Biometric security is not only used by the state. Biometric identifiers are being seen in the private sector with increasing frequency. Banks verify the identity of customers with the help of signatures affixed to special tablets, computers secured by a fingerprint reader, and devices capable of comparing the voice of a caller are just some examples confirming the level to which the fruits of modern technology are encroaching into our lives. The group that has recently tried to benefit from the "goodness" of biometry is the employers. However, as seen in a recent decision of the Supreme Court of Administration (NSA), the attempt was not successful. LG Electronics of Mława used fingerprints in order

[40] Chancellery of the *Sejm* [Parliament], Act on Passport Documents (Journal of Laws of 2006, No. 143, item 1027), http://isap.sejm.gov.pl/Download:jsessionid=38C099FE7CCCEB73F210300481 A247A7?id=WDU20061431027&type=1 (accessed on January 6, 2011).

to monitor time worked by its employees. The employees, by way of a written consent form, agreed to the collection of their biometric identifiers (in the event of refusal, the monitoring of entries and exists of such people were conducted in line with old principles). However, the Inspector General for the Protection of Personal Data concluded that the Labor Code provides no legal basis for the use of such data, which means that the procedure should be stopped. The Voivodeship [Provincial] Court of Administration adjudicated that the decision of the Inspector General for the Protection of Personal Data was flawed as in order for the fingerprints to be processed the employees had to give their consent, which is a premise giving the actions of the employer legitimacy. The Supreme Court of Administration subsequently overturned that verdict as it concluded that for the above–cited consent to be legally binding it must be expressed by equal entities[41].

Thus, it may be stated that the procurement of employee biometric data (i.e. fingerprints, irises, etc.) for the purpose of registering work time is incommensurate. It does, in fact, strike out against the employee's privacy.

3. Conclusion

In summarizing this report, it may be stated that there is a lack of unequivocal legislation defining principles of application of CCTV in Poland. Regulations are based on general protection of personal data and concrete regulations on individual public locations (mass public events, city monitoring, etc.). The situation is similar in the area of biometric technology. Apart from the Act on Passport Documents, there is no unequivocal regulation relating to methods for guaranteeing security. The ongoing development of technology should force the legislator to create unambiguous standards and laws effective in this area, as this is of great significance in the securing of the basic rights and liberties of each and every citizen of the Republic of Poland.

[41] Association of Prosecutors of the Republic of Poland (SPRP), http://www.sprp.pl/tresc/procurator/e70c99d6173a1917d8e27f3a1457d93b.pdf (accessed on January 6, 2011).

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Streszczenie

SPOŁECZNE ASPEKTY NOWYCH TECHNOLOGII - CCTV I BIOMETRII (KONCEPCJA PRYWATNOŚCI I OCHRONY DANYCH OSOBOWYCH) NA PRZYKŁADZIE POLSKI

Celem niniejszego artykułu jest przegląd instytucji odpowiadających za ochronę danych osobowych na poziomie Unii Europejskiej oraz na przykładzie narodowym – Polski jako kraju reprezentującego nowe państwa członkowskie. Przedmiotem analizy jest system instytucjonalno – prawny zapewniający bezpieczeństwo komunikacyjne oraz informacyjne instytucji, przedsiębiorstw jak i obywateli przed zagrożeniami wynikającymi z innowacyjnych rozwiązań postępującego rozwoju nowych technologii zarówno w Unii Europejskiej jak i w Polsce. Poniższy artykuł jest również próbą analizy możliwości stosowania systemów zabezpieczeń CTTV oraz Biometrii w Polsce w ujęciu prawnym.

Wyniki analizy wskazują, że pod względem instytucji Polska nie wypada źle w odniesieniu do zagrożeń wynikających z wdrożenia technologii. Sytuacja nie jest tak dobra, jeśli chodzi o świadomość obywateli i mniejszych firm. Wymaga to ułatwiania szerszego dostępu do darmowych programów zabezpieczających firmy przed wyciekiem danych lub niekontrolowanych cyber-ataków terrorystycznych. W odniesieniu do stosowania systemów zabezpieczeń CCTV oraz biometrii, Polska pod względem prawnym jest wciąż na początku procesu dostosowania do dyrektywy UE. Ciągły rozwój technologii powinien zmusić ustawodawcę do stworzenia jednoznacznych standardów i przepisów obowiązujących w zakresie stosowania technologii CCTV oraz biometrii, gdyż ma to ogromne znaczenie w zapewnieniu podstawowych praw i wolności każdego obywatela Rzeczypospolitej Polskiej.

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